



# Standard Power Module

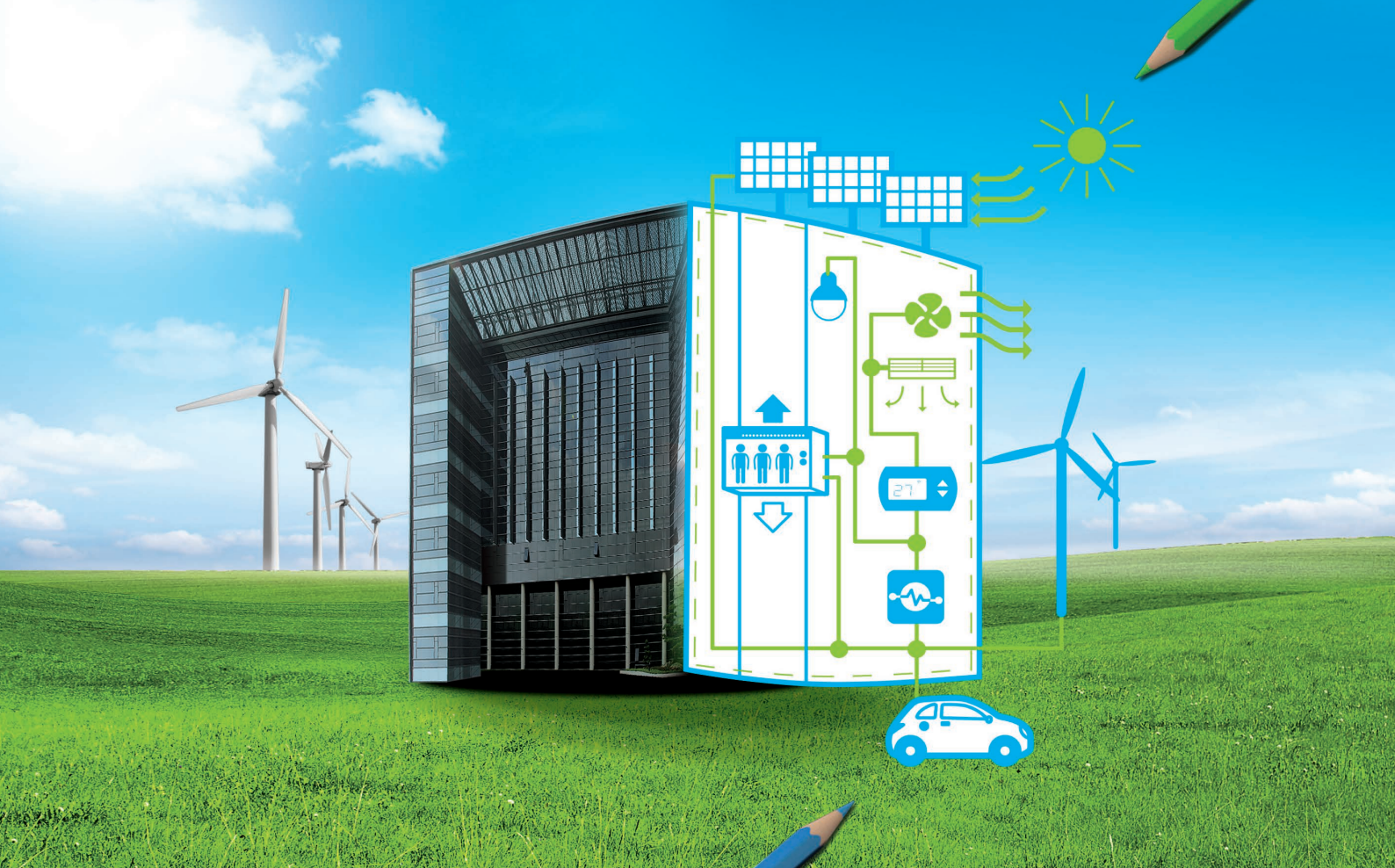
DC/DC Converters & AC/DC Modules

Product Catalog 2020

[www.deltaww.com/dcdc](http://www.deltaww.com/dcdc)





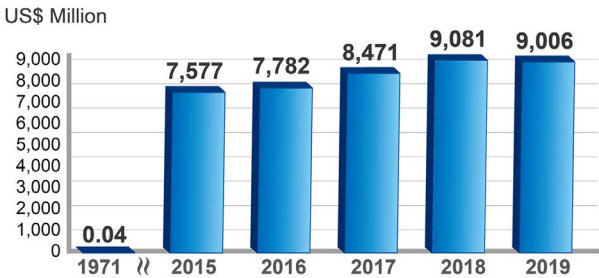


## About Delta

Delta was founded in 1971 and has been the global leader in switching power supply solutions since 2002 and DC brushless fans since 2006. Delta offers some of the most energy efficient power products in the industry, including switching power supplies with efficient over 90%, telecom power with up to 98%, and PV inverters with up to 98.8% efficient. We have also developed the world's first server power supply certified as 80 Plus Titanium with over 96% efficient. We regularly invest 6% to 7% of our annual sales revenues in R&D and have worldwide R&D facilities in Taiwan, China, Europe, India, Japan, Singapore, Thailand, and the U.S.

## Worldwide Revenues

Delta continues to deliver strong and stable financial performance. Delta's consolidated worldwide sales revenue in 2019 was US\$9.006 billion.



## Business Categories



### Power Electronics

- Components
- Embedded Power
- Fan & Thermal Management
- Automotive Electronics
- Merchant & Mobile Power



### Automation

- Industrial Automation
- Building Automation



### Infrastructure

- ICT Infrastructure
- Energy Infrastructure & Industrial Solutions



**Standard power makes it Simple**

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# Solutions and Applications

## Telecom / Networking / Datacenter

Delta is the worldwide leader in power systems technology and manufacturing for DC-DC converters for the telecom, networking and datacenter marketplace. With creative design topology and patented technologies, Delta is committed to design high-density and high-efficiency converters with advanced performance, flexibility and reliability that worldwide telecom, networking and datacenter market requires.



## Industrial

Delta's expansive product portfolio provides solution capability to meet the specific requirements of industrial application. Products use Delta's creative design topology and patented technologies to achieve extremely high efficiency, low power dissipation and greater reliability. These modules housed in industry standard footprint and pinout are easy to use and available in a fully encapsulated package for harsh environment applications.

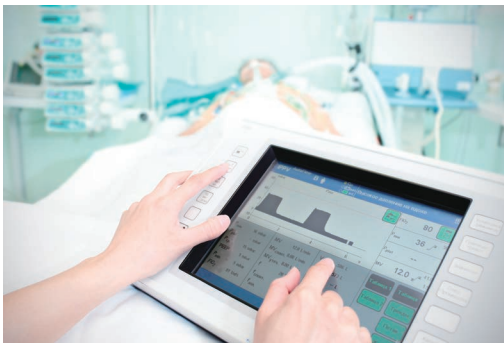


## Transportation



Delta provides isolated DC-DC power converters in the transportation industry for all industrial electric-powered vehicles and various railway applications such as drive controls, power controls, safety monitors and communications systems under the European Standard EN 50155. Delta designed these products with ultra wide input range for optimal performance in extensive transportation market. With creative design technology and optimization of component placement, these converters possess outstanding electrical and thermal performance as well as high reliability under extremely harsh operating conditions.

## Healthcare



Delta also has a series of AC-DC and DC-DC converters are designed to meet specific power requirements for healthcare applications. Such models meet UL60601-1 safety specs.

# PRODUCT SELECTION GUIDE

DC-DC

Isolated

Single Output

Vin nominal: 3.3~12V

Vin Nominal	Vin Range	Series	Max Power	Vo														Page		
				1V	1.2V	1.5V	1.8V	2.5V	3.3V	5V	9V	12V	15V	24V	28V	48V	54V			
3.3V	2.97~3.63V	PA01S	1W							▲	▲								45	
5V	4.5~5.5V	DA01S	1W								▲	▲	▲	▲					45	
		PA01S	1W							▲	▲	▲	▲	▲					45	
		PB01S	1W							▲	▲	▲	▲	▲					45	
		PD01S	1W							▲	▲	▲	▲	▲					45	
		PE01S	1W								▲	▲	▲	▲					45	
		PF01S	1W									▲	▲	▲	▲					45
		PI01S	1W									▲		▲	▲					45
		SA01S	1W								▲	▲	▲	▲	▲					45
		SB01S	1W									▲		▲	▲					46
		SH01S	1W								▲	▲	▲	▲	▲					46
		DC02S	2W									▲		▲	▲					46
		DK02S	2W									▲		▲	▲					46
		PC02S	2W								▲	▲		▲	▲					46
		SC02S	2W									▲		▲						46
	SG02S	2W									▲		▲	▲					46	
	4.5~9V	PL01S	1W									▲		▲	▲					45
		SK01S	1W									▲		▲	▲					46
		DB02S	2W								▲	▲		▲	▲					46
		PG02S	2W								▲	▲		▲						46
		SD02S	2W								▲	▲		▲	▲					46
DN03S		2-3W								▲	▲		▲	▲	▲				47	
DM03S		3W									▲		▲		▲				47	
12V	9~18V	PL01S	1W								▲		▲	▲					45	
		SK01S	1W								▲		▲	▲					46	
		DB02S	2W								▲	▲		▲	▲				46	
		PG02S	2W								▲	▲		▲					46	
		SD02S	2W								▲	▲		▲	▲				46	
		DN03S	2-3W								▲	▲		▲	▲	▲				47
		DD03S	3W									▲		▲	▲					47
		DM03S	3W									▲		▲		▲				47
		SE03S	3W								▲	▲		▲	▲					47
		SF05S	5W								▲	▲		▲	▲					47

DC-DC

Isolated

Single Output

Vin nominal: 12~24V

Vin Nominal	Vin Range	Series	Max Power	Vo														Page			
				1V	1.2V	1.5V	1.8V	2.5V	3.3V	5V	9V	12V	15V	24V	28V	48V	54V				
12V	9~18V	DH06S	6W							▲	▲		▲	▲	▲				47		
		DU06S	6W								▲		▲							47	
		DT10S	10W								▲		▲							47	
	10.8~13.2V	SE03S	3W							▲	▲		▲	▲						47	
		SF05S	5W							▲	▲		▲	▲						47	
		DH06S	6W							▲	▲		▲	▲	▲					47	
		DU06S	6W								▲		▲							47	
		DT10S	10W								▲		▲							47	
		DA01S	1W								▲	▲	▲	▲						45	
		PA01S	1W								▲	▲	▲	▲						45	
		PB01S	1W							▲	▲	▲	▲	▲						45	
		PD01S	1W							▲	▲	▲	▲	▲						45	
		PE01S	1W								▲	▲	▲	▲						45	
		PF01S	1W								▲	▲	▲	▲						45	
		PI01S	1W								▲		▲	▲						45	
		SA01S	1W							▲	▲	▲	▲	▲						45	
		SB01S	1W								▲		▲	▲						46	
		SH01S	1W							▲	▲	▲	▲	▲						46	
		DC02S	2W								▲		▲	▲						46	
		DK02S	2W								▲		▲	▲						46	
		PC02S	2W								▲	▲		▲	▲					46	
		SC02S	2W								▲		▲							46	
		SG02S	2W								▲		▲	▲						46	
		4.5~18V	PJ03S	3W							▲	▲		▲	▲						47
		15V	13.5~16.5V	PB01S	1W							▲		▲	▲						45
				SH01S	1W									▲	▲						46
		24V	18~36V	PL01S	1W							▲		▲	▲						45
	SK01S			1W							▲		▲	▲						46	
	DB02S			2W						▲	▲		▲	▲						46	
	PG02S			2W						▲	▲		▲							46	
SD02S	2W								▲	▲		▲	▲						46		
DD03S	3W									▲		▲	▲						47		
DN03S	2-3W								▲	▲		▲	▲	▲					47		
DM03S	3W									▲		▲		▲					47		

Vin Nominal	Vin Range	Series	Max Power	Vo													Page		
				1V	1.2V	1.5V	1.8V	2.5V	3.3V	5V	9V	12V	15V	24V	28V	48V		54V	
24V	18~36V	SE03S	3W							▲	▲		▲	▲					47
		SF05S	5W							▲	▲		▲	▲					47
		DH06S	6W							▲	▲		▲	▲	▲				47
		DU06S	6W								▲		▲						47
		DT10S	10W								▲		▲						47
	21.6~26.4V	DA01S	1W								▲	▲	▲	▲					45
		PA01S	1W								▲	▲	▲	▲					45
		PB01S	1W								▲	▲	▲						45
		PD01S	1W								▲	▲	▲	▲	▲				45
		PE01S	1W								▲	▲	▲	▲					45
		PF01S	1W								▲	▲	▲	▲					45
		SA01S	1W								▲	▲	▲	▲	▲				45
		SB01S	1W									▲		▲	▲				46
		SH01S	1W								▲	▲	▲	▲	▲				46
		DC02S	2W									▲		▲	▲				46
		DK02S	2W									▲		▲	▲				46
		PC02S	2W									▲	▲	▲	▲				46
		SC02S	2W									▲		▲					46
		SG02S	2W									▲		▲	▲				46
		12/24V	9~36V	PH02S	2W							▲	▲		▲	▲			
DL03S	3W									▲	▲		▲	▲				47	
PJ03S	3W										▲	▲		▲	▲			47	
DF04S	4W										▲	▲		▲	▲			47	
DJ06S	6W										▲	▲		▲	▲	▲		47	
S24SE	30W										▲	▲		▲	▲			49	
S24SP	60W											▲		▲	▲	▲		51	
DR24S	60W												▲					64	
PM24S	60W													▲				64	
12/24/36/48V	9~60V			E35SE	150W							▲		▲		▲		▲	



DC-DC

Isolated

Single Output

Vin nominal: 24~48V

Vin Nominal	Vin Range	Series	Max Power	Vo														Page			
				1V	1.2V	1.5V	1.8V	2.5V	3.3V	5V	9V	12V	15V	24V	28V	48V	54V				
24/36/48V	18~60V	B40SR	300W									12.4V	13.7V							61	
	18~75V	PH02S	2W							▲	▲		▲	▲							46
		DL03S	3W							▲	▲		▲	▲							47
		PJ03S	3W							▲	▲		▲	▲							47
		DF04S	4W							▲	▲		▲	▲							47
		DJ06S	6W							▲	▲		▲	▲	▲						47
		S36SE	24W							▲	▲		▲								42, 52
		V36SE	60W							▲	▲		▲								17
		E36SR	75W							▲	▲										22
		E36SC	125W							▲	▲		▲								21
		H36SA	150W																	▲	39
	Q36SR	240W										▲								31	
	48V	36~72V	E48SC	300W														32V	50V		25
36~75V		PL01S	1W								▲		▲	▲							45
		SK01S	1W								▲		▲	▲							46
		DB02S	2W							▲	▲		▲	▲							46
		PG02S	2W							▲	▲		▲								46
		SD02S	2W							▲	▲		▲	▲							46
		DN03S	2-3W							▲	▲		▲	▲	▲						47
		DD03S	3W								▲		▲	▲							47
		DM03S	3W								▲		▲		▲						47
		SE03S	3W							▲	▲		▲	▲							47
		SF05S	5W							▲	▲		▲	▲							47
		DH06S	6W							▲	▲		▲	▲	▲						47
		DU06S	6W								▲		▲								47
		DT10S	10W								▲		▲								47
		T48SR	25W							▲	▲										16
		S48SP	36W							▲	▲		▲								43
		V48SH	100W	▲	▲		▲		▲	▲											19
		V48SR	66W		▲		▲	▲						▲							20
		Q48SA	81W																	▲	32

DC-DC

Isolated

Single Output

Vin nominal: 48~600V

Vin Nominal	Vin Range	Series	Max Power	Vo													Page				
				1V	1.2V	1.5V	1.8V	2.5V	3.3V	5V	9V	12V	15V	24V	28V	48V		54V			
48V	36~75V	V48SC	100W						▲	▲		▲								18	
		E48SC	120W						▲	▲		▲									23
		E48SC	360W										▲								24
		E48SH	150W	▲	▲	▲	▲	▲	▲	▲		▲									26
		E48SP	240W						▲	▲		▲									28
		E48SK	450W										▲								27
		Q48SQ	400W										▲								34
		H48SA	450W														▲				40
		Q48SC	600W										▲								33
		H48SC	700W														▲				41
	38~60V	H48SA	550W															53V	39		
54V	40~60V	E54SJ	480W						▲	▲		▲								30	
		Q54SH	1300W									▲								36	
		Q54SJ	1300W								10.8V	▲								37	
	42~60V	V48SC	120W									▲								18	
		E54SD	300W									▲								29	
		Q54SG	600W									▲								35	
24/48/72/110V	14.4~170V	Q80SV	150W							▲		▲	▲	▲				▲	54		
48/72/110V	40~170V	QA1SV	200W							▲		▲	▲	▲				▲	55		
24/48/72/80V	18~106V	B62SR	360W									12.4V	13.7V	▲					61		
24/48/72/96/110V	16.8~137.5V	H80SV	200W									▲	▲	▲			▲	▲	56		
72/110V	43~160V	HA0SP*	300W									12V 13.8V	▲						57		
36/48/72/80V	32~96V	B70SP	500W									12.4V	13.7V	24.5V					63		
48/72/80V	36~106V	B70SR	300W									12.4V	13.7V	▲					61		
300V	200~400V	FB7SR*	1200W										14V		▲			▲	58		
380V	360~400V	QC8SC	750W									▲							38		
600V	400~800V	FG5SR*	1200W										14V		▲			▲	58		

\* Coming Soon

DC-DC

Isolated

Dual Outputs

Vin nominal: 5~15V

Vin Nominal	Vin Range	Series	Max Power	Vo				Page
				±5V	±9V	±12V	±15V	
5V	4.5~5.5V	PB01D	1W	•	•	•	•	45
		PD01D	1W	•	•	•	•	45
		PE01D	1W	•	•	•	•	45
		PI01D	1W	•		•	•	45
		SA01D	1W	•	•	•	•	45
		SB01D	1W	•		•	•	46
		SH01D	1W	•		•	•	46
		DC02D	2W	•		•	•	46
		DK02D	2W			•	•	46
		PC02D	2W	•		•	•	46
		SC02D	2W	•		•	•	46
		SG02D	2W			•	•	46
		4.5~9V	PL01D	1W			•	•
	SK01D		1W			•	•	46
	DB02D		2W	•		•	•	46
	SD02D		2W	•		•	•	46
	DN03D		2-3W	•		•	•	47
	DD03D		3W			•	•	47
	DM03D		3W			•	•	47
	12V	10.8~13.2V	PB01D	1W	•	•	•	•
PD01D			1W	•	•	•	•	45
PE01D			1W	•	•	•	•	45
PI01D			1W	•		•	•	45
SA01D			1W	•	•	•	•	45
SB01D			1W	•		•	•	46
SH01D			1W	•		•	•	46
DC02D			2W	•		•	•	46
DK02D			2W			•	•	46
PC02D			2W	•		•	•	46
SC02D			2W			•	•	46
SG02D			2W			•	•	46
4.5~18V			PJ03D	3W	•		•	•
9~18V		PL01D	1W			•	•	45
		SK01D	1W			•	•	46
		DB02D	2W	•		•	•	46
		SD02D	2W	•		•	•	46
		DN03D	2-3W	•		•	•	47
		DD03D	3W			•	•	47
		DM03D	3W			•	•	47
		SE03D	3W	•		•	•	47
		SF05D	5W	•		•	•	47
		DH06D	6W	•		•	•	47
DU06D	6W			•	•	47		
DT10D	10W			•	•	47		
15V	13.5~16.5V	PB01D	1W	•		•	•	45

DC-DC

Isolated

Dual Outputs

Vin nominal: 24~48V

Vin Nominal	Vin Range	Series	Max Power	Vo				Page	
				±5V	±9V	±12V	±15V		
24V	18~36V	PL01D	1W			•	•	45	
		SK01D	1W			•	•	46	
		DB02D	2W	•		•	•	46	
		SD02D	2W	•		•	•	46	
		DN03D	2-3W	•		•	•	47	
		DD03D	3W			•	•	47	
		DM03D	3W			•	•	47	
		SE03D	3W	•		•	•	47	
		SF05D	5W	•		•	•	47	
		DH06D	6W	•		•	•	47	
		DU06D	6W			•	•	47	
		DT10D	10W			•	•	47	
		21.6~26.4V	PD01D	1W	•	•	•	•	45
	PE01D		1W	•	•	•	•	45	
	SA01D		1W	•	•	•	•	45	
	SB01D		1W	•		•	•	46	
	SH01D		1W	•		•	•	46	
	DC02D		2W	•		•	•	46	
	DK02D		2W			•	•	46	
	PC02D		2W	•		•	•	46	
	SC02D		2W			•	•	46	
	SG02D		2W			•	•	46	
	9~36V	PH02D	2W	•		•	•	46	
		DL03D	3W			•	•	47	
		PJ03D	3W	•		•	•	47	
		DF04D	4W	•		•	•	47	
		DJ06D	6W	•		•	•	47	
		S24DE	30W			•	•	50	
	48V	18~75V	PH02D	2W	•		•	•	46
			DL03D	3W			•	•	47
PJ03D			3W	•		•	•	47	
DF04D			4W	•		•	•	47	
DJ06D			6W	•		•	•	47	
36~75V		PL01D	1W			•	•	45	
		SK01D	1W			•	•	46	
		DB02D	2W	•		•	•	46	
		SD02D	2W	•		•	•	46	
		DN03D	2-3W	•		•	•	47	
		DD03D	3W			•	•	47	
		DM03D	3W			•	•	47	
		SE03D	3W	•		•	•	47	
		SF05D	5W	•		•	•	47	
		DH06D	6W	•		•	•	47	
		DU06D	6W			•	•	47	
		DT10D	10W			•	•	47	

## DC-DC

## Non-Isolated

## Output Current: 0.5~80A

Part Number	Output Current	Vin	Vo	Page
PM05S015A	0.5A	4.75~32V	1.5V	73
PM05S018A		4.75~32V	1.8V	73
PM05S025A		4.75~32V	2.5V	73
PM05S033A		4.75~32V	3.3V	73
PM05S050A		6.5~32V	5V	73
PM05S065A		8~32V	6.5V	73
PM05S090A		11~32V	9V	73
PM05S120A		15~32V	12V	73
PM05S150A		18~32V	15V	73
DNT04S0A		3A	2.4~5.5V	0.75~3.63V
NE12S0A	3~13.8V		0.59~5V	73
DNT12S0A	8.3~14V		0.75~5V	71
T31SN24005	4.5A	9~53V	5~30V	70
DNT04S0A	5A	2.4~5.5V	0.75~3.63V	71
DNT12S0A		8.3~14V	0.75~5V	71
DNS04S0A	6A	2.8~5.5V	0.75~3.63V	71
NE12S0A		3~13.8V	0.59~5.1V	73
DNS10S0A		8.3~14V	0.75~5V	71
T31SN12008	8A	9~53V	3.3~16.5V	70
DNM04S0A	10A	2.8~5.5V	0.75~3.63V	71
NE12S0A		3~13.8V	0.59~5.1V	73
DNM10S0A		8.3~14V	0.75~5V	71
DCM04S0A	12A	2.4~5.5V	0.6~3.3V	72
DNL04S0A	16A	2.8~5.5V	0.75~3.63V	71
DNL10S0A		8.3~14V	0.75~5V	71
D12S05020-1	20A	4.5~13.2V	0.59~5V	73
NE12S0A		4.5~13.8V	0.59~5.1V	73
DCL12S0A		4.5~14V	0.69~5V	72
DNL10S0A		2.8~5.5V	0.75~3.63V	71
DNK05S0A	30A	4.5~5.5V	0.8~3.63V	71
DCK12S0A		6~14V	0.8~3.3V	72
DNK12S0A		6~14V	0.8~5.5V	71
D12F200	40A	4.5~13.8V	0.6~5V	73
ND12S0A		8~13.8V	0.9~5V	73
D12S2R550	50A	4.5~13.8V	0.6~5V	73
H60SB0A050		9~60V	0~60V	67
E50SN12051	51A	40~60V	12V	68
D12S300-1	60A	4.5~13.8V	0.6~5V	73
Q50SN12072*	72A	40~60V	12V	69
D12S400	80A	10.8~13.2V	0.8375~5V	73
Q50SN120A1*	110A	40~60V	11.8V	69
Q50SN120A4*	136A	40~60V	11.8V	69

\* Coming Soon

## AC-DC Power Moudle Selection Guide

**AC-DC**      **Single Output**

Series	Max Power	Vin	Vo											Page
			3.3V	5V	8V	9V	12V	14V	15V	24V	28V	36V	48V	
AA04S	4W	85~265VAC	◆	◆		◆	◆		◆	◆				75
AA07S	7W		◆	◆			◆		◆	◆				75
AA10S	10W		◆	◆			◆		◆	◆				75
AA15S	15W			◆			◆		◆	◆			◆	75
AA30S	30W			◆			◆		◆	◆			◆	75
AA60S	60W			◆			◆		◆	◆		◆	◆	75
AB24S	24W			◆		◆	◆		◆	◆				75
AB40S	40W			◆			◆		◆	◆				75
AB60S	60W			◆			◆		◆	◆			◆	75
PACSR	500W						◆			◆	◆		◆	76

**AC-DC**      **Dual Outputs**

Series	Max Power	Vin	Vo								Page	
			3.3/5V	5/12V	12/-12V	15/-15V	8/3.3V	8/5V	14/3.3V	14/5V		
AA04D	4W	85~264VAC	◆	◆	◆	◆						75
AA15D	15W			◆	◆	◆						75
AA30D	30W			◆	◆	◆						75
AB24D	24W					◆	◆					75
AB40D	40W					◆	◆					75

**AC-DC**      **Triple Outputs**

Series	Max Power	Vin	Vo			Page
			3.3/5/12V	5/12/-12V	5/15/-15V	
AA15T	15W	85~264VAC		◆	◆	75
AA30T	30W		◆	◆	◆	75

## Filter & ATCA Input Module Selection Guide

### Filter

Part Number	Input Voltage	Output Current	Common-mode Insertion Loss	Differential-mode Insertion Loss	Page
FL75L05 A	0~75V	5A	43dB	45dB	78
FL75L07 A/B	0~75V	7A	40dB	70dB	78
FL75L10 A	0~75V	10A	30dB	25dB	78
FL75L20 A/B	0~75V	20A	28dB	46dB	78

### ATCA Input Module

Part Number	Input Voltage	Auxiliary Output 1	Auxiliary Output 2	Output Power	Efficiency	Page
DIM3R3400SFA	-36~-75V	3.3V / 3.6A	5V / 150mA	400W	98.2%	79

**ISOLATED**

**DC-DC POWER MODULE**

**OPEN FRAME TYPE**





# Product Overview

The isolated open-frame type DC-DC power module is one of the important product portfolios. The power modules range all DOSA-compatible brick converter from 1/32 brick to 1/2 brick with industrial standard footprint and pinout. In this product group, the power delivers up to 1300W. Delta provides these high-density and high-efficiency converters with advanced performance, flexibility and reliability, which are widely applied to your critical design in telecom, networking and datacenter marketplace. In addition, the wide 4:1 input range products are also applied to industrial application.

Series	Form Factor	Input Voltage	Output Voltage	Output Power	Digital Control	Page
T48SR	1/32 BRICK	36~75V	3.3V, 5V	25W		16
V36SE	1/16 BRICK	18~75V	3.3V, 5V, 12V	50~60W		17
V48SC	1/16 BRICK	36~75V	3.3V, 5V, 12V	50~100W		18
V48SC	1/16 BRICK	42~60V	12V	120W		18
V48SH	1/16 BRICK	36~75V	1V, 1.2V, 1.8V, 3.3V, 5V	35~100W		19
V48SR	1/16 BRICK	36~75V	1.2V, 1.8V, 2.5V, 15V	30~66W		20
E36SC	1/8 BRICK	18~75V	3.3V, 5V, 12V	108~125W		21
E36SR	1/8 BRICK	18~75V	3.3V, 5V	66~75W		22
E48SC	1/8 BRICK	36~75V	3.3V, 5V, 12V	50~120W		23
E48SC	1/8 BRICK	36~75V	12V	240~360W	YES	24
E48SC	1/8 BRICK	36~72V	32V, 50V	160~300W	YES	25
E48SH	1/8 BRICK	36~75V	1V, 1.2V, 1.5V, 1.8V, 2.5V, 3.3V, 5V, 12V	50~150W		26
E48SK	1/8 BRICK	36~75V	12V	450W	YES	27
E48SP	1/8 BRICK	36~75V	3.3V, 5V, 5.8V, 12V	132~240W		28
E54SD	1/8 BRICK	42~60V	12V	300W	YES	29
E54SJ	1/8 BRICK	40~60V	3.3V, 5V, 12V	165~480W	YES	30
Q36SR	1/4 BRICK	18~75V	12V	204~240W		31
Q48SA	1/4 BRICK	36~75V	54V	81W		32
Q48SC	1/4 BRICK	36~75V	12V	300~600W	YES	33
Q48SQ	1/4 BRICK	36~75V	12V	216~400W		34
Q54SG	1/4 BRICK	40~60V	12V	400~600W	YES	35
Q54SH	1/4 BRICK	40~60V	11.8V	600~1300W	YES	36
Q54SJ	1/4 BRICK	40~60V	10.8V, 12.2V	700~1300W	YES	37
QC8SC	1/4 BRICK	360~400V	12V	750W	YES	38
H36SA	1/2 BRICK	18~75V	54V	162W		39
H48SA	1/2 BRICK	36~75V	28V	450W		40
H48SA	1/2 BRICK	38~60V	54V	550W		40
H48SC	1/2 BRICK	36~75V	28V	450~700W	YES	41
S36SE	1" x 1"	18~75V	3.3V, 5V, 12V	15~24W		42
S48SP	1" x 1"	36~75V	3.3V, 5V, 12V	33~36W		43

# T48SR Series

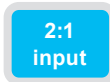
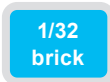
## FEATURES

### Electrical

- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

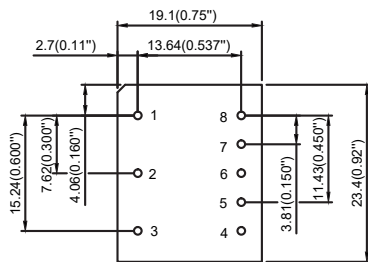
- IEC/EN/UL/CSA 60950-1



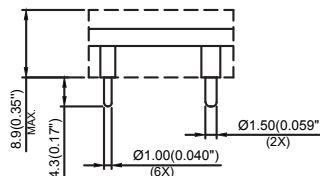
## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
T48SR3R307	36~75V	3.3V	2.64~3.63V	7.5A	25W	86%	1500V	19.1 x 23.4 x 8.9 mm
T48SR05005	36~75V	5V	4~5.5V	5A	25W	86%	1500V	19.1 x 23.4 x 8.9 mm

## MECHANICAL DRAWING



TOP VIEW



SIDE VIEW

Pin#	Function	D_pin
1	VIN(+)	Ø1.00
2	ON/OFF	Ø1.00
3	VIN(-)	Ø1.00
4	VOOUT(-)	Ø1.50
5	SENSE(-)	Ø1.00
6	TRIM	Ø1.00
7	SENSE(+)	Ø1.00
8	VOOUT(+)	Ø1.50

## PART NUMBERING SYSTEM

T	48	S	R	050	05	N	N	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code
T - 1/32 Brick	48 - 36~75V	S - Single	R - Family Name	3R3 - 3.3V 050 - 5V	05 - 5A 07 - 7.5A	N - Negative P - Positive	N - 0.146" R - 0.170"	F - RoHS 6/6 (Lead Free) Space - RoHS5/6	A - Standard Functions

# V36SE Series

## FEATURES

### Electrical

- Efficiency update to 91%
- Wide 4:1 input range
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



1/16  
brick

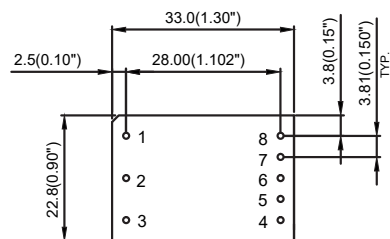
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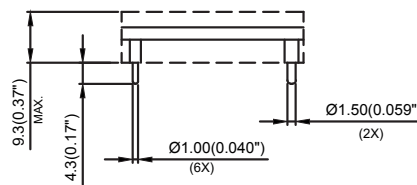
## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
V36SE3R315	18~75V	3.3V	2.64~3.63V	15A	50W	90.5%	2250V	33 x 22.8 x 9.3 mm
V36SE05010	18~75V	5V	4~5.5V	10A	50W	91.0%	2250V	33 x 22.8 x 9.3 mm
V36SE12004	18~75V	12V	9.6~13.2V	4.2A	50W	88.0%	2250V	33 x 22.8 x 8.7 mm
V36SE12005	18~75V	12V	9.6~13.2V	5A	60W	88.0%	2250V	33 x 22.8 x 8.7 mm

## MECHANICAL DRAWING



TOP VIEW



SIDE VIEW

Pin#	Function	D_pin
1	VIN(+)	Ø1.00
2	ON/OFF	Ø1.00
3	VIN(-)	Ø1.00
4	VOUT(-)	Ø1.50
5	SENSE(-)	Ø1.00
6	TRIM	Ø1.00
7	SENSE(+)	Ø1.00
8	VOUT(+)	Ø1.50

## PART NUMBERING SYSTEM

V	36	S	E	050	10	N	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
V - 1/16 Brick	36 - 18~75V	S - Single	E - Family Name	3R3 - 3.3V 050 - 5V 120 - 12V	04 - 4.2A 05 - 5A 10 - 10A 15 - 15A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170" M - SMD	F - RoHS 6/6 (Lead Free) Space - RoHS 5/6	A - Standard Functions

# V48SC Series

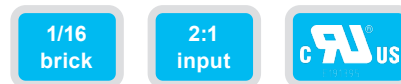
## FEATURES

### Electrical

- Efficiency up to 92%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

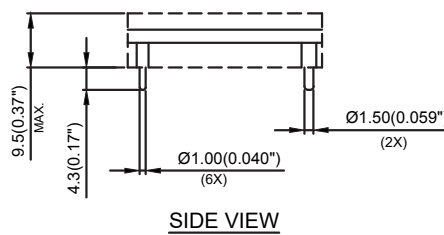
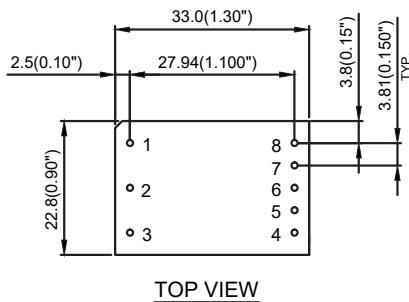
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
V48SC3R315	36~75V	3.3V	2.64~3.63V	15A	49.5W	91.5%	1500V	33 x 22.8 x 9.5 mm
V48SC3R320	36~75V	3.3V	2.64~3.63V	20A	66W	91.0%	1500V	33 x 22.8 x 9.5 mm
V48SC3R325	36~75V	3.3V	2.64~3.63V	25A	82.5W	91.0%	1500V	33 x 22.8 x 9.5 mm
V48SC05013	36~75V	5V	4~5.5V	13A	65W	91.5%	1500V	33 x 22.8 x 9.5 mm
V48SC05017	36~75V	5V	4~5.5V	17A	85W	91.5%	1500V	33 x 22.8 x 9.5 mm
V48SC05020	36~75V	5V	4~5.5V	20A	100W	91.0%	1500V	33 x 22.8 x 9.5 mm
V48SC12007	36~75V	12V	9.6~13.2V	7.5A	90W	92.0%	1500V	33 x 22.8 x 9.5 mm
V48SC12008	36~75V	12V	9.6~13.2V	8.3A	100W	92.0%	1500V	33 x 22.8 x 9.5 mm
V48SC12010	42~60V	12V	9.6~13.2V	10A	120W	91.1%	1500V	33 x 22.8 x 9.5 mm

## MECHANICAL DRAWING



Pin#	Function	D_pin
1	VIN(+)	Ø1.00
2	ON/OFF	Ø1.00
3	VIN(-)	Ø1.00
4	VOUT(-)	Ø1.50
5	SENSE(-)	Ø1.00
6	TRIM	Ø1.00
7	SENSE(+)	Ø1.00
8	VOUT(+)	Ø1.50

( without heat spreader )

## PART NUMBERING SYSTEM

V	48	S	C	050	13	N	N	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
V - 1/16 Brick	48 - 36~75V	S - Single	C - Family Name	3R3 - 3.3V 050 - 5.0V 120 - 12V	07 - 7.5A 08 - 8.3A 10 - 10A 13 - 13A 15 - 15A 17 - 17A 20 - 20A 25 - 25A	N - Negative	K - 0.110" N - 0.145" R - 0.170" M - SMD	F - RoHS 6/6 (Lead Free) Space - RoHS5/6	A - Standard Functions H - With Heatspreader B - no sense and trim pin

# V48SH Series

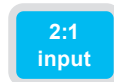
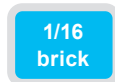
## FEATURES

### Electrical

- Efficiency up to 91.5%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

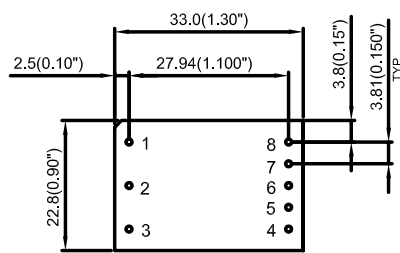
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



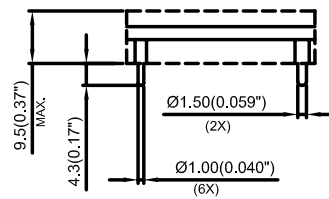
## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
V48SH1R035	36~75V	1V	0.8~1.1V	35A	35W	85.0%	1500V	33 x 22.8 x 9.5 mm
V48SH1R050	36~75V	1V	0.8~1.1V	50A	50W	84.0%	1500V	33 x 22.8 x 9.5 mm
V48SH1R235	36~75V	1.2V	0.96~1.32V	35A	42W	87.0%	1500V	33 x 22.8 x 9.5 mm
V48SH1R830	36~75V	1.8V	1.44~1.98V	30A	54W	89.0%	1500V	33 x 22.8 x 9.5 mm
V48SH1R840	36~75V	1.8V	1.44~1.98V	40A	72W	88.5%	1500V	33 x 22.8 x 9.5 mm
V48SH3R325	36~75V	3.3V	2.64~3.63V	25A	82.5W	91.0%	1500V	33 x 22.8 x 9.5 mm
V48SH3R330	36~75V	3.3V	2.64~3.63V	30A	99W	91.0%	1500V	33 x 22.8 x 9.5 mm
V48SH05017	36~75V	5V	4~5.5V	17A	85W	91.5%	1500V	33 x 22.8 x 9.5 mm
V48SH05020	36~75V	5V	4~5.5V	20A	100W	91.5%	1500V	33 x 22.8 x 9.5 mm

## MECHANICAL DRAWING



TOP VIEW



SIDE VIEW

(without heat spreader)

Pin#	Function	D_pin
1	VIN(+)	Ø1.00
2	ON/OFF	Ø1.00
3	VIN(-)	Ø1.00
4	VOUT(-)	Ø1.50
5	SENSE(-)	Ø1.00
6	TRIM	Ø1.00
7	SENSE(+)	Ø1.00
8	VOUT(+)	Ø1.50

## PART NUMBERING SYSTEM

V	48	S	H	1R0	50	N	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
V - 1/16 Brick	48 - 36~75V	S - Single	H - Family Name	1R0 - 1.0V 1R2 - 1.2V 1R8 - 1.8V 3R3 - 3.3V 050 - 5.0V	17 - 17A 25 - 25A 30 - 30A 35 - 35A 40 - 40A 50 - 50A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170" M - SMD	F - RoHS 6/6 (Lead Free) Space - RoHS5/6	A - Standard Functions H - With heat spreader

# V48SR Series

## FEATURES

### Electrical

- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



1/16  
brick

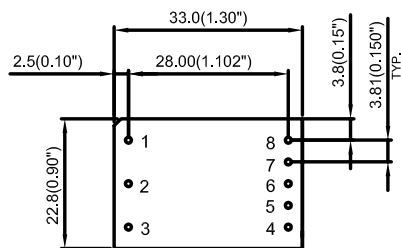
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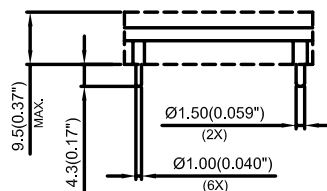
## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
V48SR1R225	36~75V	1.2V	0.96~1.32V	25A	30W	84.0%	2250V	33 x 22.8 x 9.5 mm
V48SR1R825	36~75V	1.8V	1.44~1.98V	25A	45W	87.0%	2250V	33 x 22.8 x 9.5 mm
V48SR2R520	36~75V	2.5V	2~2.75V	20A	50W	89.0%	2250V	33 x 22.8 x 9.5 mm
V48SR15004	36~75V	15V	12.75~16.5V	4.4A	66W	90.5%	2250V	33 x 22.8 x 9.5 mm

## MECHANICAL DRAWING



TOP VIEW



SIDE VIEW

Pin#	Function	D_pin
1	VIN(+)	Ø1.00
2	ON/OFF	Ø1.00
3	VIN(-)	Ø1.00
4	VOUT(-)	Ø1.50
5	SENSE(-)	Ø1.00
6	TRIM	Ø1.00
7	SENSE(+)	Ø1.00
8	VOUT(+)	Ø1.50

## PART NUMBERING SYSTEM

V	48	S	R	1R2	25	N	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
V - 1/16 brick	48 - 36~75V	S - Single	R - Family Name	1R2 - 1.2V 1R8 - 1.8V 2R5 - 2.5V 150 - 15V	04 - 4.4A 20 - 20A 25 - 25A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170" M - SMD	F - RoHS 6/6 (Lead Free)	A - Standard Functions

# E36SC Series

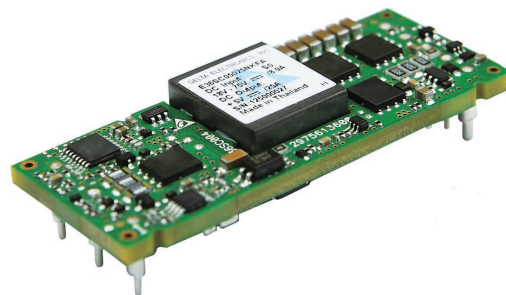
## FEATURES

### Electrical

- Efficiency up to 92%
- Wide 4:1 input range
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



1/8  
brick

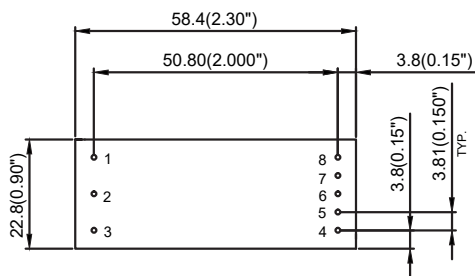
4:1  
input



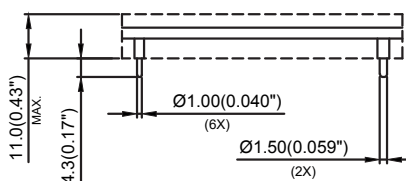
## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
E36SC3R335	18~75V	3.3V	2.97~3.63V	35A	116W	91%	1500V	58.4 x 22.8 x 11 mm
E36SC05025	18~75V	5V	4~5.5V	25A	125W	91%	1500V	58.4 x 22.8 x 11 mm
E36SC12009	18~75V	12V	10.8~13.2V	9A	108W	92%	1500V	58.4 x 22.8 x 11 mm
E36SC12010	18~75V	12V	10.8~13.2V	10A	120W	92%	1500V	58.4 x 22.8 x 11 mm

## MECHANICAL DRAWING



TOP VIEW



SIDE VIEW

( without heat spreader )

Pin#	Function	D_pin
1	VIN(+)	Ø1.00
2	ON/OFF	Ø1.00
3	VIN(-)	Ø1.00
4	VOUT(-)	Ø1.50
5	SENSE(-)	Ø1.00
6	TRIM	Ø1.00
7	SENSE(+)	Ø1.00
8	VOUT(+)	Ø1.50

## PART NUMBERING SYSTEM

E	36	S	C	050	25	N	K	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
E - 1/8 Brick	36- 18~75V	S - Single	C- Family Name	3R3 - 3.3V 050 - 5.0V 120 - 12V	09 - 9A 10 - 10A 25 - 25A 35 - 35A	N- Negative	K - 0.110" N - 0.145" R - 0.170" M - SMD	F - RoHS 6/6 (Lead Free) Space - RoHS5/6	A - Standard Functions H - With heat spreader

# E36SR Series

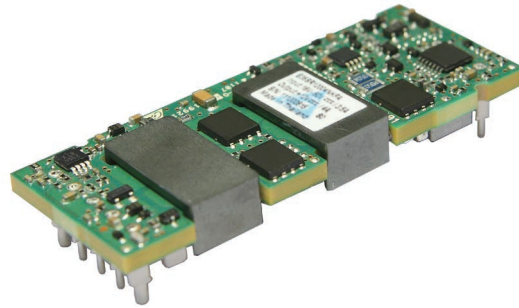
## FEATURES

### Electrical

- Wide 4:1 input range
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

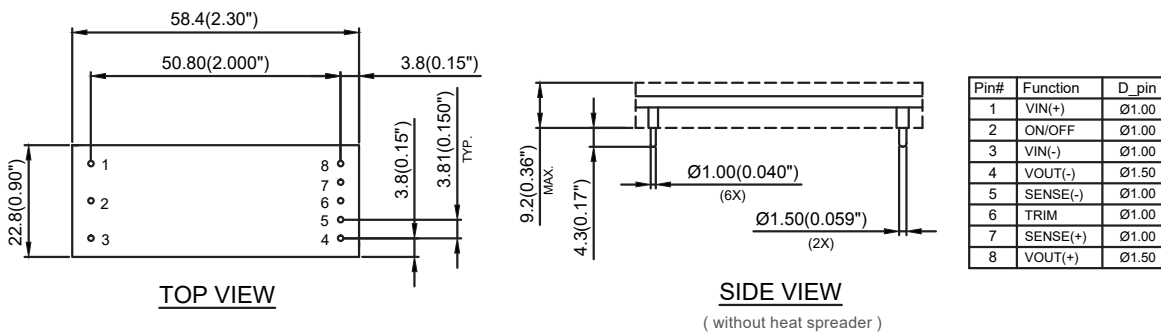
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
E36SR3R320	18~75V	3.3V	2.97~3.63V	20A	66W	88%	2250V	58.4 x 22.8 x 9.2 mm
E36SR05015	18~75V	5V	4.5~5.5V	15A	75W	89%	2250V	58.4 x 22.8 x 9.2 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

E	36	S	R	3R3	20	N	K	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
E - 1/8 Brick	36 - 18~75V	S - Single	R - Family Name	3R3 - 3.3V 050 - 5.0V	15 - 15A 20 - 20A	N - Negative	K - 0.110" N - 0.145" R - 0.170" M - SMD	F - RoHS 6/6 (Lead Free) Space - RoHS5/6	A - Standard Functions H - With heat spreader



# E48SC Series

## FEATURES

### Electrical

- Efficiency up to 92%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

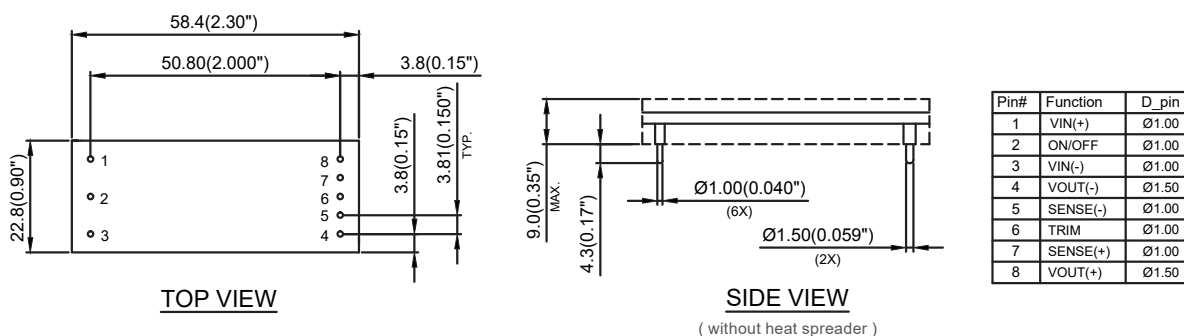
- IEC/EN/UL/CSA 62368-1 (for 3.3V & 5V)
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
E48SC3R315	36~75V	3.3V	2.97~3.63V	15A	50W	91.0%	2250V	58.4 x 22.8 x 9 mm
E48SC3R320	36~75V	3.3V	2.64~3.63V	20A	66W	91.0%	2250V	58.4 x 22.8 x 9 mm
E48SC3R325	36~75V	3.3V	2.97~3.63V	25A	82.5W	91.0%	1500V	58.4 x 22.8 x 9 mm
E48SC05012	36~75V	5V	4.5~5.5V	12A	60W	91.5%	1500V	58.4 x 22.8 x 9 mm
E48SC05015	36~75V	5V	4.5~5.5V	15A	75W	91.0%	1500V	58.4 x 22.8 x 9 mm
E48SC12005	36~75V	12V	9.6~13.2V	5A	60W	92.0%	2250V	58.4 x 22.8 x 8.4 mm
E48SC12008	36~75V	12V	10.8~13.2V	8A	96W	92.0%	2250V	58.4 x 22.8 x 8.4 mm
E48SC12010	36~75V	12V	10.8~13.2V	10A	120W	91.7%	2250V	58.4 x 22.8 x 8.4 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

E	48	S	C	120	08	N	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
E - 1/8 Brick	48 - 36~75V	S - Single	C - Family Name	3R3 - 3.3V 050 - 5.0V 120 - 12V	05 - 5A 08 - 8A 10 - 10A 12 - 12A 15 - 15A 20 - 20A 25 - 25A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170" M - SMD	F - RoHS 6/6 (Lead Free) Space - RoHS 5/6	A - Standard Functions H* - with Heat spreader

\* only available for E48SC12005, E48SC12008, E48SC12010

# E48SC Series - Digital Control

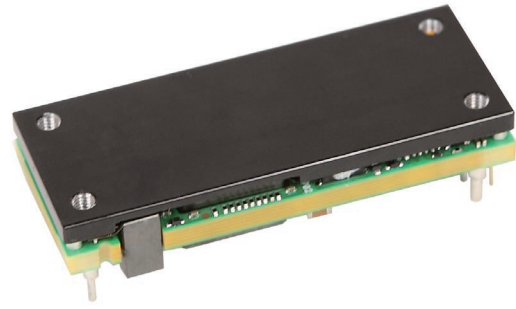
## FEATURES

### Electrical

- Efficiency up to 95.2%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- PMBUS function (optional)

### Safety & Certificate

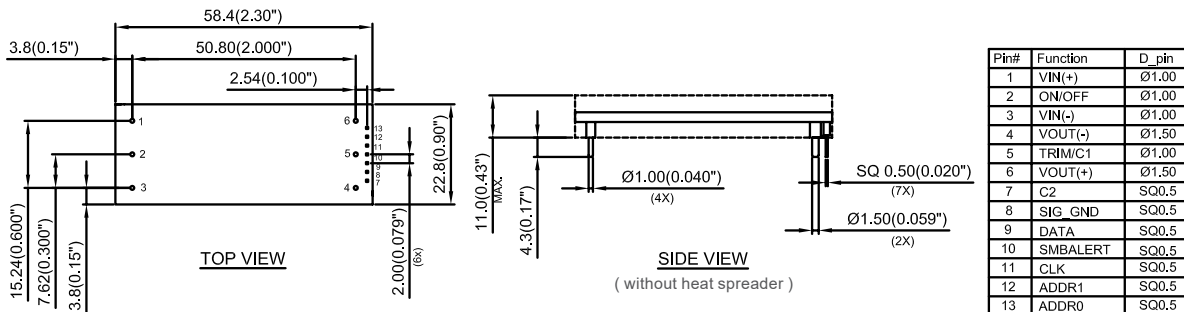
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
E48SC12020	36~75V	12V	8~13.2V	20A	240W	95.2%	1500V	58.4 x 22.8 x 11 mm
E48SC12025	36~75V	12V	8~13.2V	25A	300W	95.0%	1500V	58.4 x 22.8 x 11 mm
E48SC12030	36~75V	12V	8~13.2V	30A	360W	94.5%	1500V	58.4 x 22.8 x 11 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

E	48	S	C	120	20	N	R	F	A																																
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code																																
E- 1/8 Brick	48 - 36~75V	S - Single	C - Family Name	120 - 12V	20 - 20A 25 - 25A 30 - 30A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170" T - 0.220"	F - RoHS 6/6 (Lead Free)	<table border="1"> <thead> <tr> <th></th> <th>PMBUS Pin (7~13pin)</th> <th>Trim Pin</th> <th>Heat Spreader</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Yes</td> <td>Yes</td> <td>No</td> </tr> <tr> <td>B</td> <td>No</td> <td>Yes</td> <td>No</td> </tr> <tr> <td>C</td> <td>No</td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td>D</td> <td>No</td> <td>No</td> <td>No</td> </tr> <tr> <td>E</td> <td>No</td> <td>No</td> <td>Yes</td> </tr> <tr> <td>H</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td>I</td> <td>Yes</td> <td>No</td> <td>Yes</td> </tr> </tbody> </table>		PMBUS Pin (7~13pin)	Trim Pin	Heat Spreader	A	Yes	Yes	No	B	No	Yes	No	C	No	Yes	Yes	D	No	No	No	E	No	No	Yes	H	Yes	Yes	Yes	I	Yes	No	Yes
	PMBUS Pin (7~13pin)	Trim Pin	Heat Spreader																																						
A	Yes	Yes	No																																						
B	No	Yes	No																																						
C	No	Yes	Yes																																						
D	No	No	No																																						
E	No	No	Yes																																						
H	Yes	Yes	Yes																																						
I	Yes	No	Yes																																						

# E48SC Series - Digital Control

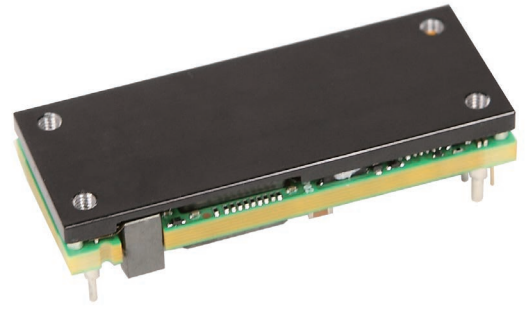
## FEATURES

### Electrical

- Efficiency up to 94.8%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- PMBUS function (optional)
- Wide Vout trim range -50% ~ +10% (32Vout , 50Vout)

### Safety & Certificate

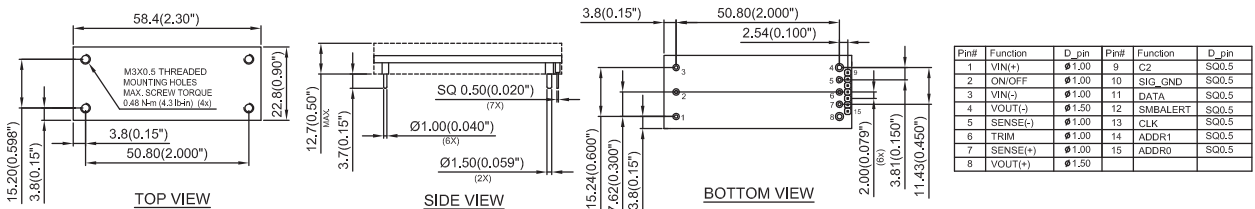
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
E48SC32005	36~72V	32V	16~35V	5A	160W	94.5%	2250V	58.4 x 22.8 x 12.7 mm
E48SC32009	36~72V	32V	16~35V	9A	300W	94.8%	2250V	58.4 x 22.8 x 12.7 mm
E48SC50006	36~72V	50V	25~55V	6A	300W	94.2%	2250V	58.4 x 22.8 x 12.7 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

E	48	S	C	320	05	N	R	A	H
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	Pin Assignment	Option Code
E - 1/8 Brick	48 - 36~72V	S - Single	C - Family Name	320 - 32V 500 - 50V	05 - 5A 06 - 6A 09 - 9A	N - Negative P - Positive	C - 0.180" R - 0.170" N - 0.145" K - 0.110"	A - Analog pins D - Digital pins	A - Standard Functions H - with Heat spreader

Note for mechanical pins option:

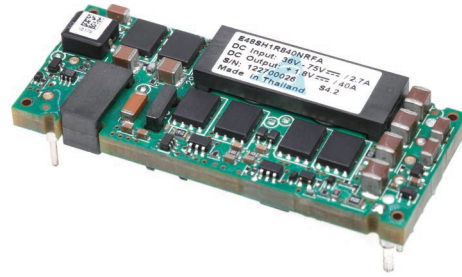
1. A - Analog pins: without digital pins
2. D - Digital pins: with digital pins(9pin~15pin) and PMBus commutation.

# E48SH Series

## FEATURES

### Electrical

- Efficiency up to 93%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense
- Secondary side control, very fast transient response



### Safety & Certificate

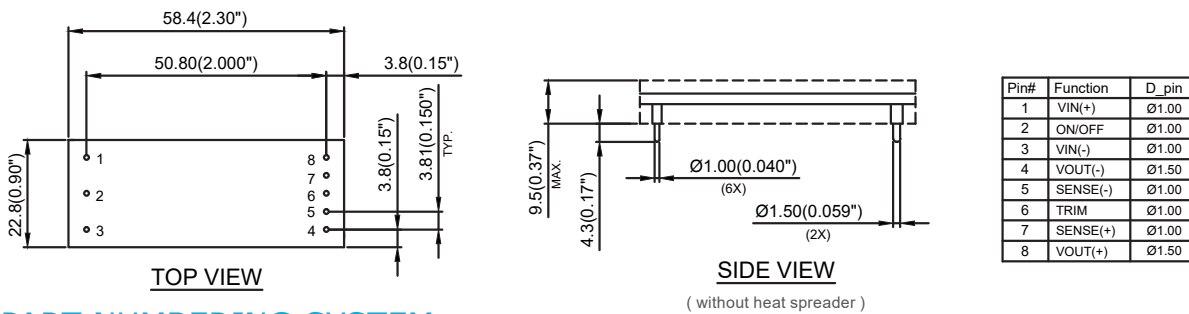
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
E48SH1R050	36~75V	1V	0.8~1.1V	50A	50W	84.5%	2250V	58.4 x 22.8 x 9.5 mm
E48SH1R250	36~75V	1.2V	0.96~1.32V	50A	60W	86.5%	2250V	58.4 x 22.8 x 9.5 mm
E48SH1R540	36~75V	1.5V	1.2~1.65V	40A	60W	89.0%	2250V	58.4 x 22.8 x 9.5 mm
E48SH1R840	36~75V	1.8V	1.44~1.98V	40A	72W	90.0%	2250V	58.4 x 22.8 x 9.5 mm
E48SH2R535	36~75V	2.5V	2~2.75V	35A	88W	89.5%	2250V	58.4 x 22.8 x 9.5 mm
E48SH3R330	36~75V	3.3V	2.64~3.63V	30A	99W	92.0%	2250V	58.4 x 22.8 x 9.5 mm
E48SH05020	36~75V	5V	4~5.5V	20A	100W	90.0%	2250V	58.4 x 22.8 x 9.5 mm
E48SH12010	36~75V	12V	9.6~13.2V	10A	120W	93.0%	2250V	58.4 x 22.8 x 9.5 mm
E48SH12013	36~75V	12V	9.6~13.2V	13A	150W	93.0%	2250V	58.4 x 22.8 x 9.5 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

E	48	S	H	050	20	N	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
E - 1/8 Brick	48 - 36~75V	S - Single	H - Family Name	1R0 - 1.0V 1R2 - 1.2V 1R5 - 1.5V 1R8 - 1.8V 2R5 - 2.5V 3R3 - 3.3V 050 - 5.0V 120 - 12V	10 - 10A 13 - 13A 20 - 20A 30 - 30A 35 - 35A 40 - 40A 50 - 50A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170" M - SMD	F - RoHS 6/6 (Lead Free)	A - Standard functions with output OCL H - With heat spreader with output OCL B* - Standard Functions with output OCP

\* only available for 1.2V, 1.8V, 2.5V output

# E48SK Series

*new product*

## FEATURES

### Electrical

- Efficiency up to 95.6%
- PMBus communication
- Input UVP, Output OCP, OVP and OTP
- Monotonic and Pre-biased startup
- No minimum load required
- Remote ON/OFF

### Safety & Certificate

- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



1/8  
brick

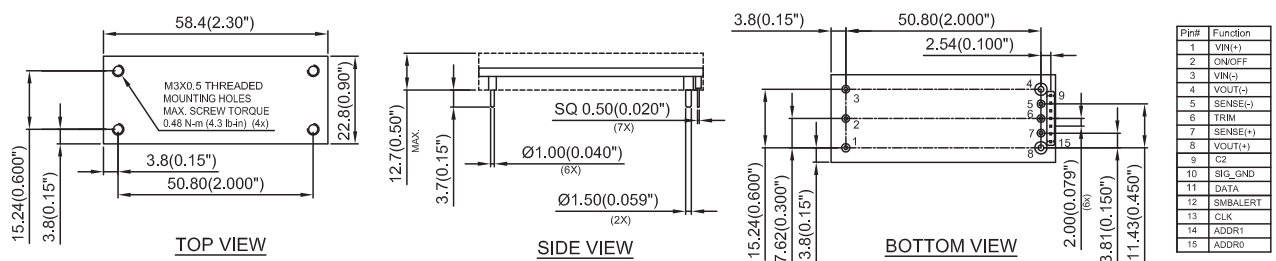
digital  
control



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
E48SK12038	36~75V	12V	8~13.2V	37.5A	450W	95.6%	2250V	58.4 x 22.8 x 12.7 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

E	48	S	K	120	38	N	R	A	H
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
E - 1/8 Brick	48 - 36~75V	S - Single	K - Family Name	120 - 12V	38 - 37.5A	N - Negative P - Positive	N - 0.145" R - 0.170"	A - Analog pins D - Digital pins I - IBC pins	H - With heat spreader

# E48SP Series

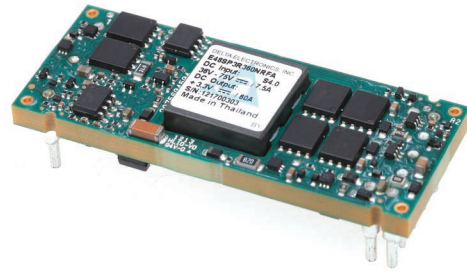
## FEATURES

### Electrical

- Efficiency up to 94.5%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Positive or negative remote ON/OFF
- Heat dissipation enhancement pinout (E48SP3R360)

### Safety & Certificate

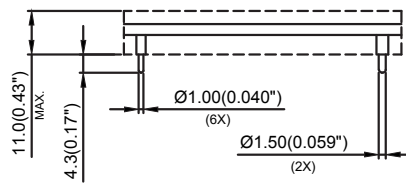
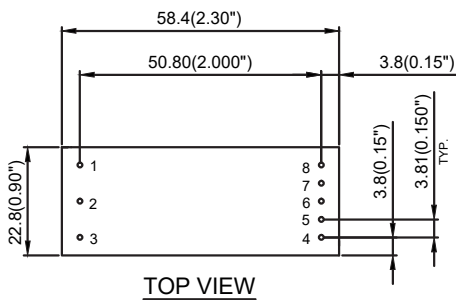
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
E48SP3R340	36~75V	3.3V	2.64~3.63V	40A	132W	93.1%	2250V	58.4 x 22.8 x 11 mm
E48SP3R360	36~75V	3.3V	2.64~3.63V	60A	198W	92.3%	2250V	58.4 x 22.8 x 11 mm
E48SP05040	36~75V	5V	4~5.5V	40A	200W	93.5%	1500V	58.4 x 22.8 x 11 mm
E48SP12020	36~75V	12V	-	20A	240W	94.5%	2250V	58.4 x 22.8 x 11 mm

## MECHANICAL DRAWING



Pin#	Function	D_pin
1	VIN(+)	Ø1.00
2	ON/OFF	Ø1.00
3	VIN(-)	Ø1.00
4	VOU(-)	Ø1.50
5	SENSE(+)	Ø1.00
6	TRIM	Ø1.00
7	SENSE(+)	Ø1.00
8	VOU(+)	Ø1.50

**SIDE VIEW**  
(without heat spreader)

## PART NUMBERING SYSTEM

(E48SP12020 is without sense pin and trim pin)

E	48	S	P	120	20	N	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
E - 1/8 Brick	48 - 36~75V	S - Single	P - Family Name	3R3 - 3.3V 050 - 5.0V 058 - 5.8V 120 - 12V	20 - 20A 25 - 25A 40 - 40A 60 - 60A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170" M - SMD	F - RoHS 6/6 (Lead Free)	A - Standard Functions H - With heat spreader B* - 36~60V Vin

\* only for E48SP12020

# E54SD Series

## FEATURES

### Electrical

- High efficiency
- Fixed frequency operation
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense
- PMBUS function (optional)

### Safety & Certificate

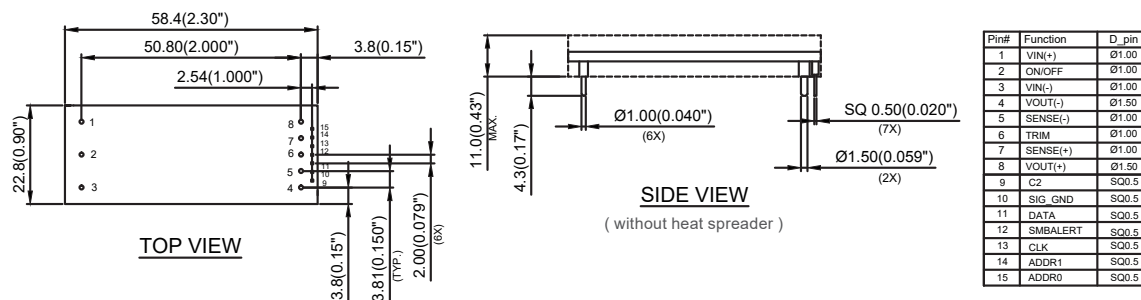
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
E54SD12025	42~60V	12V	8~13.2V	25A	300W	95.2%	1500V	58.4 x 22.8 x 11 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

E	54	S	D	120	25	N	R	F	A		
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code		
E - 1/8 Brick	54 - 42~60V	S - Single	D - Family Name	120 - 12V	25 - 25A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170"	F - RoHS 6/6 (Lead Free)		PMBUS Pin (9~15pin)	Heat Spreader
									A	Yes	No
									B	No	No
									C	No	Yes
									H	Yes	Yes

# E54SJ Series

## FEATURES

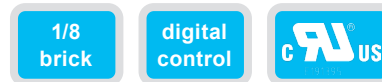
### Electrical

- Efficiency up to 97.0%
- OTP, Input UVLO, Output OCP, OVP
- Remote ON/OFF
- Pre-bias startup
- No minimum load required
- Active Droop Performance
- Parallel Operation with Direct Output Connection
- PMbus Communication
- 707Vdc isolation



### Safety & Certificate

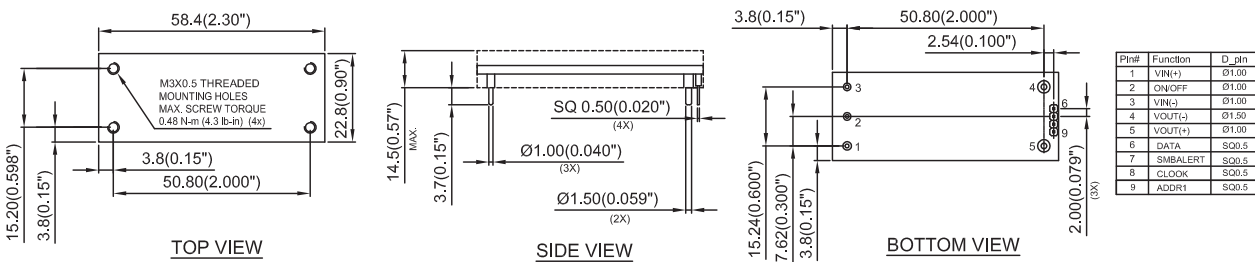
- IEC/EN/UL/CSA 62368-1 (for selective models)
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
E54SJ3R350	40~60V	3.3V	2.64~3.63	50A	165W	96.7%	707V	58.4x22.8x14.5 mm
E54SJ05040	40~60V	5V	-	40A	200W	96.0%	707V	58.4x22.8x12.2 mm
E54SJ12033	40~60V	12V	-	33.9A	400W	97.0%	707V	58.4x22.8x14.5 mm
E54SJ12040	40~60V	12V	-	40.7A	480W	96.7%	707V	58.4x22.8x14.5 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

( For E54SJ05040NNDH only, please refer to datasheet for the other models )

E	54	S	J	050	40	N	N	D	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	Pin Assignment	Option Code
E - 1/8 Brick	54 - 40~60V	S - Single	J - Family Name	3R3 - 3.3V 050 - 5V 120 - 12V	33 - 33A 40 - 40A 50 - 50A	N - Negative P - Positive	C - 0.180" K - 0.110" N - 0.145" R - 0.170"	A - Analog Pins D - Digital Pins & No PIH P - Digital Pins & PIH F - ROHS 6/6 (Lead Free)	A - Standard Functions H - With heat spreader



# Q36SR Series

## FEATURES

### Electrical

- Efficiency up to 93%
- Wide 4:1 input range
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

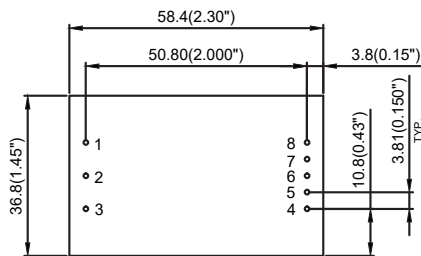
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



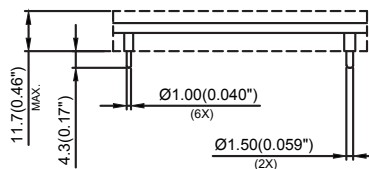
## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
Q36SR12017	18~75V	12V	10.8~13.2V	17A	204W	93%	1500V	58.4 x 36.8 x 11.7 mm
Q36SR12019	18~75V	12V	10.8~13.2V	19A	228W	93%	1500V	58.4 x 36.8 x 11.7 mm
Q36SR12020	18~75V	12V	10.8~13.2V	20A	240W	93%	1500V	58.4 x 36.8 x 11.7 mm

## MECHANICAL DRAWING



TOP VIEW



SIDE VIEW

( without heat spreader )

Pin#	Function	D. pin
1	VIN(+)	Ø1.00
2	ON/OFF	Ø1.00
3	VIN(-)	Ø1.00
4	VOUT(-)	Ø1.50
5	SENSE(-)	Ø1.00
6	TRIM	Ø1.00
7	SENSE(+)	Ø1.00
8	VOUT(+)	Ø1.50

## PART NUMBERING SYSTEM

Q	36	S	R	120	17	N	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code
Q - 1/4 Brick	36 - 18~75V	S - Single	R - Family Name	120 - 12V	17 - 17A 19 - 19A 20 - 20A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170"	F - RoHS 6/6 (Lead Free) Space - RoHS 5/6	A - Standard Functions H - With heat spreader

# Q48SA Series

## FEATURES

### Electrical

- Efficiency up to 92%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

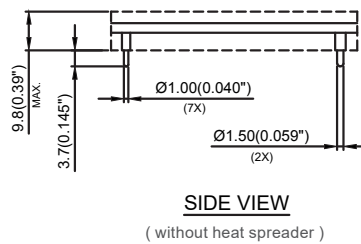
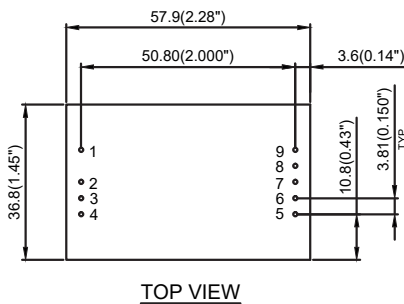
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
Q48SA54001	36~75V	54V	45.9~54V	1.5A	81W	92.0%	1500V	57.9 x 36.8 x 9.8 mm

## MECHANICAL DRAWING



Pin#	Function	D_pin
1	VIN(+)	Ø1.00
2	ON/OFF	Ø1.00
3	CASE(OPTIONAL)	Ø1.00
4	VIN(-)	Ø1.00
5	VOUT(-)	Ø1.50
6	SENSE(-)	Ø1.00
7	TRIM	Ø1.00
8	SENSE(+)	Ø1.00
9	VOUT(+)	Ø1.50

## PART NUMBERING SYSTEM

Q	48	S	A	540	01	N	N	F	H
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code
Q - 1/4 Brick	48 - 36~75V	S - Single	A - Family Name	540 - 54V	01- 1.5A	N - Negative P - Positive	N - 0.145" R - 0.170"	F - RoHS 6/6 (Lead Free) Space- RoHs 5/6	H - With heat spreader

# Q48SC Series

## FEATURES

### Electrical

- Efficiency up to 95.1%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

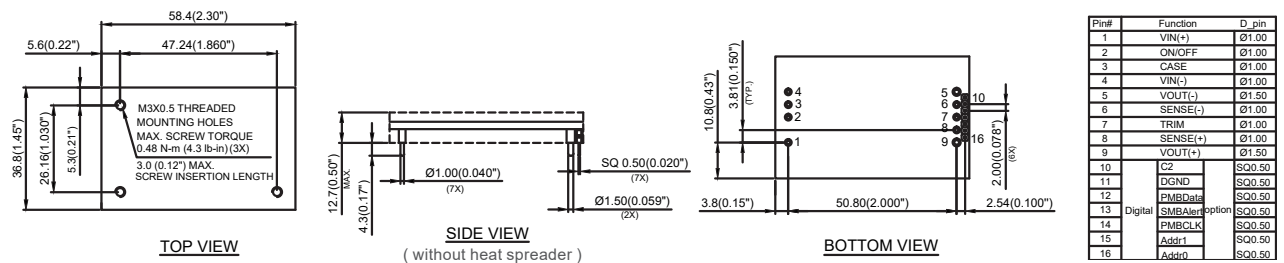
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
Q48SC12025	36~75V	12V	8~13.2V	25A	300W	95.1%	1500V	57.9 x 36.8 x 11.2 mm
Q48SC12033	36~75V	12V	8~13.2V	33A	400W	95.0%	1500V	57.9 x 36.8 x 11.2 mm
Q48SC12042	36~75V	12V	8~13.2V	42A	500W	95.0%	1500V	57.9 x 36.8 x 12.7 mm
Q48SC12050	36~75V	12V	8~13.2V	50A	600W	94.2%	1500V	58.4 x 36.8 x 12.7 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

Q	48	S	C	120	50	N	R	D	H				
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	Pin Assignment	Option Code				
Q - 1/4 Brick	48 - 36~75V	S - Single	C - Family Name	120 - 12V	25 - 25A 33 - 33A 42 - 42A 50 - 50A	P - Positive N - Negative	K - 0.110" N - 0.145" R - 0.170"	D - Digital pins A - Analog pins I - IBC pins T - Trim pins	Trim Pin	Current Sharing	Heat Spreader	Case Pin	
									H	Yes	No	Yes	No
									I	No	Droop	Yes	No
									J	No	No	Yes	No
									R	Yes	No	Yes	Yes
									S	No	Droop	Yes	Yes
									T	No	No	Yes	Yes

Note for mechanical pins option:

1. D - Digital pins: with digital pins & sense pins
2. A - Analog pins: with sense pins, without digital pins
3. I - IBC pins: without digital pins & sense pins
4. T - Trim pins: with digital pins, without sense pins

# Q48SQ Series

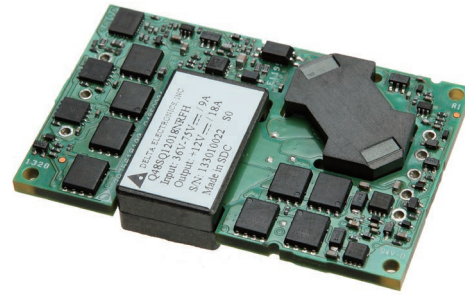
## FEATURES

### Electrical

- Efficiency up to 95.5%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF
- Remote sense

### Safety & Certificate

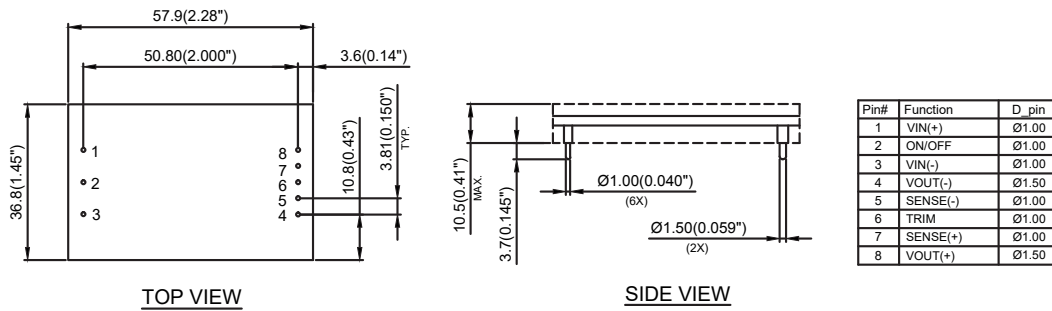
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
Q48SQ12018	36~75V	12V	9.6~13.2V	18A	216W	95.0%	1500V	57.9 x 36.8 x 10.5 mm
Q48SQ12025	36~75V	12V	9.6~13.2V	25A	300W	95.5%	1500V	57.9 x 36.8 x 11.2 mm
Q48SQ12033	36~75V	12V	9.6~13.2V	33A	400W	95.5%	1500V	57.9 x 36.8 x 13.2 mm

## MECHANICAL DRAWING



Pin#	Function	D pin
1	VIN(+)	Ø1.00
2	ON/OFF	Ø1.00
3	VIN(-)	Ø1.00
4	VOUT(-)	Ø1.50
5	SENSE(-)	Ø1.00
6	TRIM	Ø1.00
7	SENSE(+)	Ø1.00
8	VOUT(+)	Ø1.50

( Q48SQ12018 without heat spreader )

## PART NUMBERING SYSTEM

Q	48	S	Q	120	18	N	R	F	H
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code
Q - 1/4 Brick	48 - 36~75V	S - Single	Q - Family Name	120 - 12V	18 - 18A 25 - 25A 33 - 33A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170"	F - RoHS 6/6 (Lead Free) Space - RoHS5/6	A - with trim/sense pin no heat spreader B - no trim/sense pin no heat spreader H - with trim/sense pin with heat spreader N - no trim/sense pin with heat spreader

# Q54SG Series

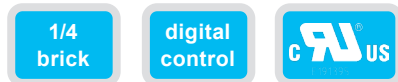
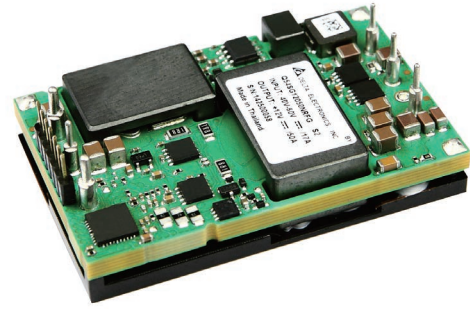
## FEATURES

### Electrical

- Efficiency up to 96.7%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Positive or negative remote ON/OFF
- PMBUS function (optional)

### Safety & Certificate

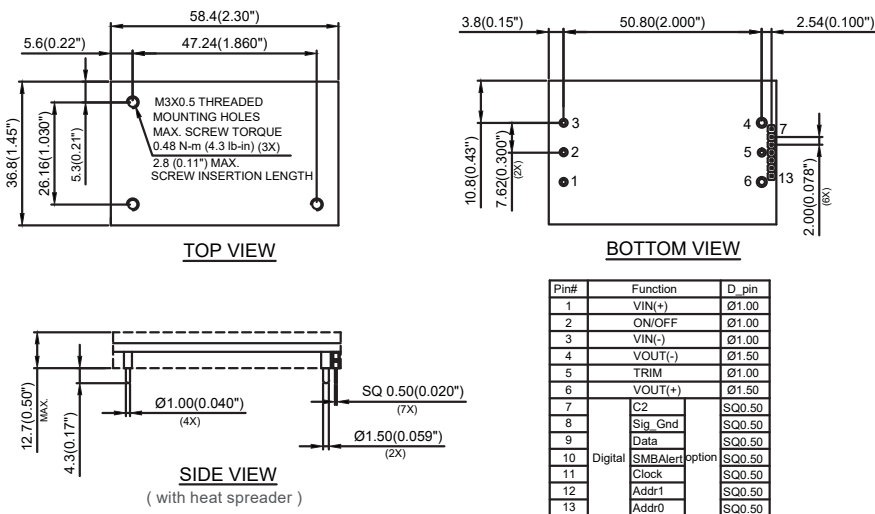
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) with heat spreader
Q54SG12033	40~60V	12V	9.6~13.2V	33A	400W	96.3%	2250V	58.4 x 22.8 x 12.7 mm
Q54SG12050	40~60V	12V	9.6~13.2V	50A	600W	96.7%	2250V	58.4 x 36.8 x 13.2 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

Q	54	S	G	120	50	N	R	F	G				
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code				
Q- 1/4 Brick	54 - 40~60V	S- Single	G - Family Name	120 - 12V	33 - 33A 50 - 50A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170" Y - 0.200"	F- RoHS 6/6 (Lead Free)		Droop Current Sharing	Trim Pin	PMBus Pin	Heat Spreader
									C	No	Yes	No	Yes
									G	No	Yes	Yes	Yes

# Q54SH Series

## FEATURES

### Electrical

- Efficiency up to 97.8%
- OTP, Input UVP/OVP, Output OCP
- Remote ON/OFF
- Pre-bias startup
- No minimum load required
- Parallel Operation with Direct Output Connection
- PMbus Communication

### Safety & Certificate

- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



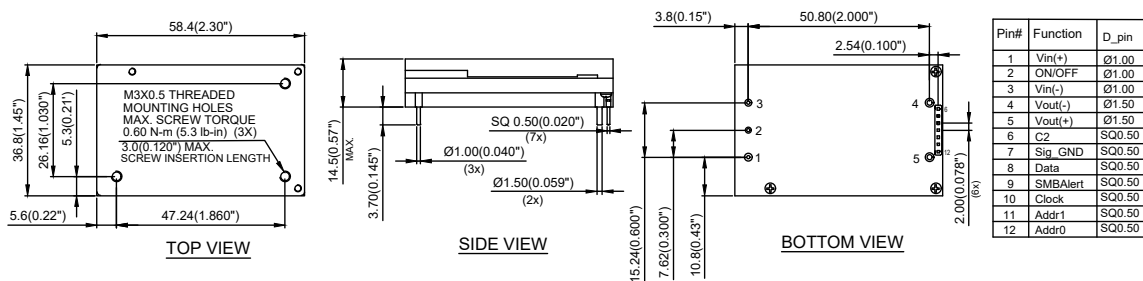
1/4  
brick

digital  
control

## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
Q54SH12050	40~60V	11.8V	-	51A	600W	97.8%	707V	58.4x36.8x15.5 mm
Q54SH12060	40~60V	11.8V	-	60A	700W	97.7%	707V	58.4x36.8x16.2 mm
Q54SH12068	40~60V	11.8V	-	68A	800W	97.5%	707V	58.4x36.8x14.5 mm
Q54SH12084	40~60V	11.8V	-	84.8A	1000W	97.3%	707V	58.4x36.8x15.0 mm
Q54SH120A1	40~60V	11.8V	-	110A	1300W	97.2%	707V	58.4x36.8x15.0 mm

## MECHANICAL DRAWING



( For Q54SH12068NNDH only, please refer to datasheet for the other models )

## PART NUMBERING SYSTEM

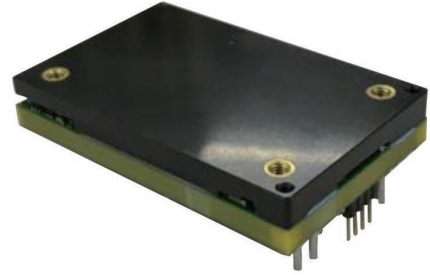
Q	54	S	H	120	50	N	N	D	H
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	Pin Assignment	Option Code
Q - 1/4 Brick	54 - 40~60V	S - Single	H - Family Name	120 - 12V	50 - 51A 60 - 60A 68 - 68A 84 - 84.8A A1 - 110A	N - Negative P - Positive	C - 0.180" K - 0.110" N - 0.145" R - 0.170"	D - Digital pins P - PIH process	F - Heatspreader and Heatsink Version H - With heat spreader

# Q54SJ Series

## FEATURES

### Electrical

- Efficiency up to 97.6%
- OCP, Input UVP/OVP, OTP
- Remote ON/OFF
- Pre-bias startup
- No minimum load required
- Parallel Operation with Direct Output Connection
- PMbus Communication
- Black Box for fault logging
- Online upgrade firmware by the system processor without being turned off
- 707Vdc isolation



1/4  
brick

digital  
control



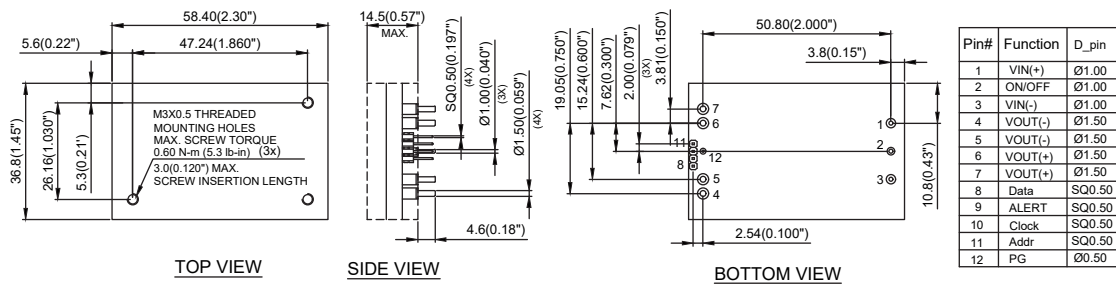
### Safety & Certificate

- IEC/EN/UL/CSA 62368-1 (for selective models)
- IEC/EN/UL/CSA 60950-1

## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) with heat spreader
Q54SJ12058	40~60V	12.2V	-	57.4A	700W	96.4%	800V	57.9x36.8x12 mm
Q54SJ10892	40~60V	10.8V	-	92A	1000W	97.6%	707V	58.4x36.8x14.5 mm
Q54SJ108A2	40~60V	10.7V	-	121A	1300W	97.5%	707V	58.4x36.8x14.5 mm

## MECHANICAL DRAWING



( For Q54SJ108A2NCDH only, please refer to datasheet for the other models )

## PART NUMBERING SYSTEM

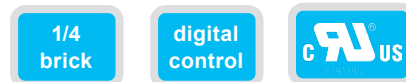
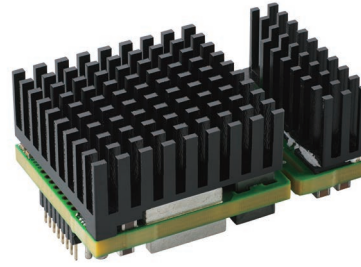
Q	54	S	J	108	92	N	C	D	H
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	Pin Assignment	Option Code
Q - 1/4 Brick	54 - 40~60V	S - Single	J - Family Name	108 - 10.8V 120 - 12.2V	58 - 58A 92 - 92A A2 - 121A	N - Negative P - Positive	C - 0.180" K - 0.110" N - 0.145" R - 0.170"	D - With PMbus Pins A - Without PMbus Pins P - With PMbus Pins & for PIH process	A - Standard Functions H - With heat spreader

# QC8SC Series

## FEATURES

### Electrical

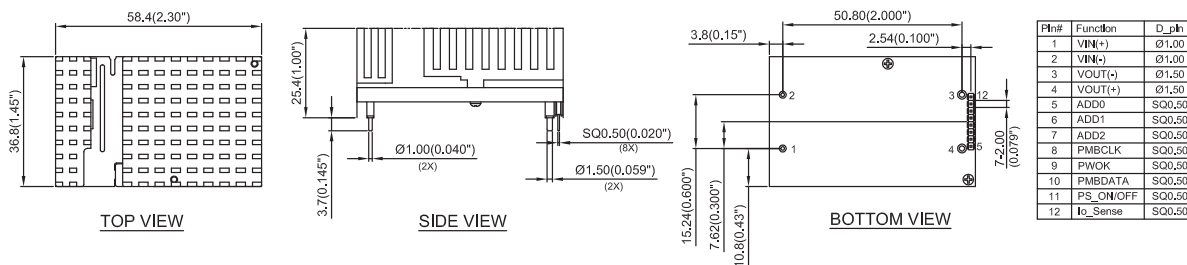
- Peak Efficiency up to 97.0%
- OCP, Input UVP/OVP, OTP
- Remote ON/OFF
- Pre-bias startup
- No minimum load required
- PMbus Communication
- Reinforced insulation
- 4242Vdc Isolation Voltage



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
QC8SC12063	360~400V	12V	-	63A	750W	96.6%	4242V	58.4 x 36.8 x 25.4 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

Q	C8	S	C	120	63	N	N	D	H
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
Q - 1/4 Brick	C8 - 360~400V	S - Single	C - Family Name	120 - 12V	63 - 63A	N - Negative P - Positive	N - 0.145" R - 0.170"	D - Digital pins A - Analog pins	B - Heat Spreader H - Heat Sink



# H36SA Series

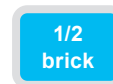
## FEATURES

### Electrical

- Efficiency up to 93.5%
- Wide 4:1 input range
- Input UVLO, OTP, OCP, OVP
- Monotonic startup into normal and pre-biased loads
- 2828V isolation and basic insulation
- No minimum load required

### Safety & Certificate

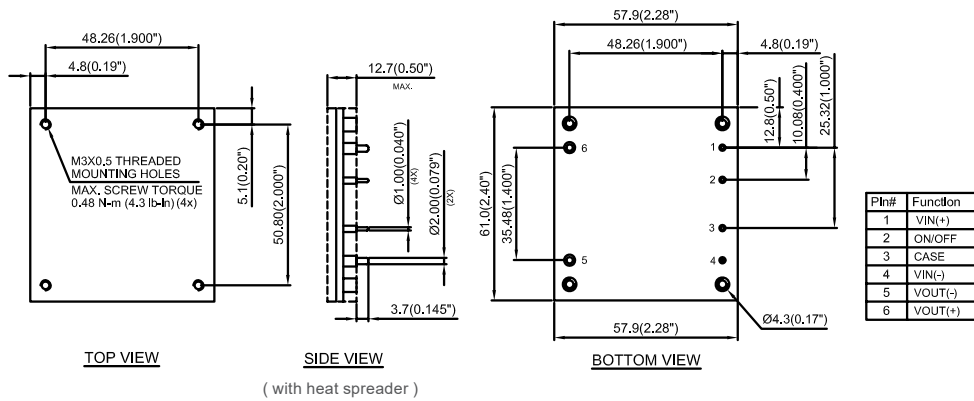
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) with heat spreader
H36SA54003	18~75V	54V	48.6~59.4V	3A	162W	93.5%	2828V	61.0 x 57.9x 13.2 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

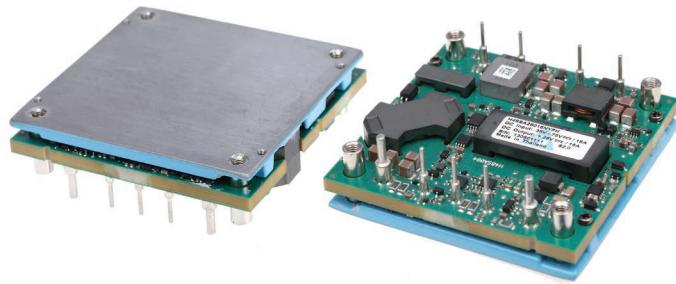
H	36	S	A	540	03	N	N	F	H
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code
H- Half Brick	36 - 18~75V	S - Single	A - Family Name	540 - 54V	03 - 3A	N - Negative P - Positive	N - 0.145"	F - RoHS 6/6 (Lead Free) Space - RoHS 5/6	H - With heat spreader

# H48SA Series

## FEATURES

### Electrical

- Efficiency up to 94.2%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Positive or negative remote ON/OFF
- Remote sense (excluding H48SA53010)



### Safety & Certificate

- IEC/EN/UL/CSA 60950-1

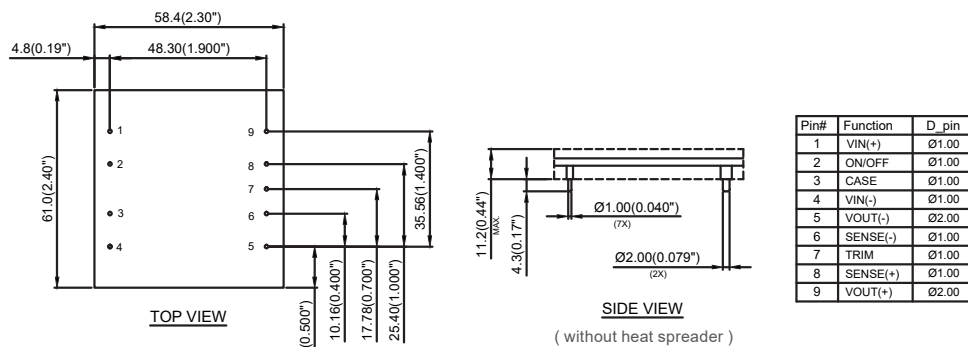


## SPECIFICATIONS

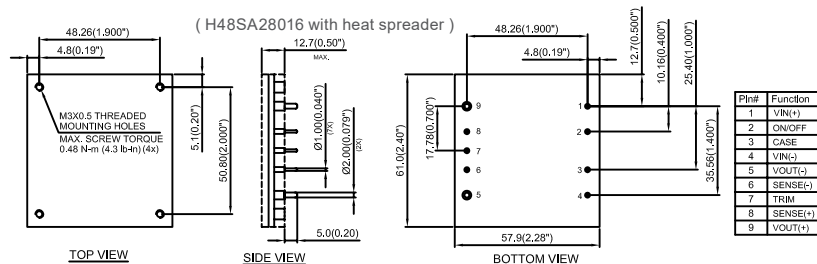
Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
H48SA28016	36~75V	28V	14~33V	16A	450W	92.7%	1500V	61 x 57.9 x 12.7 mm
H48SA53010	38~60V	54V	51.3~56.7V	10.2A	550W	94.2%	2250V	61 x 58.4 x 11.2 mm

## MECHANICAL DRAWING

### H48SA53010



### H48SA28016



## PART NUMBERING SYSTEM

H	48	S	A	280	16	N	N	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code
H - Half Brick	48 - 36~75V or 38~60V	S - Single	A - Family Name	280 - 28V 530 - 54V	10 - 10.2A 16 - 16A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170"	F - RoHS 6/6 (Lead Free)	A - Standard Functions H - With heat spreader

# H48SC Series

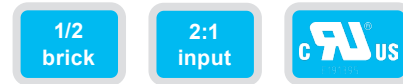
## FEATURES

### Electrical

- Efficiency up to 95%
- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Positive or negative remote ON/OFF
- Parallel and droop current sharing
- PMBUS function

### Safety & Certificate

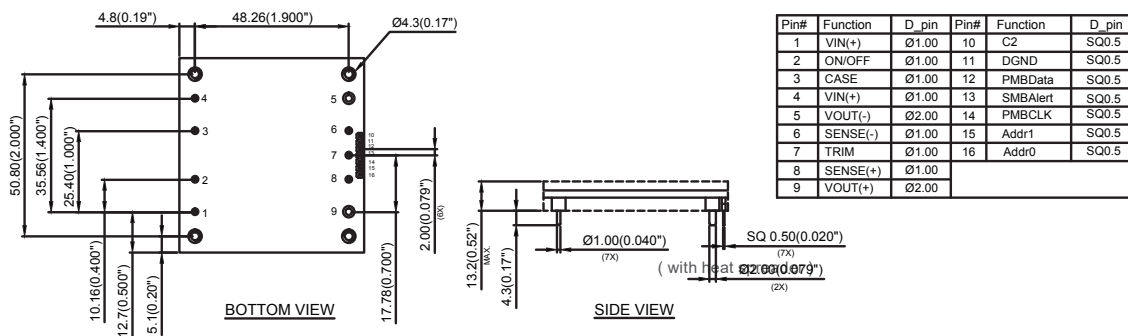
- IEC/EN/UL/CSA 62368-1 (for 25A only)
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
H48SC28016	36~75V	28V	23~33V	16A	450W	95%	1500V	61 x 57.9 x 13.2 mm
H48SC28025	36~75V	28V	23~34V	25A	700W	95%	1500V	61 x 57.9 x 12.7 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

H	48	S	C	280	16	N	R	F	H		
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code		
H - Half Brick	48 - 36~75V	S - Single	C - Family Name	280 - 28V	16 - 16A 25 - 25A	N - Negative P - Positive	K - 0.110" N - 0.145" R - 0.170"	F - RoHS 6/6 (Lead Free)	PMBUS pin (10~16pin)	Heat Spreader	
									A	No	No
									B	Yes	No
									C	Yes	Yes
									H	No	Yes

# S36SE Series

## FEATURES

### Electrical

- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required

### Safety & Certificate

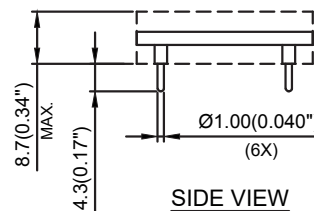
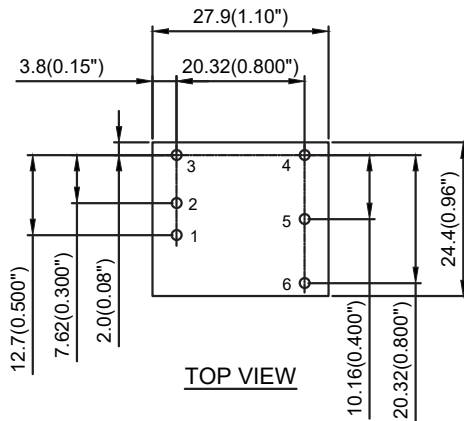
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
S36SE3R305	18~75V	3.3V	2.97~3.63V	5A	16.5W	86.5%	2250V	27.9 x 24.4 x 8.7 mm
S36SE05003	18~75V	5V	4.5~5.5V	3A	15W	83.5%	2250V	27.9 x 24.4 x 8.7 mm
S36SE12001	18~75V	12V	10.8~13.2V	1.3A	15.5W	87.0%	2250V	27.9 x 24.4 x 8.7 mm
S36SE12002	36~75V	12V	10.8~13.2V	2A	24W	87.0%	2250V	27.9 x 24.4 x 8.7 mm

## MECHANICAL DRAWING



Pin#	Function
1	VIN(+)
2	VIN(-)
3	ON/OFF
4	VOUT(-)
5	TRIM
6	VOUT(+)

## PART NUMBERING SYSTEM

S	36	S	E	050	03	N	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
S - Small Power	36 - 18~75V or 36~75V	S - Single	E - Family Name	3R3 - 3.3V 050 - 5.0V 120 - 12V	01 - 1.3A 02 - 2A 03 - 3A 05 - 5A	N - Negative P - Positive	K - 0.110\" N - 0.145\" R - 0.170\" M - SMD	F - RoHS 6/6 (Lead Free)	A - No trim pin B - With trim pin (Default)

# S48SP Series

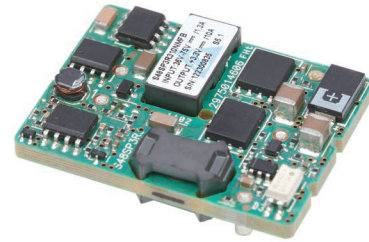
## FEATURES

### Electrical

- OTP, Input UVLO, Output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF

### Safety & Certificate

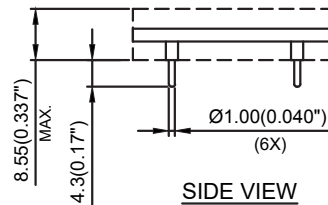
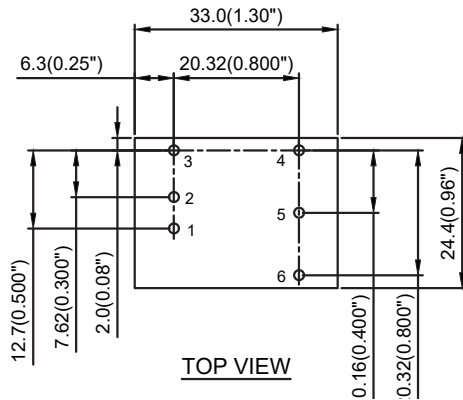
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
S48SP3R310	36~75V	3.3V	2.97~3.63V	10A	33W	90.0%	2250V	33.0 x 24.4 x 8.55 mm
S48SP05007	36~75V	5V	4.5~5.5V	7A	35W	90.0%	2250V	33.0 x 24.4 x 8.55 mm
S48SP12003	36~75V	12V	10.8~13.2V	3A	36W	90.0%	2250V	33.0 x 24.4 x 8.55 mm

## MECHANICAL DRAWING



Pin#	Function
1	VIN(+)
2	VIN(-)
3	ON/OFF
4	VOUT(-)
5	TRIM
6	VOUT(+)

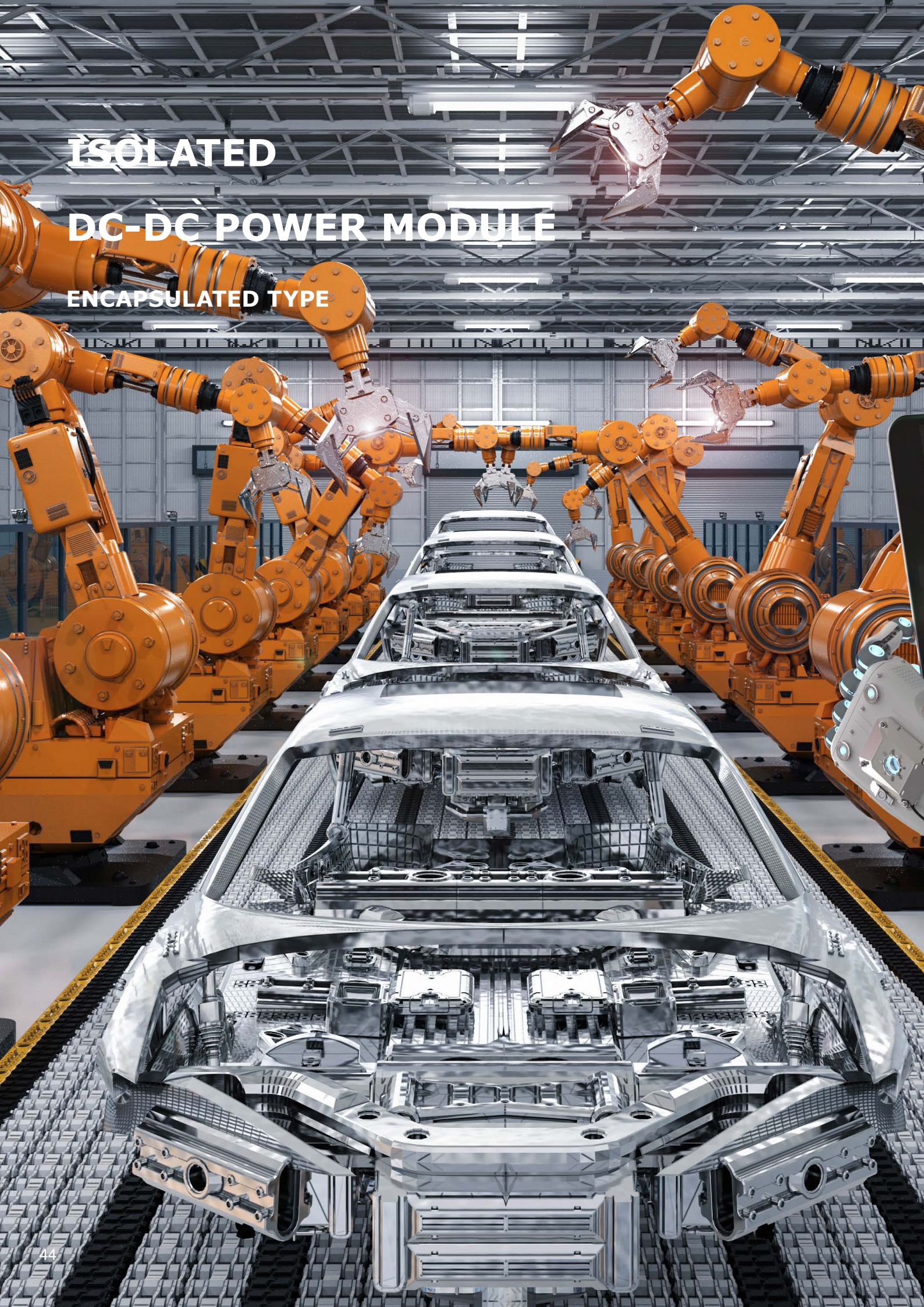
## PART NUMBERING SYSTEM

S	48	S	P	050	07	N	R	F	B
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
S - Small Power	48 - 36V~75V	S - Single	P - Family Name	3R3 - 3.3V 050 - 5V 120 - 12V	03 - 3A 07 - 7A 10 - 10A	N - Negative P - Positive E - No remote on/off control pin	K - 0.110" N - 0.145" R - 0.170" M - SMD	F - RoHS 6/6 (Lead Free)	A - No trim pin B - With trim pin (Default)

**ISOLATED**

**DC-DC POWER MODULE**

**ENCAPSULATED TYPE**



# Product Overview

## Low Power ( 1~10W )

Delta's expansive product portfolio provides solution capability to meet the specific requirements of industrial application. Products use Delta's creative design topology and patented technologies to achieve extremely high efficiency, low power dissipation and greater reliability. These modules housed in industry standard footprint and pinout are easy to use and available in a fully encapsulated package for harsh environment applications.

Series	Output Power	Input Voltage (V)	Output Voltage (V)	Safety Mark	Max Eff.	Isolation Voltage	Dimension (mm) L x W x H
 DA01S	1W	5,12,24 (±10%)	5, 9, 12, 15	CSA 60950-1	79%	3000VDC	12.7 x 8 x 10.2
 PA01S	1W	3.3, 5,12,24 (±10%)	5, 9, 12, 15	N/A	80%	1000VDC	11.5 x 7.1 x 10.2
 PB01S PB01D	1W	5,12,15,24 (±10%)	3.3, 5, 9, 12, 15 ±5, ±9, ±12, ±15	CSA 60950-1	81%	1000VDC	19.5 x 7.1 x 10.2
 PD01S PD01D	1W	5,12,24 (±10%)	3.3, 5, 9, 12, 15 ±5, ±9, ±12, ±15	CSA 60950-1	81%	3000VDC	19.5 x 7.1 x 10.2
 PE01S PE01D	1W	5,12,24 (±10%)	5, 9, 12, 15 ±5, ±9, ±12, ±15	CSA 60950-1	88.5%	1000VDC	19.5 x 7.1 x 10.2
 PF01S	1W	5,12,24 (±10%)	5, 9, 12, 15	CSA 60950-1	88%	3000VDC	19.5 x 7.1 x 10.2
 PI01S PI01D	1W	5,12 (±10%)	5, 12, 15 ±5, ±12, ±15	UL 62368-1 UL 60950-1 UL 60601-1	75%	3000VAC	22 x 7.5 x 12.5
 PL01S PL01D	1W	4.5-9,9-18, 18-36,36-75	5, 12, 15 ±12, ±15	UL 62368-1 CSA 60950-1	80%	1500VDC	17 x 7.62 x 11
 SA01S	1W	5,12,24 (±10%)	3.3, 5, 9, 12, 15	N/A	82%	1000VDC	12.7 x 8.3 x 7.8
 SA01D	1W	5,12,24 (±10%)	±5, ±9, ±12, ±15	N/A	80%	1000VAC	15.24 x 8.3 x 7.8

Series	Output Power	Input Voltage (V)	Output Voltage (V)	Safety Mark	Max Eff.	Isolation Voltage	Dimension (mm) L x W x H
 SB01S SB01D	1W	5,12,24 (±10%)	5, 12, 15 ±5, ±12, ±15	N/A	81%	3000VDC	15.3 x 8 x 6.75
 SH01S SH01D	1W	5,12,15,24 (±10%)	3.3, 5, 9, 12, 15 ±5, ±12, ±15	UL 62368-1 CSA 60950-1	80%	1500VDC	16.24 x 8 x 6.7
 SK01S SK01D	1W	5,12,24,48 (±10%)	5, 12, 15 ±12, ±15	UL 62368-1 CSA 60950-1	82%	1500VDC	18.9 x 13.7 x 8.45
 DB02S DB02D	2W	4.5-9,9-18, 18-36,36-75	3.3, 5, 12, 15 ±5, ±12, ±15	CSA 60950-1	80%	1500VDC	23.8 x 13.7 x 8
 DC02S DC02D	2W	5,12,24 (±10%)	5, 12, 15 ±5, ±12, ±15	N/A	64%	6000VDC	31.8 x 20.3 x 10.2
 DK02S DK02D	2W	5,12,24 (±10%)	5, 12, 15 ±12, ±15	UL 62368-1 UL 60950-1 UL 60601-1	75%	4000VAC	23.8 x 13.4 x 8.6
 PC02S PC02D	2W	5,12,24 (±10%)	3.3, 5, 12, 15 ±5, ±12, ±15	N/A	83%	1000VDC	19.5 x 7.6 x 10.2
 PG02S	2W	4.5-9,9-18, 18-36,36-75	3.3, 5, 12	UL 62368-1 CSA 60950-1	81%	1000VDC	21.8 x 9.3 x 11.2
 PH02S PH02D	2W	9-36,18-75	3.3, 5, 12, 15 ±5, ±12, ±15	UL 62368-1 CSA 60950-1	80%	1500VDC	25.95 x 9.25 x 12.45
 SC02S SC02D	2W	5,12,24 (±10%)	5, 12 ±5, ±12, ±15	N/A	82%	1000VDC	15.3 x 9.3 x 8.65
 SD02S SD02D	2W	4.5-9,9-18, 18-36,36-75	3.3, 5, 12, 15 ±5, ±12, ±15	CSA 60950-1	81%	1500VDC	24 x 13.7 x 8
 SG02S SG02D	2W	5,12,24 (±10%)	5, 12, 15 ±12, ±15	UL 62368-1 UL 60950-1 UL 60601-1	75%	4000VAC	24 x 13.7 x 9



Series	Output Power	Input Voltage (V)	Output Voltage (V)	Safety Mark	Max Eff.	Isolation Voltage	Dimension (mm) L x W x H
 DD03S DD03D	3W	4.5-9,9-18, 18-36,36-75	5, 12, 15 ±12, ±15	CSA 60950-1	81%	1500VDC	31.8 x 20.3 x 10.2
 DL03S DL03D	3W	9-36,18-75	3.3, 5, 12, 15 ±12, ±15	CSA 60950-1	84%	1500VDC	31.8 x 20.3 x 10.2
 DM03S DM03D	3W	4.5-9,9-18, 18-36,36-75	5, 12, 24 ±12, ±15	UL 60950-1 CSA 60950-1 UL 60601-1	84%	4000VDC	31.8 x 20.3 x 10.5
 DN03S DN03D	2-3W	4.5 ~ 9, 9 ~ 18	3.3, 5, 12, 15, 24 ±5, ±12, ±15	UL 62368-1 CSA 60950-1	85%	1500VDC 3000VDC	31.8 x 20.3 x 10.2
 PJ03S PJ03D	3W	4.5-18,9-36,18-75	3.3, 5, 12, 15 ±5, ±12, ±15	UL 62368-1 CSA 60950-1	81%	1600VDC	21.8 x 9.3 x 11.2
 SE03S SE03D	3W	9-18,18-36,36-75	3.3, 5, 12, 15 ±5, ±12, ±15	CSA 60950-1	83%	1500VDC	32.3 x 14.8 x 10.2
 DF04S DF04D	4W	9-36,18-75	3.3, 5, 12, 15 ±5, ±12, ±15	UL 60950-1	85%	1500VDC	31.8 x 20.3 x 10.2
 SF05S SF05D	5W	9-18,18-36,36-75	3.3, 5, 12, 15 ±5, ±12, ±15	CSA 60950-1	85%	1500VDC	33.4 x 20.8 x 10.2
 DH06S DH06D	6W	9-18,18-36,36-75	3.3, 5, 12, 15, 24 ±5, ±12, ±15	UL 62368-1 CSA 60950-1	84%	1500VDC 3000VDC	31.8 x 20.3 x 10.2
 DJ06S DJ06D	6W	9-36,18-75	3.3, 5, 12, 15, 24 ±5, ±12, ±15	UL 62368-1 CSA 60950-1	84%	1500VDC 3000VDC	31.8 x 20.3 x 10.2
 DU06S DU06D	6W	9-18,18-36,36-75	5, 12 ±12, ±15	UL 60950-1 UL 60601-1	80%	4000VDC	31.8 x 20.3 x 12
 DT10S DT10D	10W	9-18,18-36,36-75	5, 12 ±12, ±15	UL 62368-1 UL 60950-1 UL 60601-1	82%	4200VAC	50.8 x 25.4 x 12

# Product Overview

## 10 ~ 150W

These are encapsulated board-mounted DC/DC power modules in a compact footprint with industry standard pinout. Designed for harsh environments such as process control and automation, data communication and telecom equipment, test equipment, or industrial, railway and healthcare markets, all modules are packaged in metal case and potted with thermal potting material, which ensures good thermal performance and high reliability in harsh environment applications.

Series	Output Power	Input Voltage	Output Voltage (V)								Max Efficiency	Isolation Voltage	Package	Page	
			3.3	5	12	15	24	48	±12	±15					
S24SE	10~30W	9~36V	•	•	•	•					89.0%	1600VDC	1"x1"	49	
S24DE	10~30W	9~36V								•	•	88.0%	1600VDC	1"x1"	50
S24SP	40~60W	9~36V		•	•	•	•					93.0%	1500VDC	2"x1"	51
S36SE	15~16.5W	18~75V	•	•	•							93.0%	2250VDC	1"x1"	52
E35SE	150W	9~60V		•	•		•	•				92.2%	4000VDC	1/8 brick	53

## 50 ~ 300W

These are isolated DC-DC power converters designed for various railway applications such as drive controls, power controls, safety monitors and communications systems under the European Standard EN 50155. Delta designed these products with ultra wide input range for optimal performance in extensive transportation market. With creative design technology and optimization of component placement, these converters possess outstanding electrical and thermal performance as well as high reliability under extremely harsh operating conditions.

Series	Output Power	Input Voltage	Output Voltage (V)							Max Efficiency	Isolation Voltage	Package	Page
			5	12	13.8	15	24	48	54				
Q80SV	150W	14.4~170V	•	•		•	•		•	90.0%	4242VDC	1/4 brick	54
QA1SV	200W	40~170V	•	•		•	•		•	90.0%	4242VDC	1/4 brick	55
H80SV	100~200W	16.8~137.5V		•		•	•	•	•	91.5%	4242VDC	1/2 brick	56
HA0SP*	300W	43~160V		•	•	•				91.5%	4242VDC	1/2 brick	57

## 1200W

These high power level modules with high voltage input range is designed for super computer, high-end computing, and industrial system where uses 200~800V power distribution.

Series	Output Power	Input Voltage	Output Voltage (V)			Max Efficiency	Isolation Voltage	Package	Page
			14	28	54				
FB7SR*	1200W	200~400V	•	•	•	96.5%	4242VDC	full brick	58
FG5SR*	1200W	400~800V	•	•	•	96.4%	4242VDC	full brick	58

\* Coming Soon

# S24SE Series

## FEATURES

### Electrical

- Industry standard footprint and pinout
- Wide 4:1 input range
- OTP, input UVLO, output OCP, OVP
- Remote ON/OFF
- Without tantalum capacitor inside module

### Safety & Certificate

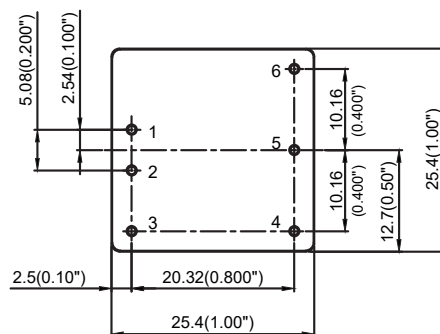
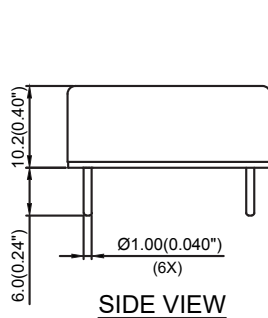
- IEC/EN/UL/CSA 60950-1
- Meet EN 50155



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
S24SE3R303	9~36V	3.3V	3A	10W	87.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE3R305	9~36V	3.3V	4.5A	15W	87.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE3R306	9~36V	3.3V	6A	20W	87.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE3R307	9~36V	3.3V	7.5A	30W	88.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE05002	9~36V	5V	2A	10W	87.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE05003	9~36V	5V	3A	15W	89.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE05004	9~36V	5V	4A	20W	88.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE05006	9~36V	5V	6A	30W	89.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE12001	9~36V	12V	1.25A	15W	87.5%	1600V	25.4 x 25.4 x 10.2 mm
S24SE12002	9~36V	12V	1.67A	20W	88.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE12003	9~36V	12V	2.5A	30W	88.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE120R8	9~36V	12V	0.83A	10W	86.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE15001	9~36V	15V	1.33A	20W	88.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE15002	9~36V	15V	2A	30W	88.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE150R6	9~36V	15V	0.67A	10W	87.0%	1600V	25.4 x 25.4 x 10.2 mm
S24SE150R9	9~36V	15V	1A	15W	87.5%	1600V	25.4 x 25.4 x 10.2 mm

## MECHANICAL DRAWING



BOTTOM VIEW

PIN	Single	Dual
1	Vin(+)	Vin(+)
2	Vin(-)	Vin(-)
3	ON/OFF	ON/OFF
4	Vout(-)	Vout(-)
5	Trim	Comm
6	Vout(+)	Vout(+)

# S24DE Series

## FEATURES

### Electrical

- Industry standard footprint and pinout
- Wide 4:1 input range
- OTP, input UVLO, output OCP, OVP
- Remote ON/OFF
- Without tantalum capacitor inside module

### Safety & Certificate

- IEC/EN/UL/CSA 60950-1
- Meet EN 50155



1" x 1"

4:1 input

dual outputs

## SPECIFICATIONS

Part Number	Input Voltage	Outputs		Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
S24DE120R4	9~36V	12V/0.42A	-12V/0.42A	10W	87.0%	1600V	25.4 x 25.4 x 10.2 mm
S24DE120R6	9~36V	12V/0.625A	-12V/0.625A	15W	87.5%	1600V	25.4 x 25.4 x 10.2 mm
S24DE120R8	9~36V	12V/0.83A	-12V/0.83A	20W	88.0%	1600V	25.4 x 25.4 x 10.2 mm
S24DE12001	9~36V	12V/1.25A	-12V/1.25A	30W	88.0%	1600V	25.4 x 25.4 x 10.2 mm
S24DE150R3	9~36V	15V/0.33A	-15V/0.33A	10W	87.0%	1600V	25.4 x 25.4 x 10.2 mm
S24DE150R5	9~36V	15V/0.5A	-15V/0.5A	15W	87.5%	1600V	25.4 x 25.4 x 10.2 mm
S24DE150R6	9~36V	15V/0.67A	-15V/0.67A	20W	88.0%	1600V	25.4 x 25.4 x 10.2 mm
S24DE15001	9~36V	15V/1.33A	-15V/1.33A	30W	88.0%	1600V	25.4 x 25.4 x 10.2 mm

## MECHANICAL DRAWING

**SIDE VIEW**

**BOTTOM VIEW**

PIN	Single	Dual
1	Vin(+)	Vin(+)
2	Vin(-)	Vin(-)
3	ON/OFF	ON/OFF
4	Vout(-)	Vout(-)
5	Trim	Comm
6	Vout(+)	Vout(+)

## PART NUMBERING SYSTEM

S	24	S	E	050	02	P	D	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code
S - Small Size	24 - 9~36V	S - Single D - Dual	E - Family Name	3R3 - 3.3V 050 - 5.0V 120 - 12V or ±12V 150 - 15V or ±15V	02 - 2A 03 - 3A 04 - 4A 06 - 6A etc.	N - Negative P - Positive	R - 0.17" T - 0.22" D - 0.24"	F - RoHS 6/6 (Lead Free)	A - Standard (with metal case) H - With metal case and heat sink

# S24SP Series

## FEATURES

### Electrical

- Efficiency up to 93.7%
- Industry standard footprint and pinout
- Wide 4:1 input range
- OTP, input UVLO, output OCP, OVP
- Remote ON/OFF
- Without tantalum capacitor inside module



2" x 1"

4:1  
input

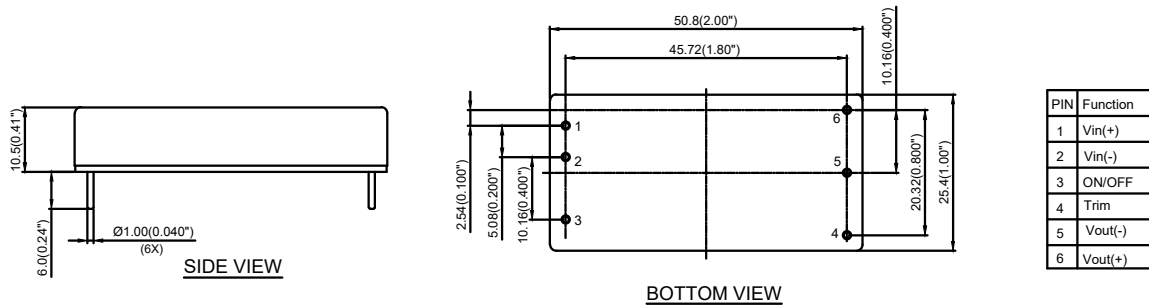
### Safety & Certificate

- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1
- Meet EN50155

## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
S24SP05008	9~36V	5V	4.5~5.5V	8A	40W	92.80%	1500V	50.8 x 25.4 x 10.5 mm
S24SP05012	9~36V	5V	4.5~5.5V	12A	60W	92.40%	1500V	50.8 x 25.4 x 10.5 mm
S24SP12004	9~36V	12V	10.8~13.2V	3.5A	40W	92.80%	1500V	50.8 x 25.4 x 10.5 mm
S24SP12005	9~36V	12V	10.8~13.2V	5A	60W	92.80%	1500V	50.8 x 25.4 x 10.5 mm
S24SP15003	9~36V	15V	13.5~16.5V	2.7A	40W	93.70%	1500V	50.8 x 25.4 x 10.5 mm
S24SP15004	9~36V	15V	13.5~16.5V	4A	60W	93.30%	1500V	50.8 x 25.4 x 10.5 mm
S24SP24002	9~36V	24V	21.6~26.4V	1.7A	40W	92.50%	1500V	50.8 x 25.4 x 10.5 mm
S24SP24003	9~36V	24V	21.6~26.4V	2.5A	60W	93.30%	1500V	50.8 x 25.4 x 10.5 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

S	24	S	P	050	12	P	D	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code
S - Small Power	24 - 9~36V	S - Single	P - Family Name	050 - 5V 120 - 12V 150 - 15V 240 - 24V	08 - 8A 12 - 12A 04 - 3.5A 05 - 5A 03 - 2.7A 04 - 4A 02 - 1.7A 03 - 2.5A	N - Negative P - Positive	R - 0.17" T - 0.22" D - 0.24"	F - RoHS 6/6 (Lead Free)	A - Standard (with metal case) H - With metal case and heat sink

# S36SE Series

## FEATURES

### Electrical

- Wide 4:1 input range
- OTP, input UVLO, output OCP, OVP
- Isolation and basic insulation
- Pre-biased startup
- No minimum load required
- Remote ON/OFF



### Safety & Certificate

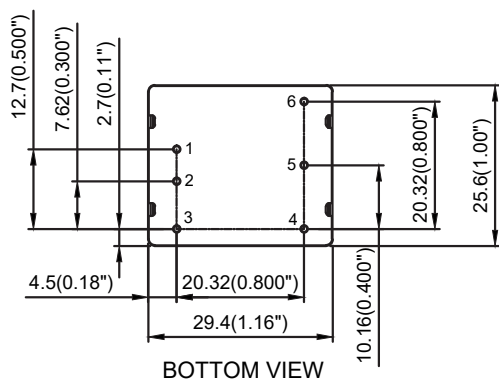
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



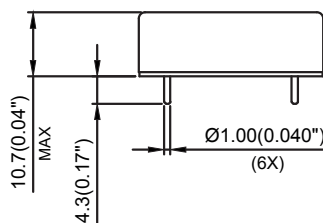
## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
S36SE3R305	18~75V	3.3V	2.7~3.63V	5A	16.5W	86.5%	2250V	29.4 x 25.6 x 10.7 mm
S36SE05003	18~75V	5V	4.4~5.5V	3A	15W	83.5%	2250V	29.4 x 25.6 x 10.7 mm
S36SE12001	18~75V	12V	10.8~13.2V	1.3A	15.5W	87.0%	2250V	29.4 x 25.6 x 10.7 mm

## MECHANICAL DRAWING



BOTTOM VIEW



SIDE VIEW

Pin#	Function
1	VIN(+)
2	VIN(-)
3	ON/OFF
4	VOUT(-)
5	TRIM
6	VOUT(+)

## PART NUMBERING SYSTEM

S	36	S	E	050	03	N	R	F	G
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code
S - Small Size	36- 18~75V	S - Single	E - Family Name	3R3 - 3.3V 050 - 5.0V 120 - 12V	01 - 1.3A 03 - 3A 05 - 5A	N - Negative P - Positive E - No remote on/off control pin	K - 0.110" N - 0.145" R - 0.170"	F- RoHS 6/6 (Lead Free)	G - Encapsulated

# E35SE Series

new product

## FEATURES

### Electrical

- Efficiency up to 92.2%
- OTP, Input UVLO, Output OVP, OCP
- Wide output voltage trim range
- Monotonic startup and pre-biased loads
- 4242Vdc isolation
- Working altitude up to 5500 m

### Safety & Certificate

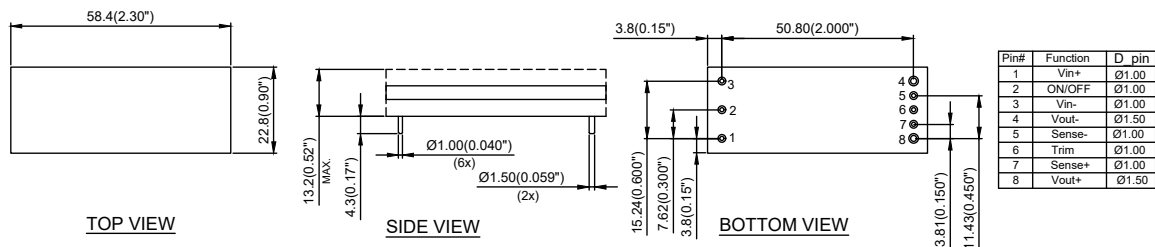
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1
- Meet EN50155 and EN45545-2



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
E35SE05030	9~60V	5V	4~6V	24A / 30A	Max. 150W	92.2%	4242V	58.4x22.8x13.5mm
E35SE12013	9~60V	12V	9.6~14.4V	10A / 13A	Max. 150W	91.0%	4242V	58.4x22.8x13.5mm
E35SE24006	9~60V	24V	19.2~28.8V	5A / 6A	Max. 150W	92.2%	4242V	58.4x22.8x13.5mm
E35SE48003	9~60V	48V	38.4~57.6V	2.5A / 3A	Max. 150W	91.2%	4242V	58.4x22.8x13.5mm

## MECHANICAL DRAWING



Pin#	Function	D_pin
1	Vin+	Ø1.00
2	ON/OFF	Ø1.00
3	Vin-	Ø1.00
4	Vout-	Ø1.50
5	Sense-	Ø1.00
6	Trim	Ø1.00
7	Sense+	Ø1.00
8	Vout+	Ø1.50

( with potting and regular case only, please refer to datasheet for the other options )

## PART NUMBERING SYSTEM

E	35	S	E	050	24	P	D	P	G
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	Operating Ambient Temperature	Option Code
E - 1/8 Brick	35 - 9~60V	S - Single	E - Family Name	050 - 5V 120 - 12V 240 - 24V 480 - 48V	03 - 3A 06 - 6A 13 - 13A 30 - 30A	N - Negative P - Positive	D - 0.24" T - 0.22" R - 0.17"	P - -40~85°C M - -45~100°C H - -55~100°C *Note1	A - Open frame H - With baseplate G - With potting and regular case F - With potting and flanged baseplate

\*Note1: 'M' and 'H' available only for Option Code = 'G' or 'F'



# Q80SV Series

*new product*

## FEATURES

### Electrical

- Efficiency up to 90% @110Vin
- Ultra wide input range, 14.4V-170V  
12V-14.4V/1s, 170V-200V/1s transient voltage
- Output OVP/OCP, OTP
- Remote ON/OFF
- Without tantalum capacitor inside module
- 4242VDC input to output reinforced isolation
- Working altitude up to 5000 m



### Safety & Certificate

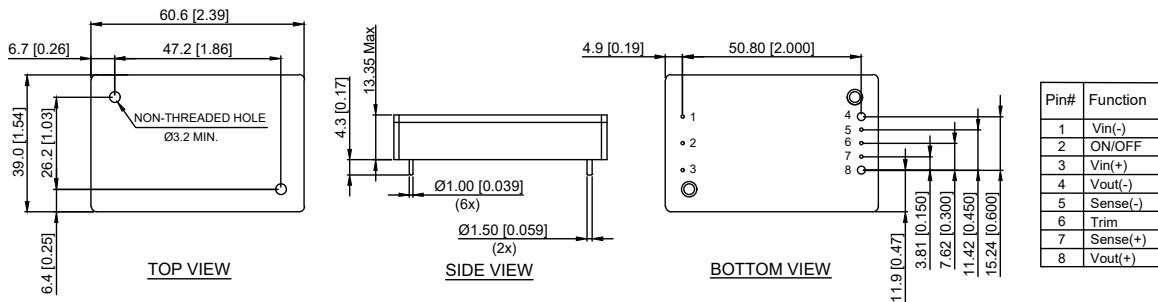
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1
- Meet EN50155 and EN45545-2



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
Q80SV05030	14.4~170V	5V	4~5.5V	30A	150W	88.3%	4242VDC	60.6 x 39 x 12.7 mm
Q80SV12013	14.4~170V	12V	9.6~13.2V	12.5A	150W	90.0%	4242VDC	60.6 x 39 x 12.7 mm
Q80SV15010	14.4~170V	15V	12~16.5V	10A	150W	89.5%	4242VDC	60.6 x 39 x 12.7 mm
Q80SV24006	14.4~170V	24V	19.2~28.3V	6.3A	150W	89.3%	4242VDC	60.6 x 39 x 12.7 mm
Q80SV54003	14.4~170V	54V	43.2~59.4V	2.8A	150W	89.5%	4242VDC	60.6 x 39 x 12.7 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

Q	80	S	V	120	13	P	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
Q - 1/4 Brick	80 - 14.4-170V	S - Single	V - Family Name	050 - 5V 120 - 12V 150 - 15V 240 - 24V 540 - 54V	30 - 30A 13 - 12.5A 10 - 10A 06 - 6.3A 03 - 2.8A	N - Negative P - Positive	R - 0.170"	F - RoHS 6/6 (Lead Free)	A - unthreaded mounting hole S - with threaded mounting hole (M3*0.5)



# QA1SV Series

new product

## FEATURES

### Electrical

- Efficiency up to 90% @110Vin
- Wide input range, 40V-170V
- 200V/1s transient voltage
- Output OVP/OCV, OTP
- Remote ON/OFF
- Without tantalum capacitor inside module
- 4242VDC input to output reinforced isolation
- Working altitude up to 5000 m



### Safety & Certificate

- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1
- Meet EN50155 and EN45545-2

1/4  
Brick

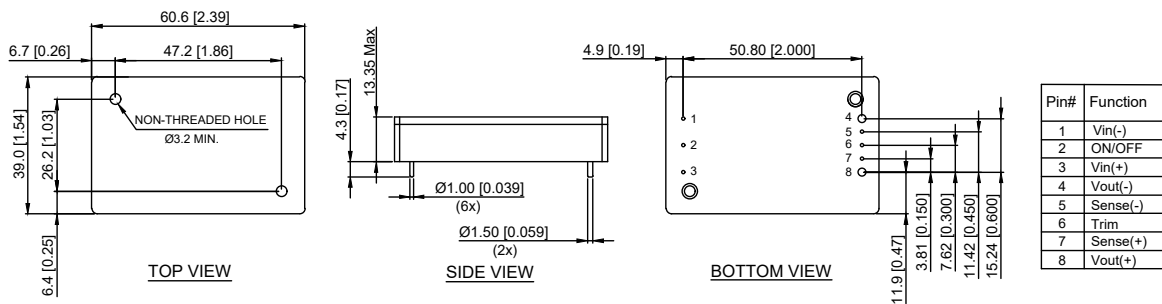
wide  
input

railway

## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
QA1SV05040	40~170V	5V	4~5.5V	40A	200W	88.5%	4242VDC	60.6x 39 x 12.7 mm
QA1SV12017	40~170V	12V	9.6~13.2V	17A	200W	90.0%	4242VDC	60.6x 39 x 12.7 mm
QA1SV15013	40~170V	15V	12~16.5V	13.5A	200W	89.5%	4242VDC	60.6x 39 x 12.7 mm
QA1SV24008	40~170V	24V	19.2~28.3V	8.5A	200W	89.5%	4242VDC	60.6x 39 x 12.7 mm
QA1SV54004	40~170V	54V	43.2~59.4V	3.7A	200W	89.8%	4242VDC	60.6x 39 x 12.7 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

Q	A1	S	V	120	13	P	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
Q - 1/4 Brick	A1 - 40-170V	S - Single	V - Family Name	050 - 5V 120 - 12V 150 - 15V 240 - 24V 540 - 54V	40 - 40A 17 - 17A 13 - 13.5A 08 - 8.5A 04 - 3.7A	N - Negative P - Positive	R - 0.170"	F - RoHS 6/6 (Lead Free)	A - unthreaded mounting hole S - with threaded mounting hole (M3*0.5)

# H80SV Series

## FEATURES

### Electrical

- Efficiency up to 92.5%@ 72Vin
- Ultra wide input range, 16.8~137.5V  
14.4V/1s, 200V/1s transient voltage
- Input Brown-out OTP, Input UVLO, Output OCP, OVP
- Reinforce insulation 4242Vdc
- No minimum load required
- Remote ON/OFF
- Pin option for hold up time

### Safety & Certificate

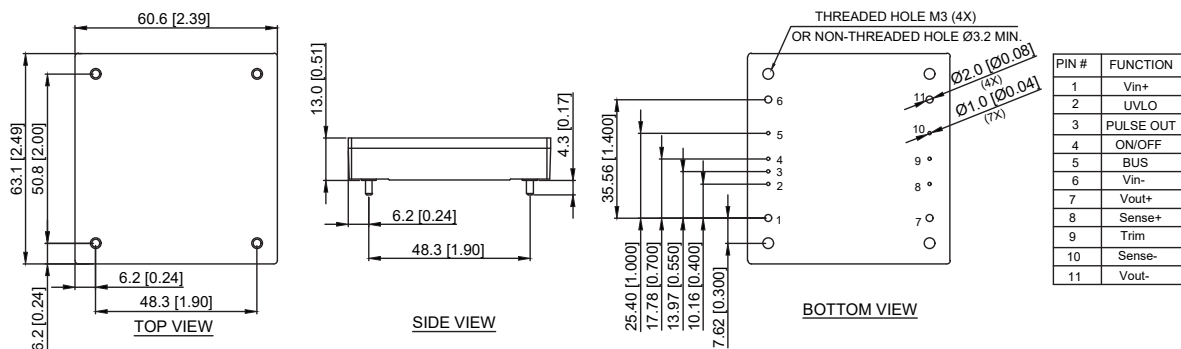
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1
- Meet EN50155 and EN45545-2



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
H80SV12008	16.8~137.5V	12V	9.6~13.2V	8.5A	100W	89.0%	4242V	60.6 x 63.1 x 13 mm
H80SV12017	16.8~137.5V	12V	9.6~13.2V	17A	200W	91.0%	4242V	60.6 x 63.1 x 13 mm
H80SV15007	16.8~137.5V	15V	12~16.5V	7A	100W	92.5%	4242V	60.6 x 63.1 x 13 mm
H80SV15013	16.8~137.5V	15V	12~16.5V	13.5A	200W	91.5%	4242V	60.6 x 63.1 x 13 mm
H80SV24004	16.8~137.5V	24V	19.2~26.4V	4.2A	100W	88.0%	4242V	60.6 x 63.1 x 13 mm
H80SV24008	16.8~137.5V	24V	19.2~26.4V	8.5A	200W	88.0%	4242V	60.6 x 63.1 x 13 mm
H80SV48002	16.8~137.5V	48V	38.4~52.8V	2.1A	100W	90.0%	4242V	60.6 x 63.1 x 13 mm
H80SV48004	16.8~137.5V	48V	38.4~52.8V	4.2A	200W	90.0%	4242V	60.6 x 63.1 x 13 mm
H80SV54002	16.8~137.5V	54V	43.2~59.4V	1.9A	100W	90.0%	4242V	60.6 x 63.1 x 13 mm
H80SV54004	16.8~137.5V	54V	43.2~59.4V	3.8A	200W	90.6%	4242V	60.6 x 63.1 x 13 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

H	80	S	V	120	08	P	R	F	S
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
H - 1/2 Brick	80 - 16.8~137.5V	S - Single	V - Family Name	120 - 12V 150 - 15V 240 - 24V 480 - 48V 540 - 54V	02 - 2A 04 - 4A 07 - 7A 08 - 8A 13 - 13A 17 - 17A	N - Negative P - Positive	R - 0.170"	F - RoHS 6/6 (Lead Free) Space - RoHS5/6	A - unthreaded mounting hole S - with threaded mounting hole (M3*0.5)

# HA0SP Series

coming soon

## FEATURES

### Electrical

- Efficiency up to 89% @110Vin
- Input transient voltage: 200V/1s
- Parallel operation
- OTP, Input UVLO, Output OVP & OCP
- 4242Vdc input to output isolation
- Operating Base Plate Temp: - 40°C to 105°C
- Pre-biased startup
- No minimum load requirement

### Safety & Certificate

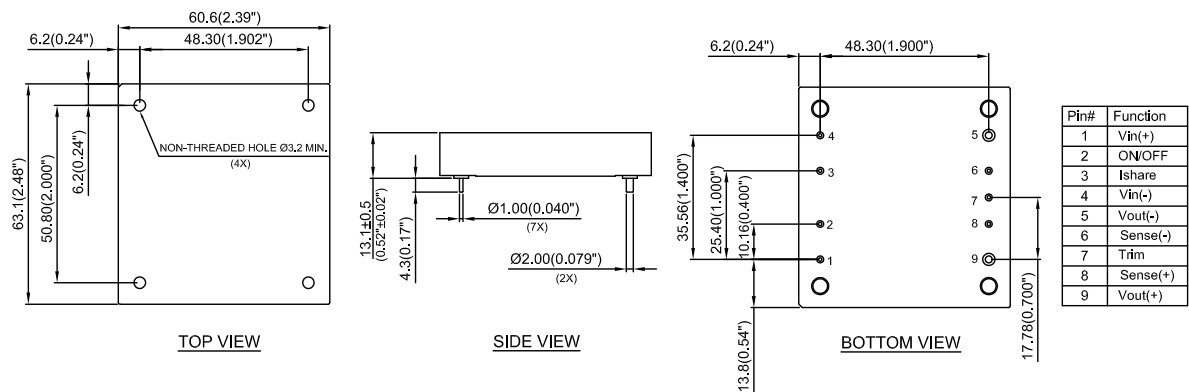
- IEC/EN/UL/CSA 62368-1 (pending)
- Meet EN50155 and EN45545-2 (pending)



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
HA0SP12025	40~160V	12V	9.6 ~ 13.2V	25A	300W	89%	4242V	60.6 x 63.1 x 13.1 mm
HA0SP13822	40~160V	13.8V	11.0 ~ 15.1V	22A	300W	89%	4242V	60.6 x 63.1 x 13.1 mm
HA0SP15020	40~160V	15V	12.0 ~ 16.5V	20A	300W	89%	4242V	60.6 x 63.1 x 13.1 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

H	A0	S	P	120	25	P	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
H - 1/2 Brick	A0 - 40~160V	S - Single	P - Family Name	120 - 12V 138 - 13.8V 150 - 15V	20 - 20A 22 - 22A 25 - 25A	N - Negative P - Positive	R - 0.170"	F - RoHS 6/6 (Lead Free)	A - unthreaded mounting hole S - with threaded mounting hole (M3*0.5)

New Product is coming soon. Please contact Delta for more specification information.



# FB7SR FG5SR Series

coming soon

## FEATURES

### Electrical

- High efficiency :  $\geq 95\%$  @full load
- Input UVLO, Hiccup output OCP, Latch output OVP, Output current limited protection(OCL), Auto recovery OTP
- Negative enable (Positive enable optional)
- Active current sharing
- Remote sense
- Sync start and fast sync off
- Monotonic startup into normal
- 4242V isolation and reinforce insulation
- No minimum load required



### Safety & Certificate

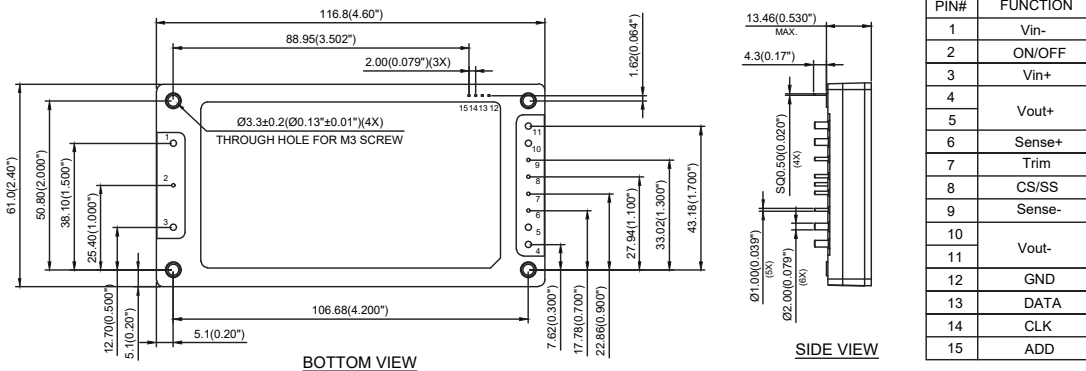
- IEC/EN/UL/CSA 62368-1 pending for approval
- IEC/EN/UL/CSA 60950-1 pending for approval



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
FB7SR14086	200~400V	14V	11.2~15.4V	86A	1204W	94.5%	4242V	116.8 x 61 x 12.7mm
FB7SR28043	200~400V	28V	22.4~30.8V	43A	1204W	94.0%	4242V	116.8 x 61 x 12.7mm
FB7SR54022	240~400V	54V	43.2~56.7V	22A	1188W	95.8%	4242V	116.8 x 61 x 12.7mm
FG5SR14086	400~800V	14V	11.2~15.4V	86A	1204W	94.5%	4242V	116.8 x 61 x 12.7mm
FG5SR28043	400~800V	28V	22.4~30.8V	43A	1204W	94.0%	4242V	116.8 x 61 x 12.7mm
FG5SR54022	480~800V	54V	43.2~56.7V	22A	1188W	95.5%	4242V	116.8 x 61 x 12.7mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

F	B7	S	R	140	86	N	R	F	A
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length Pin Type	RoHS	Option Code
F - Full Brick	B7 - 270V G5 - 750V	S - Single	R - Family Name	140 - 14V 280 - 28V 500 - 50V 540 - 54V	22 - 22A 24 - 24A 43 - 43A 86 - 86A	N - Negative P - Positive	R - 0.170"	F - RoHS 6/6 (Lead Free) Space - RoHS5/6	A - With baseplate

**ISOLATED**

**DC-DC POWER MODULE**

**PANEL MOUNT & DIN-RAIL**



# Product Overview

Panel-mounted DCDC converter, the B series, a wide input voltage range of 18~106V, can provide 500W, regulated DC output voltage with high efficiency. The power module offers input UVLO, output over current limit, short circuit, output over voltage, over temperature, and input reverse polarity protections. It has an option for integrated fuse holder and enable on/off function. The B series also has parallel function; and allows a wide operating temperature range of -40°C to +75°C. With specific mating connector, the B series can meet IP67 protection. The B series is usually applied to non-automotive cart such as forklift, colf car and so on. All products possess outstanding electrical and thermal performance, as well as high reliability under extremely harsh operating conditions.

Series	Output Power	Input Voltage	Output Voltage (V)						Max Efficiency	Isolation Voltage	Package	Page
			5	12.4	13.7	24	±12	±15				
B40SR	200~300W	18~60V		•	•				98.5%	2250VDC	Panel Mount	64
B62SR	200~360W	18~106V		•	•	•			91.0%	2250VDC	Panel Mount	64
B70SR	300W	36~106V		•	•	•			92.5%	2250VDC	Panel Mount	64
B70SP	500W	32~96V		•	•	•			91.5%	2250VDC	Panel Mount	66

These are designed particularly for industrial applications where no PCB mounting is possible the module has to be mounted on panel or DIN-rail. The series come with a host of industry-standard features, such as over current protection, over voltage protection, over temperature protection and remote on/off. An optional heatsink is available for more extreme thermal requirements. All models have wide input voltage range. With operating temperature of -40°C to +85°C, it is suitable for customers' critical applications, such as process control and automation, transportation, data communication and telecom equipment, test equipment, medical device and everywhere where space on the PCB is critical.

Series	Output Power	Input Voltage	Output Voltage (V)						Max Efficiency	Isolation Voltage	Package	Page
			5	12	15	24	±12	±15				
PM24S	60W	9~36V		•					93.7%	1600VDC	Panel Mount	67
DR24S	60W	9~36V		•					93.7%	1600VDC	DIN Rail	67

# B40SR B62SR B70SR Series

## FEATURES

### Electrical

- Ultra wide input voltage range 18~106V
- Parallel connection of multiple units
- Operating temperature range -40°C to +75°C
- Minimized inrush current
- Input reverse polarity protection
- OTP, input UVLO, output OCL, SCP, OVP
- Intergrated fuse holder and Enable on/off (optional)
- Isolation voltage 2250VDC

### Mechanical

- Box type package with metal base plate
- Package dimension: 190.0 x 76.0 x 44.0 mm
- IP67 protection for selective model

### Safety & Certificate

- IEC/EN/UL/CSA 60950-1
- CE Mark



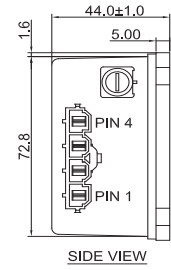
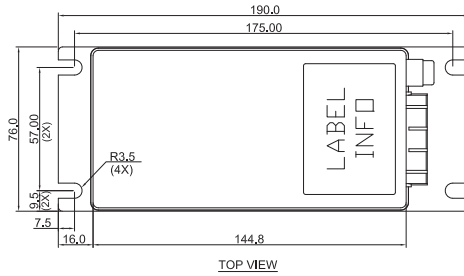
## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency
B40SR12424DP	18~60V	12.4V	24A	300W	88.3%
B40SR12424A/B/C/D	18~60V	12.4V	24A	200W @18~27Vin	88.3%
B40SR13722A/B/C/D	18~60V	13.7V	22A	300W @27~60Vin	88.5%
B62SR12424A/B/C/D	18~106V	12.4V	24A	200W @18~27Vin	88.0%
B62SR13722A/B/C/D	18~106V	13.7V	22A	300W @27~106Vin	88.5%
B62SR24125A/B/C/D	18~106V	24V	12.5A		91.0%
B62SR24015A/B/C/D	18~106V	24V	15A	360W	90.5%
B70SR12424A/B/C/D	36~106V	12.4V	24A		89.5%
B70SR13722A/B/C/D	36~106V	13.7V	22A	300W	90.2%
B70SR24125A/B/C/D	36~106V	24V	12.5A		92.5%

## MECHANICAL DRAWING

### BXXSRXXXXXA

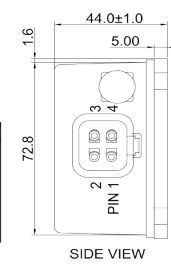
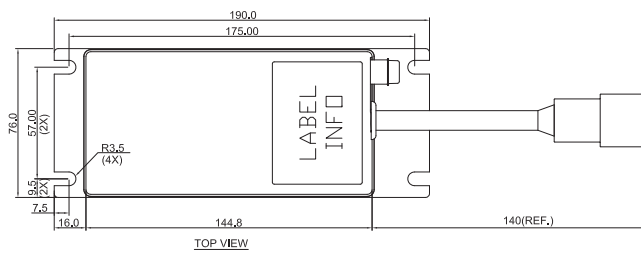
- With built-in fuse holder
- No enable pin



Pin	Function
1	Output-
2	Output+
3	Input-
4	Input+

### BXXSRXXXXXB

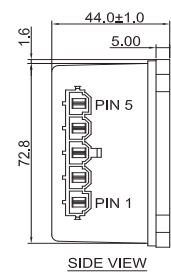
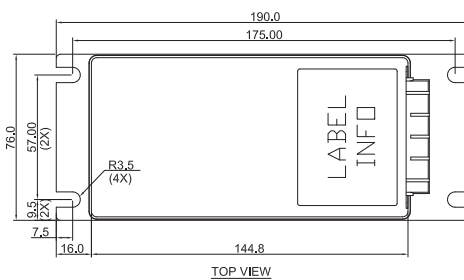
- With built-in fuse holder
- No enable pin
- With sealed connector & fuse holder



Pin	Function
1	Output-
2	Output+
3	Input-
4	Input+

### BXXSRXXXXXC

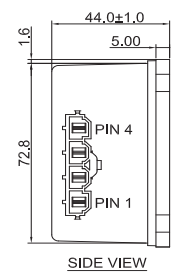
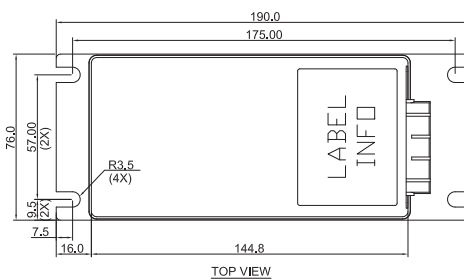
- No built-in fuse holder
- With enable pin



Pin	Function
1	Output-
2	Output+
3	Input-
4	Input+
5	Enable

### BXXSRXXXXXD

- No built-in fuse holder
- No enable pin



Pin	Function
1	Output-
2	Output+
3	Input-
4	Input+



# B70SP Series

## FEATURES

### Electrical

- Wide input voltage range, 32~96V
- Full Load Efficiency up to 91.5% @48Vin and 72Vin
- Parallel Connection of multiple units
- Operating Temperature Range - 40°C to +75°C
- Input Reverse Polarity Protection
- Input UVLO, Output OCL, Short circuit protection, OVP, OTP
- Enable on/off
- 2250VDC Isolation

### Mechanical

- Box type package with metal base plate
- Package Dimension: 198.0 x 113.0 x 45.0mm
- IP67 protection (With fully assembled mating connector)

### Safety & Certificate

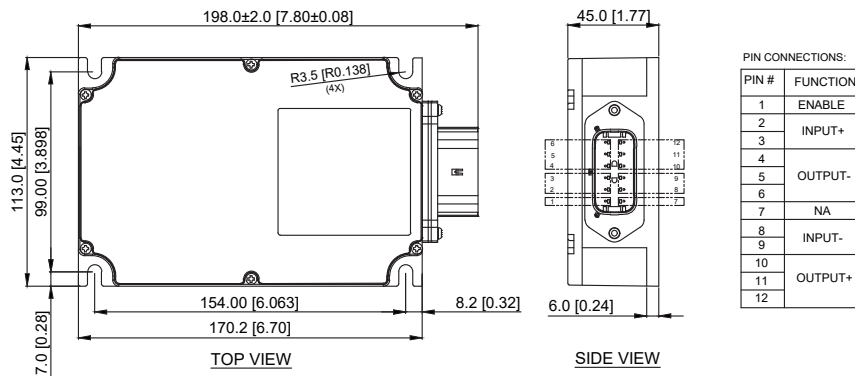
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1
- CE Mark
- EMC compatible: EN12895-2015, EN55011, EN55014-2, CISPR11 Class A



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency
B70SP12440A/B	32~96V	12.4V	40A	500W	89.0%
B70SP13736A/B	32~96V	13.7V	36.5A	500W	90.0%
B70SP24020A/B	32~96V	24.5V	21A	500W	91.5%

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

B	70	S	P	124	40	A	C
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	Option Code	Option Fitting
B - Box	70 - 32~96V	S - Single	P - High Power	124 - 12.4V	40 - 40A	A Without parallel function B with parallel function	Connector Kit with mating connector with mating connector

# PM24 DR24 Series

## FEATURES

### Electrical

- EN55022 Class B EMC Filter built-in
- Reverse Polarity Protected
- Minimized Inrush Current
- Output Trim Potentiometer
- OTP, Input UVLO and Output OVP, OCP
- Isolation Voltage
- No Min Load Required

### Mechanical

- Metal Case
- Screw terminal

### Safety & Certificate

- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1
- CE Mark

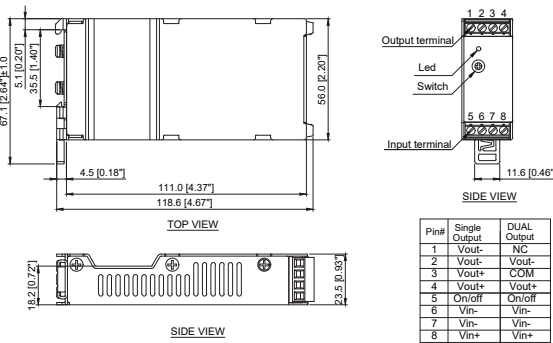


## SPECIFICATIONS

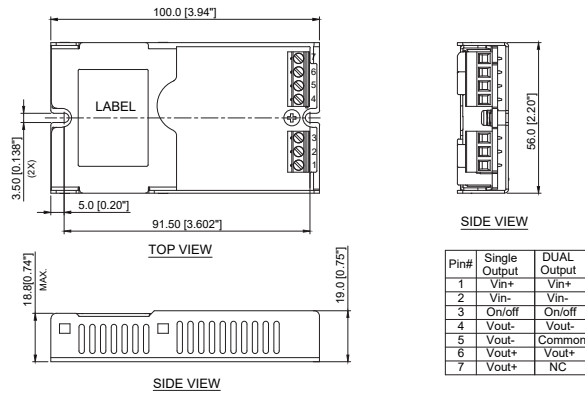
Part Number	Input Voltage	Output Voltage	Vo trim range	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
DR24S12005	9~36V	12V	10.8~13.2V	5A	60W	92.3%	1500V	118.6x67.1x23.5mm
PM24S12005	9~36V	12V	10.8~13.2V	5A	60W	92.3%	1500V	100x56x19mm

## MECHANICAL DRAWING

**DR24S12005**



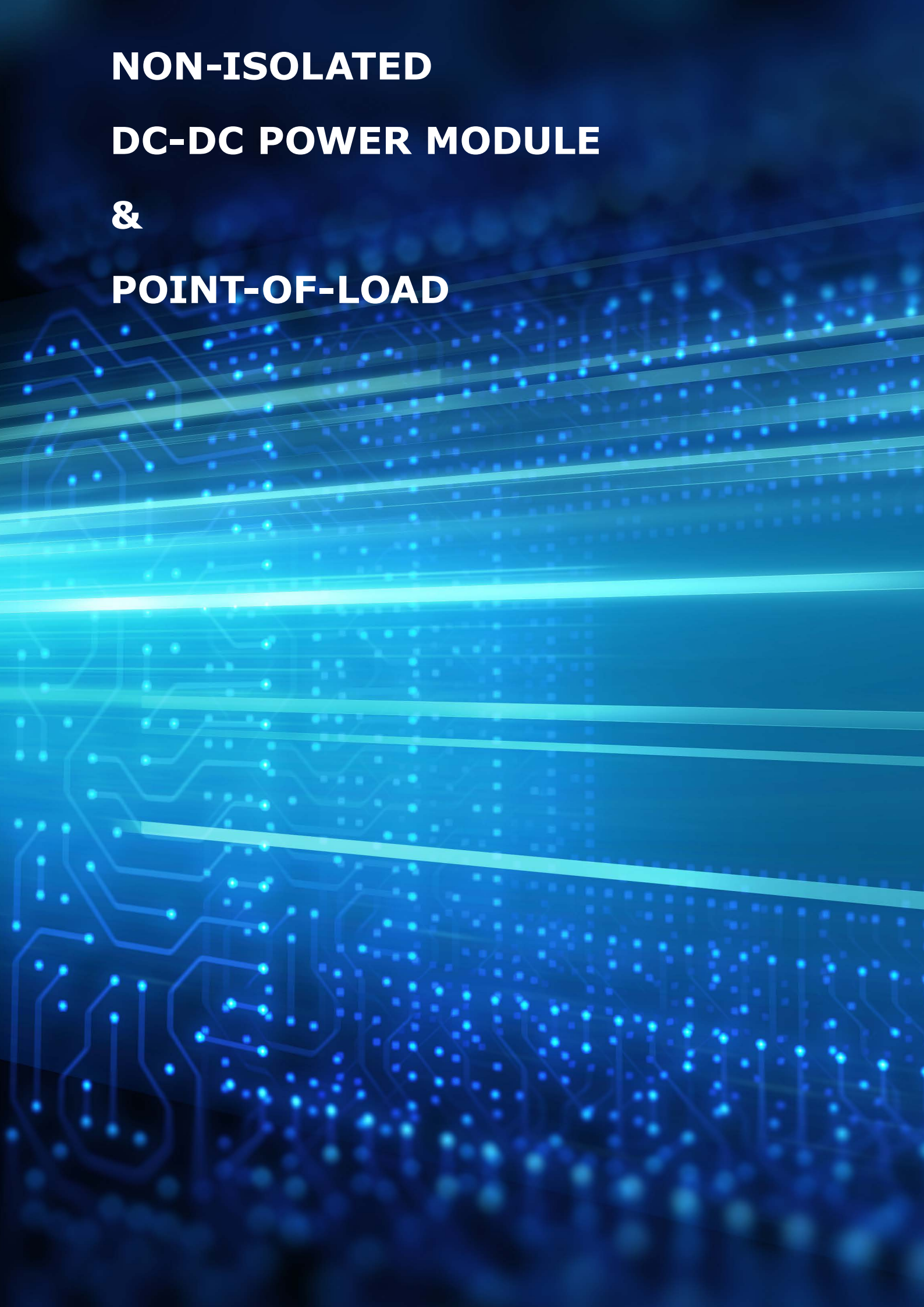
**PM24S12005**



## PART NUMBERING SYSTEM

PM	24	S	050	03	P	A	F	A
Form Factor	Input Voltage	Number of Outputs	Output Voltage	Output Current	ON/OFF Logic	Terminal Type	RoHS	Option Code
PM - Panel Mount DR - Din-rail Mount	24 - 9~36V	S - Single D - Dual	5V, 12V, 15V 24V, +/-12V +/-15V	1A, 1.25A, 1.7A 2A, 2.5A, 2.7A 3A, 3.5A, 4A 4.2A, 5A, 6A 8A, 10A, 12A	P - Positive	A - Screw terminal	F - RoHS 6/6 (Lead Free)	A - Built-in EMI filter

**NON-ISOLATED  
DC-DC POWER MODULE  
&  
POINT-OF-LOAD**



# Product Overview

## Non-Isolated Brick

This group offers non-isolated, wide input and output range solution for converting variable voltages from a battery or other source to a regulated output voltage. The output voltage can be programmed by connecting one external resistor. Delta also have a series of narrow input range (40 to 60V) bricks that can be applied in high-end computing where efficiency are critical in design. PMBus communication and Power Good function are available for selective models.



Page 67-70

## DOSA Standard POL

DOSA POL power modules are designed in an industry standard footprint and pinout. Each provides programmable output voltage by using an external resistor. Some series have flexible and programmable tracking and sequencing features to enable a variety of startup voltage as well as sequencing and tracking between power modules. DOSA I POL power modules are available in SIP and SMD package. DOSA II POL power modules are packaged by SMD.



Page 71-72

## SIP POL

The SIP POL power modules provide wide input range for more bus voltage point-of-load applications. SIP POL power converters can cover output current from 0.5A to 80A to meet various demands.



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# Non-isolated Brick H60SB Series

## FEATURES

### Electrical

- Efficiency up to 96%
- PMBus communication
- Wide input range
- Input UVP and OVP, output OVP, OCP and OTP
- Adjustable current limit
- Remote ON/OFF
- Pre-bias startup
- No minimum load required
- Parallel Operation with Active Current Sharing



### Safety & Certificate

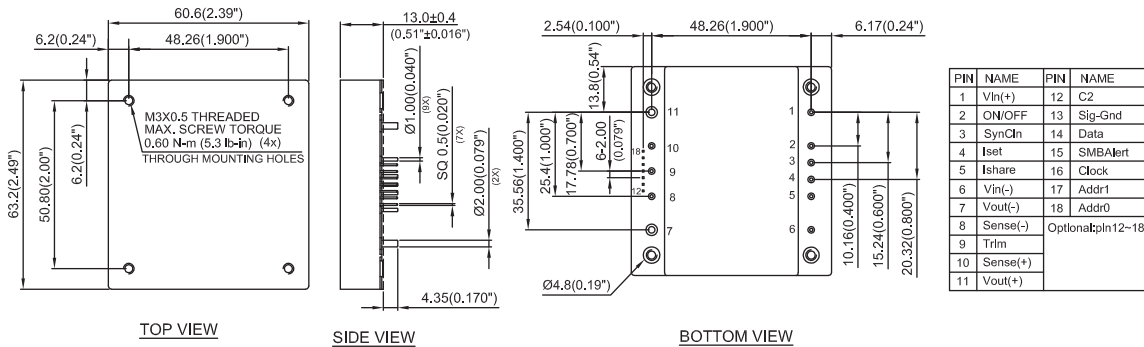
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
H60SB0A050NRDC	9~60V	0~60V	50A	max 3kW	96.0%	Non-isolated	63.2x60.6x13mm
H60SB0A050NRAC	9~60V	0~60V	50A	max 3kW	96.0%	Non-isolated	63.2x60.6x13mm

## MECHANICAL DRAWING



PIN	NAME	PIN	NAME
1	Vin(+)	12	C2
2	ON/OFF	13	Sig-Gnd
3	SynCln	14	Data
4	Iset	15	SMBAlert
5	Ishare	16	Clock
6	Vin(-)	17	Addr1
7	Vout(-)	18	Addr0
8	Sense(-)	Optionatpin12~18	
9	Trim		
10	Sense(+)		
11	Vout(+)		

(H60SB0A050NRDC : pin 1~18  
H60SB0A050NRAC : pin 1~11)

## PART NUMBERING SYSTEM

H	60	S	B	0A0	50	N	R	D	C
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	Pin Assignment	Option Code
H - 1/2 Brick	60 - 9~60V	S - Single	B - Family Name	0A0 - Adjustable	50 - 50A	N - Negative	R - 0.170"	D - Digital pins A - Analog pins	B - baseplate C - baseplate & encased F - flanged baseplate & encased

## FEATURES

### Electrical

- Peak Efficiency up to 97.3% @54Vin
- PMBus communication
- Fully regulated output voltage
- Input UVLO, output OVP, OCP and OTP
- Monotonic and pre-bias startup
- No minimum load required

### Safety & Certificate

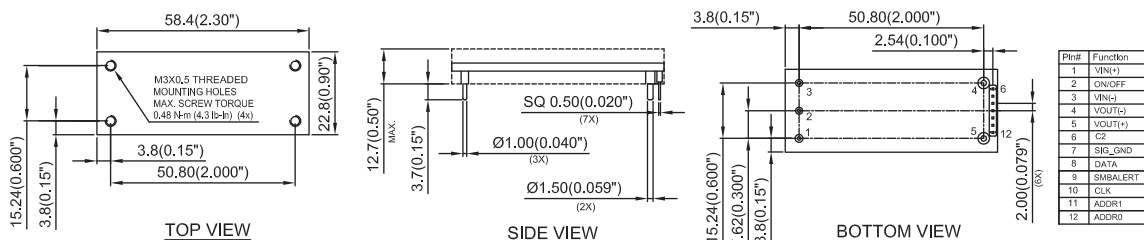
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
E50SN12051	40~60V	12V	51A	600W	96.5%	Non-isolated	58.4x22.8x12.7mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

E	50	S	N	120	51	N	K	D	H	F
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	Pin Assignment	Option Code	Customer Specific
E - 1/8 Brick	50 - 40~60V	S - Single	N - Family Name	120 - 12.0V	51 - 51A	N - Negative R - Negative and compliant Reflow process	R - 0.170" N - 0.145" K - 0.110"	D - Digital pins A - Analog pins	H - With baseplate	Omit - Standard F - Halogen free

# Q50SN Series

coming soon

## FEATURES

### Electrical

- Peak Efficiency up to 98.3% @54Vin
- PMBus communication
- Fully regulated output voltage
- Input UVLO, output OVP, OCP and OTP
- Monotonic and pre-bias startup
- No minimum load required
- Parallel and active current sharing

### Safety & Certificate

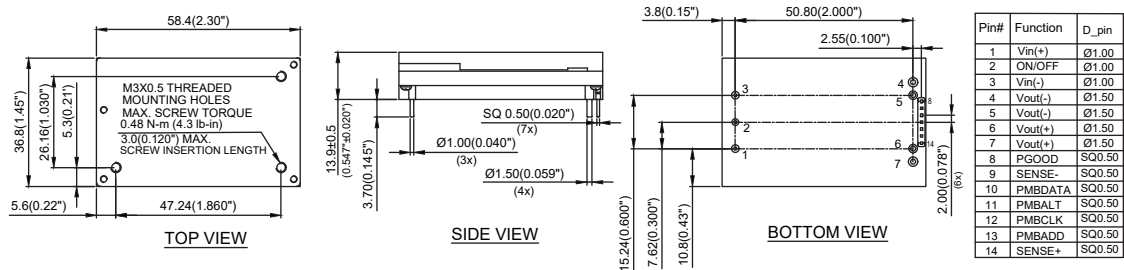
- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH)
Q50SN12072	38~60V	12V	72A	860W	98.3%	Non-isolated	58.4x36.8x12.0mm
Q50SN120A1	40~60V	11.8V	110A	1300W	97.8%	Non-isolated	58.4x36.8x15.5mm
Q50SN120A4	40~60V	11.8V	136A	1600W	97.8%	Non-isolated	58.4x36.8x15.5mm

## MECHANICAL DRAWING



( for Q50SN120A1 only, please refer to datasheet for the other part numbers )

## PART NUMBERING SYSTEM

Q	50	S	N	120	72	N	K	D	H	F
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	Pin Assignment	Option Code	Customer Specific
Q - 1/4 Brick	50 - 38~60V or 40~60V	S - Single	N - Family Name	120 - 11.8V or 12.0V	72 - 72A A1 - 110A A4 - 136A	N - Negative R - Negative and compliant Reflow process	R - 0.170" N - 0.145" K - 0.110"	D - Digital pins A - Analog pins	S - With baseplate H - Standard	Omit - Standard F - Halogen free

New Product is coming soon. Please contact Delta for more specification information.

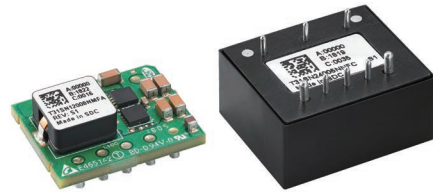


# T31SN Series

## FEATURES

### Electrical

- Efficiency up to 98.0%
- Industry standard 1/32 brick form factor
- Thermal limit, input UVLO, output OCP
- Wide output voltage trim range
- Output Remote sense
- Monotonic startup into normal and pre-biased loads
- No minimum load requirement
- Working altitude to 5000m
- Power Good optional



1/32  
brick

non-  
isolated

### Mechanical Option

- Open frame / Potting with standard case / Potting with flanged case

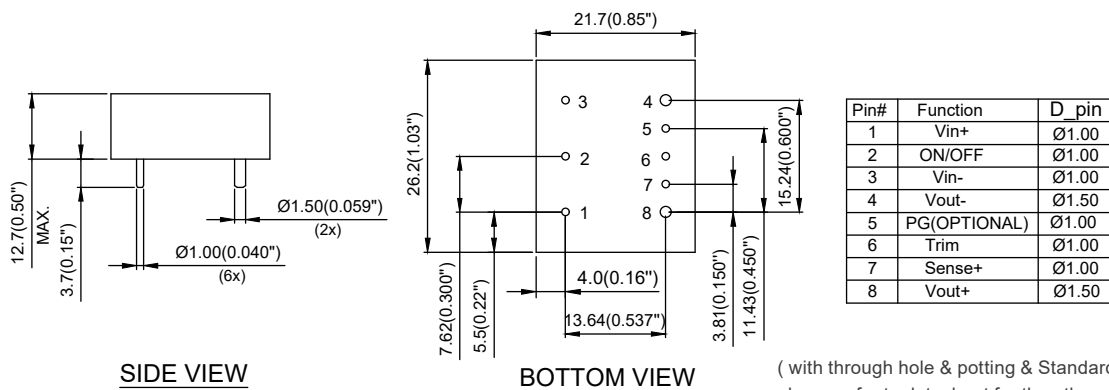
### Safety & Certificate

- IEC/EN/UL/CSA 62368-1
- IEC/EN/UL/CSA 60950-1

## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Range	Output Current	Output Power	Efficiency	Size (LxWxH)
T31SN12008	9~53V	3.3~16.5V	3.3~16.5V	8A	Max 100W	98.0%	19.1x23.4x9.6 mm
T31SN24005	9~53V	5~30V	5~30V	4.5A	Max 100W	98.0%	19.1x23.4x9.6 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

T	31	S	N	120	08	N	N	F	A				
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	ON/OFF Logic	Pin Length	RoHS	Option Code				
T - 1/32 Brick	31 - 9V~53V	S - Single	N - Family Name	120 - 3.3~16.5 240 - 5~30V	08 - 8A 05 - 4.5A	N - Negative P - Positive	N - 0.145" M - SMD	F - RoHS 6/6 (Lead Free)		Power Good	Standard Case (Potting)	Flanged Case (Potting)	
									A	No	No	No	
									B	Yes	No	No	
									C	Yes	Yes	No	
									D	No	Yes	No	
									E	Yes	No	Yes	
									F	No	No	Yes	



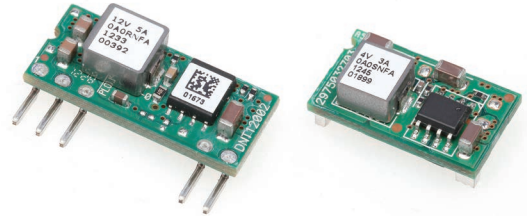
# DOSA Standard POL

## DOSA I

### FEATURES

#### Electrical

- High efficiency
- Pre-bias startup
- No minimum load required
- Output voltage programmable via external resistor
- Fixed frequency operation
- Output voltage tracking (optional)
- Current sharing (optional)
- Input UVLO, Output OCP
- Output OTP (optional)
- Remote ON/OFF
- Remote sense (optional)



#### Mechanical

- Standard footprint with SIP or SMD package

#### Safety & Certificate

- UL 60950-1 & CSA C22.2 No.60950-1-07

### SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency	Package	Size (LxWxH)
DNT04S0A0R03NFA DNT04S0A0S03NFA	2.4~5.5V	0.75~3.63V	3A	11W	93.5%	SIP SMD	22.86x10.16x6.35 mm 20.32x11.43x6.86 mm
DNT12S0A0R03NFA DNT12S0A0S03NFA	8.3~14V	0.75~5V	3A	15W	92.5%	SIP SMD	22.86x10.16x6.35 mm 20.32x11.43x6.86 mm
DNT04S0A0R05NFA DNT04S0A0S05NFA	2.4~5.5V	0.75~3.63V	5A	18W	93.5%	SIP SMD	22.86x10.16x6.35 mm 20.32x11.43x6.86 mm
DNT12S0A0R05NFA DNT12S0A0S05NFA	8.3~14V	0.75~5V	5A	25W	92.5%	SIP SMD	22.86x10.16x6.35 mm 20.32x11.43x6.86 mm
DNS04S0A0R06PFD DNS04S0A0S06PFD	2.8~5.5V	0.75~3.63V	6A	22W	94.0%	SIP SMD	25.4x12.7x6.7 mm 27.9x11.4x7.1 mm
DNS10S0A0R06PFD DNS10S0A0S06PFD	8.3~14V	0.75~5V	6A	30W	89.5%	SIP SMD	25.4x12.7x6.7 mm 27.9x11.4x7.1 mm
DNM04S0A0R10PFD DNM04S0A0S10PFD	2.8~5.5V	0.75~3.63V	10A	36W	96.0%	SIP SMD	50.8x13.4x8.5 mm 33.0x13.5x8.8 mm
DNM10S0A0R10PFD DNM10S0A0S10PFD	8.3~14V	0.75~5V	10A	50W	93.0%	SIP SMD	50.8x12.7x9.5 mm 33.0x13.5x8.8 mm
DNL04S0A0R16PFD DNL04S0A0S16PFD	2.8~5.5V	0.75~3.63V	16A	58W	95.0%	SIP SMD	50.8x13.4x8.5 mm 33.0x13.5x8.8 mm
DNL10S0A0R16PFD DNL10S0A0S16PFD	8.3~14V	0.75~5V	16A	80W	92.0%	SIP SMD	50.8x12.7x9.5 mm 33.0x13.5x9.7 mm
DNK05S0A0R30NFA	4.5~5.5V	0.8~3.63V	30A	109W	95.0%	SIP	50.8x12.7x14.0 mm
DNK12S0A0R30NFA	6~14V	0.8~5V	30A	150W	95.0%	SIP	50.8x12.7x14.0 mm
DNL10S0A0R20PFD	2.8 ~ 5.5 V	0.75 ~ 3.63 V	20A	100W	93.5%	SIP	50.8x12.7x9.5 mm

# DOSA Standard POL

## DOSA II

### FEATURES

#### Electrical

- High efficiency
- Pre-bias startup
- No minimum load required
- Output voltage programmable via external resistor
- Fixed frequency operation
- Output voltage tracking (optional)
- Current sharing (optional)
- Input UVLO, Output OCP
- Output OTP (optional)
- Remote ON/OFF
- Remote sense (optional)

#### Mechanical

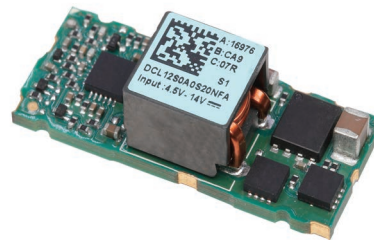
- Standard footprint with SIP or SMD package

#### Safety & Certificate

- UL 60950-1 & CSA C22.2 No.60950-1-07



DCM12S0A0S12NFA



DCL12S0A0S20NFA

### SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency	Package	Size (LxWxH)
DCM04S0A0S12PFA	2.4~5.5V	0.6~3.3V	12A	40W	95.0%	SMD	20.3x11.4x8.50 mm
DCM12S0A0S12NFA	4.5~14V	0.69~5.5V	12A	66W	95.4%	SMD	20.3x11.4x8.50 mm
DCK12S0A0S30NFA	6~14V	0.8~3.3V	30A	99W	92.8%	SMD	33.0x13.5x10.0 mm
DCL12S0A0S20NFA	4.5~14V	0.69~5V	20A	100W	93.0%	SMD	33.0x13.5x8.50 mm

# SIP POL

## PM05 D12 NE ND Series

### FEATURES

#### Electrical

- Efficiency up to 97%
- No minimum load required
- Wide input range
- Input UVLO, Output OCP, OVP, SCP (PM05S only SCP)
- Output voltage programmable via external resistor (PM05S excluded)
- Power good function (PM05S excluded)

#### Mechanical

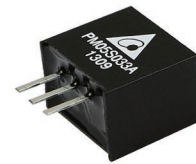
- Small size with vertically or horizontally mounted through-hole package

#### Safety & Certificate

- IEC/EN/UL/CSA 60950-1 (PM05S excluded)

### SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency	Package	Size (LxWxH)
PM05S015A	4.75~32V	1.5V	0.5A	0.75W	73.0%	SIP	11.5x7.5x10.2 mm
PM05S018A	4.75~32V	1.8V	0.5A	0.9W	82.0%	SIP	11.5x7.5x10.2 mm
PM05S025A	4.75~32V	2.5V	0.5A	1.25W	87.0%	SIP	11.5x7.5x10.2 mm
PM05S033A	4.75~32V	3.3V	0.5A	1.65W	91.0%	SIP	11.5x7.5x10.2 mm
PM05S050A	6.5~32V	5.0V	0.5A	2.5W	94.0%	SIP	11.5x7.5x10.2 mm
PM05S065A	8~32V	6.5V	0.5A	3.25W	95.0%	SIP	11.5x7.5x10.2 mm
PM05S090A	11~32V	9.0V	0.5A	4.5W	96.0%	SIP	11.5x7.5x10.2 mm
PM05S120A	15~32V	12V	0.5A	6W	97.0%	SIP	11.5x7.5x10.2 mm
PM05S150A	18~32V	15V	0.5A	7.5W	97.0%	SIP	11.5x7.5x10.2 mm
NE12S0A0H03PNFA NE12S0A0V03PNFA	3~13.8V	0.59~5V	3A	15W	92.5%	DIP SIP	9.4x15.5x7.9 mm 9.4x15.5x6.6 mm
NE12S0A0H06PNFA NE12S0A0V06PNFA	3~13.8V	0.59~5.1V	6A	30.6W	94.5%	DIP SIP	10.4x16.5x11.5 mm 10.4x16.5x11.0 mm
NE12S0A0H10PNFA NE12S0A0V10PNFA	3~13.8V	0.59~5.1V	10A	51W	94.0%	DIP SIP	10.4x16.5x11.5 mm 10.4x16.5x11.0 mm
NE12S0A0V20PNFA	4.5~13.8V	0.59~5.1V	20A	102W	94.0%	SIP	30.5x15.5x12.0 mm
D12S05020-1	4.5~13.2V	0.59~5V	20A	100W	93.4%	SIP	30.5x15.5x12.0 mm
D12F200	4.5~13.8V	0.6~5V	40A	200W	94.0%	SIP	30.5x27.9x11.1 mm
ND12S0A0H40PKFA ND12S0A0V40PKFA	8~13.8V	0.9~5V	40A	200W	94.0%	DIP SIP	36.8x32.2x14.8 mm 36.8x32.2x13.0 mm
D12S2R550	4.5~13.8V	0.6~5V	50A	250W	93.6%	SIP	33.0x28.0x20.2 mm
D12S300-1	4.5~13.8V	0.6~5V	60A	300W	94.0%	SIP	65.53x31.75x11 mm
D12S400	10.8~13.2V	0.8375~5V	80A	400W	94.0%	SIP	61.0x31.8x12.3 mm



PM05S Series



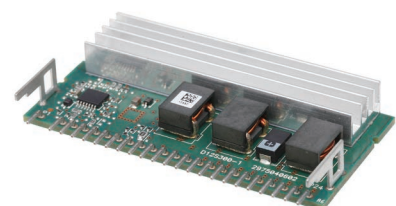
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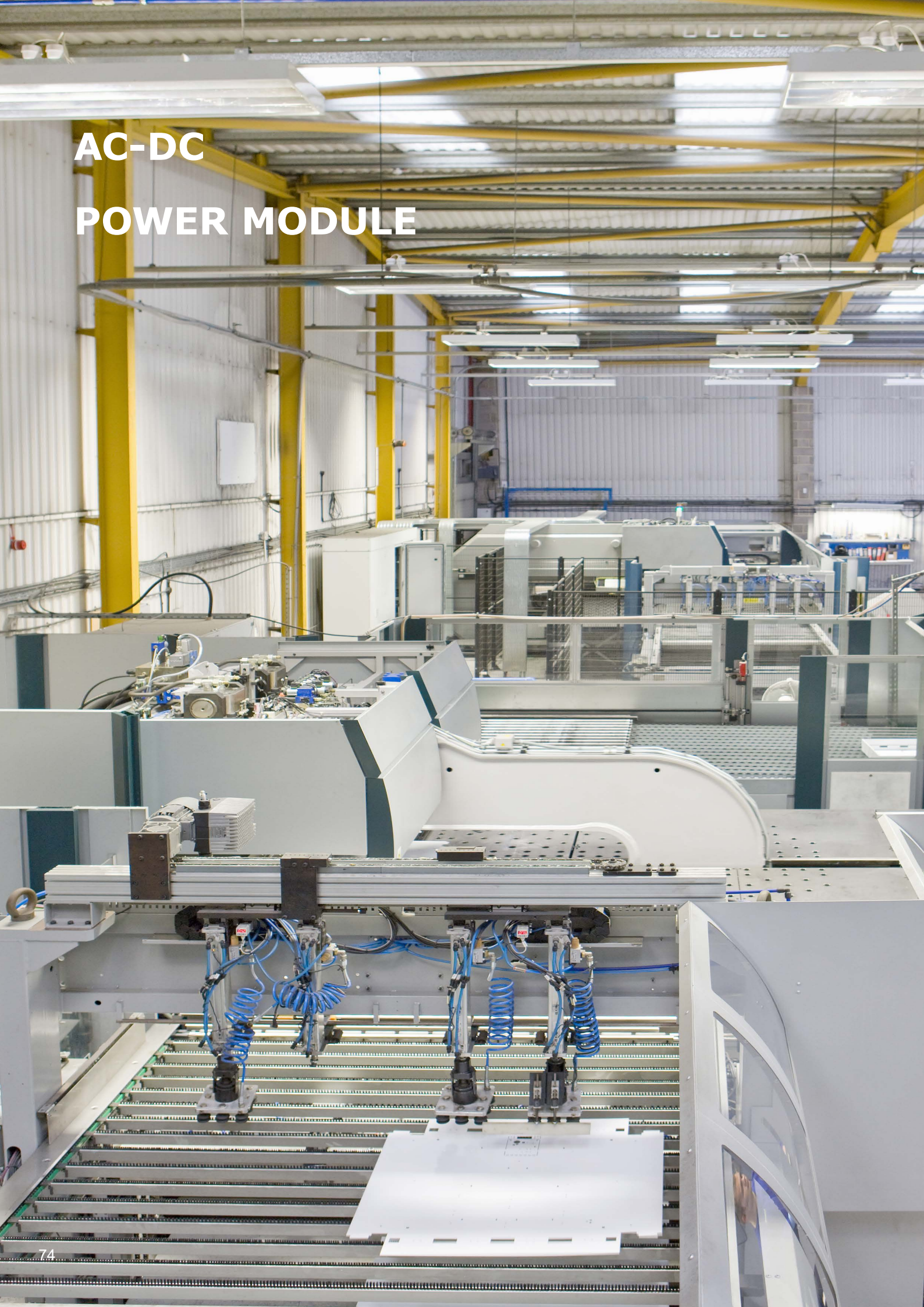


D12F200



D12S300-1

# AC-DC POWER MODULE



# AA AB Series

## Low Power ( 4~60W )

Delta's expansive product portfolio provides solution capability to meet the specific requirements of industrial application. Products use Delta's creative design topology and patented technologies to achieve extremely high efficiency, low power dissipation and greater reliability. These modules housed in industry standard footprint and pinout are easy to use and available in a fully encapsulated package for harsh environment applications.

	Series	Output Power	Input Voltage(V)	Output Voltage (V)	Safety Mark	Max Eff.	Isolation Voltage	Package
	AA04S AA04D	4W	85-264 VAC	3.3, 5, 9, 12, 15, 24 ±12, ±15, +5/+3.3, +12/+5	 	77%	3000VDC	PCB Mounting
	AA07S	7W	85-264 VAC	3.3, 5, 12, 15, 24	 	78%	3000VDC	PCB Mounting
	AA10S	10W	85-264 VAC	3.3, 5, 12, 15, 24	 	76%	3000VDC	PCB Mounting
	AA15S AA15D AA15T	15W	85-264 VAC	5, 12, 15, 24, 48 ±12, ±15, 5/12, 5/ ±12, 5/±15	  	79%	3000VDC	PCB/ Chassis Mounting
	AA30S AA30D AA30T	30W	85-264 VAC	5, 12, 15, 24, 48 ±12, ±15, 5/12, 5/ ±12, 5/±15, 5/3.3/ 12, 3.3/5/12	  	80%	3000VDC	PCB/ Chassis/ DIN-Rail Mount
	AA60S	60W	85-264 VAC	5.1, 12, 15, 24, 36	  	84%	3000VDC	PCB/ Chassis/ DIN-Rail Mount
	AB24S AB24D	24W	85-264 VAC	5, 9, 12, 15, 24 ±12, ±15	  	85%	4000VAC	PCB/ Chassis/ DIN-Rail Mount
	AB40S AB40D	40W	85-264 VAC	5, 12, 15, 24 ±12, ±15	  	85%	4000VDC	PCB/ Chassis/ DIN-Rail Mount
	AB60S	60W	85-264 VAC	5.1, 12, 15, 24, 48	  	88%	4000VDC	PCB/ Chassis/ DIN-Rail Mount

# PACSR Series

## FEATURES

### Electrical

- High efficiency 94% @220VAC
- Universal input voltage range
- Operating base plate temperature - 40°C to +100°C
- Input Brown-out OTP, Input UVLO, Output OCP, OVP
- Minimized inrush control
- Reinforce insulation 3000Vac
- No minimum load required

### Safety & Certificate

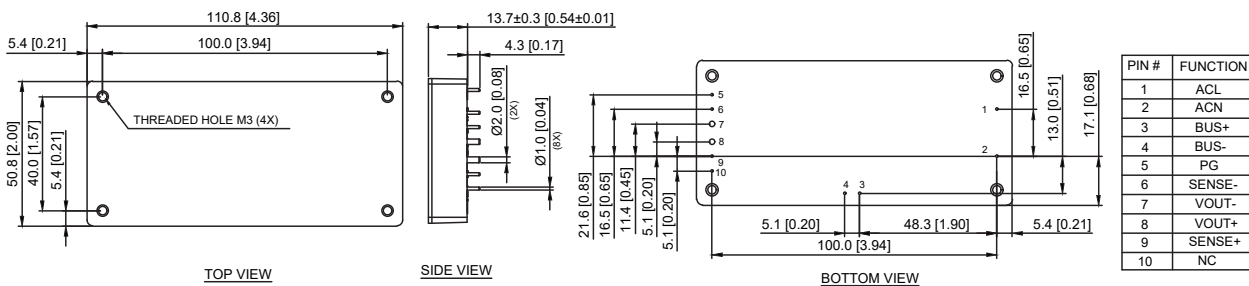
- CE Mark
- IEC/UL/EN 60950-1
- EMC compatible: CISPR11 ClassB (with external filter)



## SPECIFICATIONS

Part Number	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency	Isolation Voltage	Size (LxWxH) without heat spreader
PACSR12025	85~265V	12V	25A	300W	91.5%	3000Vac	110.8 x 50.8 x13.7 mm
PACSR12042	85~265V	12V	42A	500W	91.0%	3000Vac	110.8 x 50.8 x13.7 mm
PACSR24012	85~265V	24V	12.5A	300W	92.5%	3000Vac	110.8 x 50.8 x13.7 mm
PACSR24021	85~265V	24V	21A	500W	93.0%	3000Vac	110.8 x 50.8 x13.7 mm
PACSR28018	85~265V	28V	18A	500W	93.0%	3000Vac	110.8 x 50.8 x13.7 mm
PACSR48006	85~265V	48V	6.3A	300W	93.5%	3000Vac	110.8 x 50.8 x13.7 mm
PACSR48010	85~265V	48V	10.5A	500W	94.0%	3000Vac	110.8 x 50.8 x13.7 mm

## MECHANICAL DRAWING



## PART NUMBERING SYSTEM

P	AC	S	R	120	25	S
Form Factor	Input Voltage	Number of Outputs	Product Series	Output Voltage	Output Current	Option Code
P - Form factor code	AC - 100~240VAC	S - Single	R - Regular	120 - 12V 240 - 24V 280 - 28V 480 - 48V	06 - 6.3A 10 - 10.5A 12 - 12.5A 18 - 18A 21 - 21A 25 - 25A 42 - 42A	A - Through hole S - Screw hole(M3*0.5)

**FILTER**

**&**

**ATCA INPUT MODULE**



# Filter

The filter modules are designed to reduce the conducted common-mode and differential-mode noise on input or output lines of high-frequency switching power supplies, with the industry standard footprint and pin-out. With creative design technology and optimization of component placement, FL75L05 filter modules possess outstanding electrical and thermal performance, as well as extremely high reliability under highly stressful operating conditions.

## FEATURES

- ROHS Compliant
- Industry standard footprint and pin-out
- Optimized for use with high frequency board mounted DC/DC converters
- ISO 9001, TL 9000, ISO 14001, QS 9000, OHSAS 18001 certified manufacturing facility
- UL/cUL 60950 (US & Canada) recognized, VDE 0805 (IEC60950) licensed



FL75L05 A



FL75L07 A



FL75L10 A



FL75L20 A

Part Number	Input Voltage	Output Current	Common-mode Insertion Loss	Differential-mode Insertion Loss	Package	Size (LxWxH)
FL75L05 A	0~75V	5A	43dB	45dB	Through hole	25.4 x 25.4 x 10.2 mm
FL75L07 A	0~75V	7A	40dB	70dB	SMD	25.4 x 25.4 x 12.5 mm
FL75L07 B					Through hole	25.4 x 25.4 x 12.7 mm
FL75L10 A	0~75V	10A	30dB	25dB	Through hole	50.8 x 27.9 x 11.7 mm
FL75L20 A	0~75V	20A	28dB	46dB	Through hole	50.8 x 40.6 x 12.7 mm
FL75L20 B					(A: Pin length=5.0mm) (B: Pin length=3.1mm)	



# ATCA Input Module

DIM series, dual redundant input power processing isolated DC/DC converter, provide up to 400 watts of power in an industry standard footprint and pinout. The DIM series are designed to simplify the task and reduce the board space of implementing dual redundant, hot swappable 48Vdc power distribution with EMI filtering and inrush current limiting for an ATCA (Advanced Telecommunications Computing Architecture) or other telecom boards. In addition to processing the dual redundant 48V bus, the DIM module also provides isolated auxiliary 3.3V, and/or 5V BLUE\_LED power for other housekeeping functions. All models are fully protected from abnormal input/output voltage, current, and temperature conditions.

## FEATURES

- Input UVLO, Main Output OCP, OTP, Management power: OCP,OTP and OVP
- Input OR'ing for the A/B dual input power feeds as well as A/B Enable signals
- Inrush protection and hot swap capability
- Integral EMI filter designed for the ATCA board to meet CISPR Class B
- Adjustable Hold Up Voltage
- For charging the external holdup capacitors resulting in significant board real estate savings and bleed resistor power dissipation
- I<sup>2</sup>C interface for data monitoring and reporting
- Hardware alarms via opto-isolators for loss of A or B Feeds/Fuse
- UL/cUL 60950-1
- ISO 9001, TL 9000, ISO 14001, QS9000, OHSAS18001 certified manufacturing facility



Part Number	Input Voltage	Auxiliary Output 1	Auxiliary Output 2	Output Power	Efficiency	Features	Package	Size (LxWxH)
DIM3R3400SFA	-36 ~ -75V	3.3V/3.6A	5V/150mA	400W	98.2%	digital control	Through hole	58.4 x 36.8 x14.2 mm





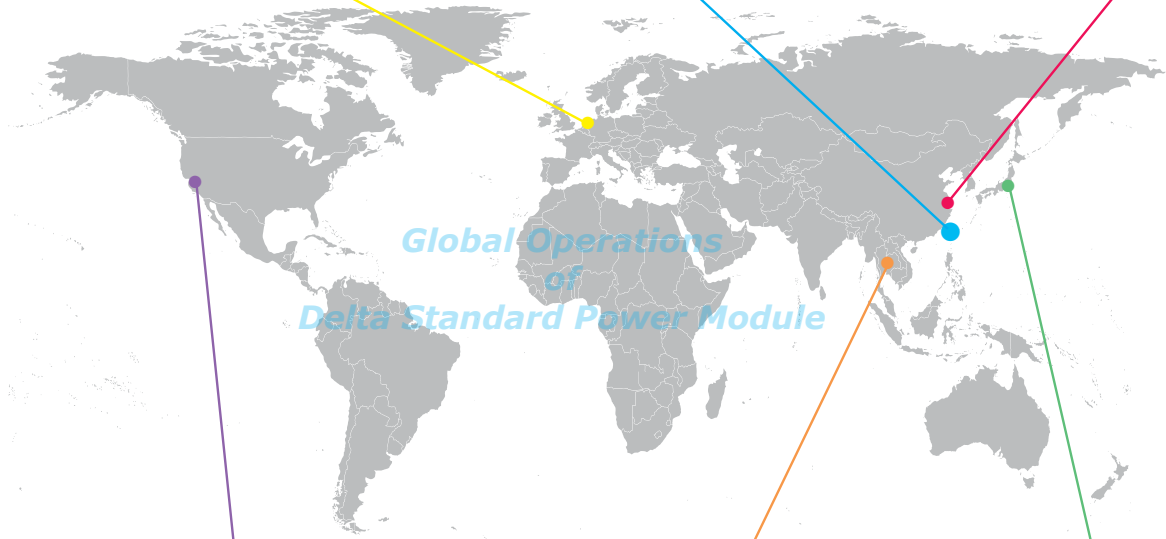
● Amsterdam, the Netherlands



● Taipei, Taiwan



● Shanghai, China



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