



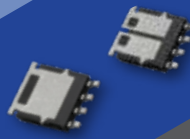
# AEC-Q101 Qualified SQ Automotive MOSFETs

**Optimized High and  
Low Side** Combination  
for Synchronous Buck



DUAL ASYMMETRIC PowerPAK® SO-8L

**1/2 the Size of DPAK,**  
Similar On-Resistance



PowerPAK® SO-8L

**1/3 the Size of SO-8**  
with Similar Performance



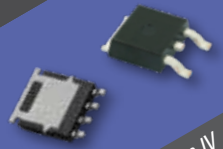
PowerPAK® 1212-8

**55 % Thinner,  
> 50 % Smaller**  
Than Two DPAKs



PowerPAK® 8 x 8L Dual

**≥ 80 V,  
Low On-Resistance  
and Low FOM**



TrenchFET® Gen IV

**Bare Die Supplied**  
in Tape and Reel and  
Fully Tested



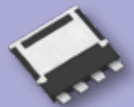
Known Good Die (KGD)

**100 % Lead (Pb)-Free  
and Halogen-Free**



PowerPAK® Little Foot®

**75 % Thinner and  
55 % Smaller**  
Than D<sup>2</sup>PAK



PowerPAK® 8 x 8L



# SQ AUTOMOTIVE MOSFETs

## Focus Products

### Single N-Channel MOSFETs, 20 V to 300 V

V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (Ω) Max.		Q <sub>g</sub> (nC)	TO-220	D <sup>2</sup> PAK (TO-263)	DPAK (TO-252)	PowerPAK® 8 x 8 L	PowerPAK® SO-8L	SO-8	PowerPAK® 1212-8	TSOP-6	SOT-23	PowerPAK® SC-70	SC-70-6
	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 4.5 V												
20	0.0013	0.0017	192		SQM120N02-1m3L									
20	0.0035	0.0045	70			SQD100N02-3m5L								
20		0.028 <sup>d</sup>	9 <sup>b</sup>							SQS420EN				
20		0.03 <sup>d</sup>	9.3 <sup>b</sup>								SQ3460EV			
20		0.03 <sup>d</sup>	4.5 <sup>b</sup>									SQ2310ES		
20		0.028 <sup>d</sup>	5										SQA410EJ	
30	0.0015	0.002	179		SQM120N03-1m5L									
30	0.0032	0.0039	77			SQD100N03-3m2L								
30	0.0039	0.0042	73.5					SQJ410EP						
30	0.0038	0.005	72						SQ4182EY					
30	0.0085	0.01	26							SQS482EN				
30	0.0175	0.0213	14								SQ3410EV			
30	0.024	0.032	7.95									SQ2348ES		
30		0.065 <sup>d</sup>	4.2 <sup>b</sup>											SQ1470AEH
40	0.0011	0.0013	275		SQM200N04-1m1L <sup>c</sup>									
40	0.0012	0.0015	140				SQJQ100EL							
40	0.0024	0.0031	65					SQJA44EP <sup>a</sup>						
40	0.0032		65			SQD40030E								
40	0.0046	0.0056	72						SQ4184EY					
40	0.009	0.01	25.5							SQS484EN				
40	0.031	0.036	8.7									SQ2318AES		
40	0.032	0.042	8.5								SQ3418EV			
60	0.0019		110											
60	0.002	0.0025	128		SQM50020EL									
60	0.0048	0.0063	39					SQJA62EP <sup>a</sup>						
60	0.006		96.5	SQP120N06-06										
60	0.0063	0.0069	82			SQD97N06-6m3L								
60	0.012	0.014	45						SQ4470EY					
60	0.0215	0.0261	27.4							SQS850EN				
60	0.042	0.063	4 <sup>b</sup>								SQ3426EV			
60	0.068	0.075	7.6									SQ2362ES		
60	0.12	0.015	4.4											SQ1440EH
75	0.026	0.032	22					SQJ486EP						
80	0.003		100				SQJQ480E*							
80	0.0032		110		SQM60030E									
80	0.007	0.011	39					SQJA80EP*						
80	0.021	0.027	12							SQSA80ENW <sup>a</sup>				
100	0.0038		125	SQP120N10-3m8	SQM120N10-3m8		SQJQ410EL <sup>a</sup>							
100	0.0089	0.0112	46			SQD50N10-8m9L								
100	0.011	0.014	37					SQJ402EP						
100	0.3		2.3									SQ2398ES		
150	0.019		80		SQM85N15-19									
150	0.052		37.9	SQP25N15-52										
150	0.052		34			SQD25N15-52								
200	0.035		90		SQM60N20-35									
250	0.35		19			SQD07N25-350H								
300	0.097		86		SQM35N30-97									
300	0.33		31			SQD10N30-330H								

### Dual N-Channel MOSFETs

20		0.28 <sup>a</sup>	0.76 <sup>b</sup>											SQ1912EH
30	0.007	0.0086	25.8					SQJ910AEP						
30	0.0123	0.0135	31.5						SQ4282EY					
40	0.0035		50				SQJQ904E <sup>a</sup>							
40	0.007	0.0092	40					SQJB40EP <sup>a</sup>						
40	0.0135	0.0148	30						SQ4284EY					
40	0.03	0.04	10							SQS944ENW <sup>a</sup>				
60	0.012	0.016	14					SQJB60DP <sup>a</sup>						
60	0.014	0.019	12				SQJQ960EL <sup>a</sup>							
60	0.04	0.055	11.7						SQ4946AEY					
60	0.04	0.05	5							SQS966ENW <sup>a</sup>				
75	0.05	0.066	14					SQJ980AEP						
80	0.015	0.019	12.7				SQJQ980EL <sup>a</sup>							
80	0.02	0.026	12					SQJB80DP <sup>a</sup>						
100	0.0086						SQJQ910EL <sup>a</sup>							
100	0.0263	0.0349	15					SQJ974EP						

Notes: a. Target specification b. V<sub>GS</sub> = 4.5 V c. 7 lead d. Also rated at 2.5 V and / or 1.8 V or 1.5 V



# SQ AUTOMOTIVE MOSFETs

## Focus Products

### Single P-Channel MOSFETs

V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (Ω) Max.		Q <sub>g</sub> (nC)		TO-220	D <sup>2</sup> PAK (TO-263)	DPAK (TO-252)	PowerPAK® 8 x 8 L	PowerPAK® SO-8L	SO-8	PowerPAK® 1212-8	TSOP-6	SOT-23	SC-70-6
	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 4.5 V	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 10 V										
-12		0.006 <sup>d</sup>	109 <sup>b</sup>						SQJ401EP					
-12		0.0065 <sup>d</sup>	101 <sup>b</sup>							SQ4153EY				
-12		0.025 <sup>d</sup>	21 <sup>b</sup>									SQ3461EV		
-12		0.05 <sup>d</sup>	8.4 <sup>b</sup>										SQ2315ES	
-20	0.036	0.064	17.7									SQ3469EV		
-20		0.115 <sup>d</sup>	3.4 <sup>b</sup>										SQ2351ES	
-30	0.0044	0.0071	169						SQJ407EP					
-30	0.007	0.011	103.5		SQP50P03-07	SQM50P03-07								
-30	0.007	0.011	97				SQD50P03-07							
-30	0.0085	0.02	75							SQ4483EY				
-30	0.021	0.06	17 <sup>b</sup>								SQS423EN			
-30	0.043	0.07	15.4									SQ3481EV		
-30	0.17	0.37	4.5										SQ2303ES	
-30	0.175	0.3	4.2 <sup>b</sup>											SQ1431EH
-40	0.003	0.0038	527			SQM40031EL								
-40	0.0094	0.016	103				SQD90P04-9m4L							
-40	0.007	0.0010	170						SQJ409EP					
-40	0.014	0.023	74							SQ4401EY				
-40	0.029	0.047	17.7 <sup>b</sup>								SQS401EN			
-40	0.058	0.092	15.3									SQ3419EV		
-40	0.075	0.145	10.5										SQ2319ADS	
-60	0.0067	0.0088	180		SQP90P06-07L	SQM120P06-07L								
-60	0.0155	0.02	98				SQD50P06-15L							
-60	0.018	0.024	73						SQJ459EP					
-60	0.065	0.09	25.5								SQ7415AEN			
-60	0.085	0.115	26.5							SQ9407EY				
-60	0.095	0.135	15.3									SQ3427EV		
-60	0.177	0.246	9										SQ2361ES	
-60	0.29	0.395	3.6 <sup>b</sup>											SQ1421EDH
-80	0.025	0.031	91			SQM50P08-25L	SQD50P08-25L							
-80	0.025	0.029	101						SQJ469EP					
-80	0.29	0.314 (6 V)	11.5										SQ2337ES	
-100	0.0101	0.015	125			SQM120P10-10M1L								
-100	0.040	0.048	96				SQD40P10-40L							
-150	1.77		7.4										SQ2325ES	
-200	0.213	0.221 (6 V)	71						SQJ431EP					

### Dual P-Channel MOSFETs

V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (Ω)		Q <sub>g</sub> (nC)		PowerPAK® SO-8L	SO-8	TSOP-6
	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 4.5 V	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 10 V			
-20		0.145 <sup>d</sup>	3.1 <sup>b</sup>				SQ3985EV
-30	0.017	0.036	33		SQJ951EP		
-30	0.035	0.065	19.5			SQ4949EY	
-60	0.048	0.0612	43.4			SQ4917EY	
-60	0.085	0.115 (6 V)	26.5		SQJ963EP		

### Asymmetric Dual N-Channel MOSFETs

V <sub>DS</sub> (V)	Channel 1			Channel 2			PowerPAK® SO-8L
	R <sub>DS(on)</sub> (Ω)		Q <sub>g</sub> (nC)	R <sub>DS(on)</sub> (Ω)		Q <sub>g</sub> (nC)	
	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 4.5 V	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 4.5 V	V <sub>GS</sub> = 10 V	
12	0.0033	0.0045	35.9	0.0065	0.0093	14.5	SQJ202EP
20	0.0037	0.005	29	0.0088	0.0124	12	SQJ200EP
40	0.0064	0.0076	31.8	0.016	0.0188	13.5	SQJ940EP
40	0.011	0.013	22.5	0.022	0.026	13.1	SQJ942EP
100	0.066			0.025			SQJ990EP <sup>a</sup>

### N-Channel and P-Channel Pair MOSFETs

V <sub>DS</sub> (V)	N-Channel			P-Channel			PowerPAK® SO-8L	SO-8	SC-70-6
	R <sub>DS(on)</sub> (Ω)		Q <sub>g</sub> (nC)	R <sub>DS(on)</sub> (Ω)		Q <sub>g</sub> (nC)			
	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 4.5 V	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 10 V	V <sub>GS</sub> = 4.5 V	V <sub>GS</sub> = 10 V			
20		0.28 <sup>d</sup>	0.93 <sup>b</sup>		0.49 <sup>d</sup>	1 <sup>b</sup>			SQ1563AEH
30	0.031	0.042	5.9	0.07	0.19	7.9		SQ4532AEY	
30	0.28	0.38	1 <sup>b</sup>	0.94	1.8	1.2 <sup>b</sup>			SQ1539EH
40	0.0092	0.0112	25.5	0.027	0.0435	30.2	SQJ500AEP		

Notes: a. Target specification b. V<sub>GS</sub> = 4.5 V c. 7 lead d. Also rated at 2.5 V and / or 1.8 V or 1.5 V



# Dedicated Automotive Processes Instill Quality and Robustness From Design to Manufacturing

## Advantages of SQ Automotive MOSFETs

- AEC-Q101 qualified
- Junction temperature up to 175 °C
- Low on-resistance n- and p-channel TrenchFET® technologies
- Innovative space-saving package options

## For the Following Applications

- Engine management
- Motor drives and actuators for:
  - Power steering
  - Braking
  - Transmission
  - Start-stop
  - ADAS
- Battery management
- Body systems



Innovative packaging saves  
valuable space



KGD maximizes efficiency

## Useful Links

- Automotive MOSFETs Product Portfolio  
[www.vishay.com/mosfets/automotive-mosfets/tab/products/](http://www.vishay.com/mosfets/automotive-mosfets/tab/products/)
- Automotive MOSFETs Parametric Search  
[www.vishay.com/mosfets/automotive-mosfets/tab/param/](http://www.vishay.com/mosfets/automotive-mosfets/tab/param/)

Talk to Vishay about optimizing a MOSFET  
for your application

**AEC-Q101  
QUALIFIED**  
TS-16949 approved

**HALOGEN  
FREE**



EU Annex II  
compliant

A **WORLD OF**  
**SOLUTIONS™**