

Features

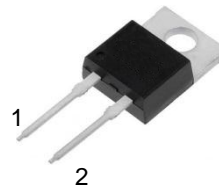
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature-independent Switching
- 175°C Operating Junction Temperature

V_{RRM}	=	650	V
$I_F (T_c \leq 135^\circ\text{C})$	=	25	A
Q_C	=	37	nC

Benefits

- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

Package



TO-220-2

Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor drive, PV Inverter, Wind Power Station



Part Number	Package	Marking
AS3D020065A	TO-220-2	ASD2065A

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V _{RRM}	Repetitive Peak Reverse Voltage	650	V	T _C = 25°C	
V _{RSM}	Surge Peak Reverse Voltage	650	V	T _C = 25°C	
V _R	DC Blocking Voltage	650	V	T _C = 25°C	
I _F	Forward Current	56 25 20	A	T _C ≤ 25°C T _C ≤ 135°C T _C ≤ 147°C	
I _{FSM}	Non-Repetitive Forward Surge Current	170	A	T _C = 25°C, t _p = 8.3ms, Half Sine Wave	
P _{tot}	Power Dissipation	176	W	T _C = 25°C	Fig.3
T _C	Maximum Case Temperature	147	°C		
T _J , T _{STG}	Operating Junction and Storage Temperature	-55 to 175	°C		
	TO-220-2 Mounting Torque	1	Nm	M3 Screw	

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V _F	Forward Voltage	1.4 1.7	1.65 2.3	V	I _F = 20A, T _J = 25°C I _F = 20A, T _J = 175°C	Fig.1
I _R	Reverse Current	2 10	20 200	μA	V _R = 650V, T _J = 25°C V _R = 650V, T _J = 175°C	Fig.2
C	Total Capacitance	1190 115 96	/	pF	V _R = 0V, T _J = 25°C, f = 1MHz V _R = 200V, T _J = 25°C, f = 1MHz V _R = 400V, T _J = 25°C, f = 1MHz	Fig.5
Q _C	Total Capacitive Charge	37	/	nC	V _R = 650V, I _F = 20A di/dt = 200A/μs, T _J = 25°C	Fig.4

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
R _{θJC}	Thermal Resistance from Junction to Case	0.85	°C/W	Fig.6
R _{θJA}	Thermal Resistance from Junction to Ambient	80	°C/W	
T _{sold}	Soldering Temperature	260	°C	

Typical Performance

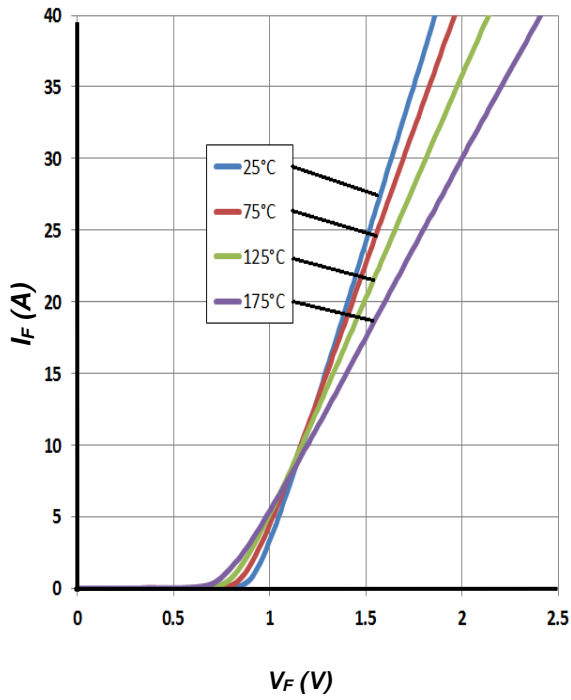


Figure 1. Forward Characteristics

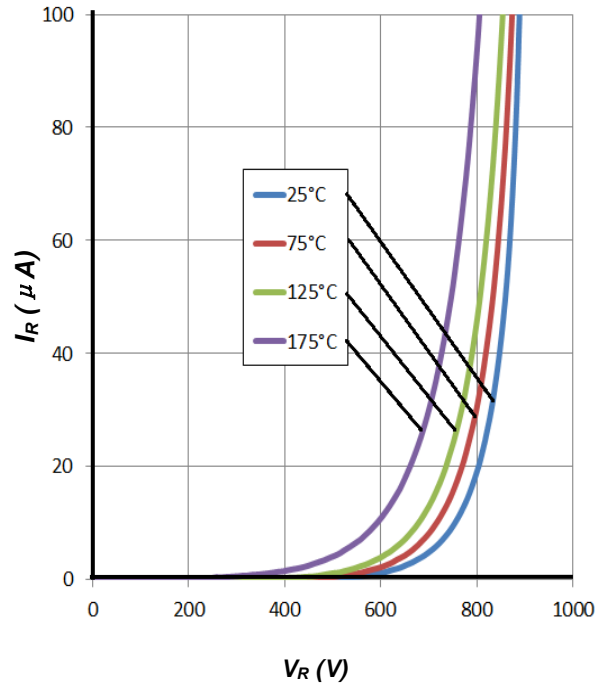


Figure 2. Reverse Characteristics

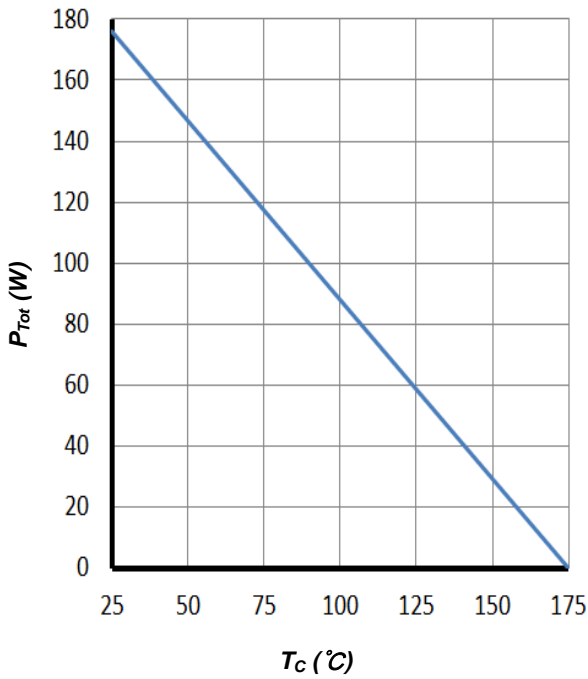


Figure 3. Power Derating

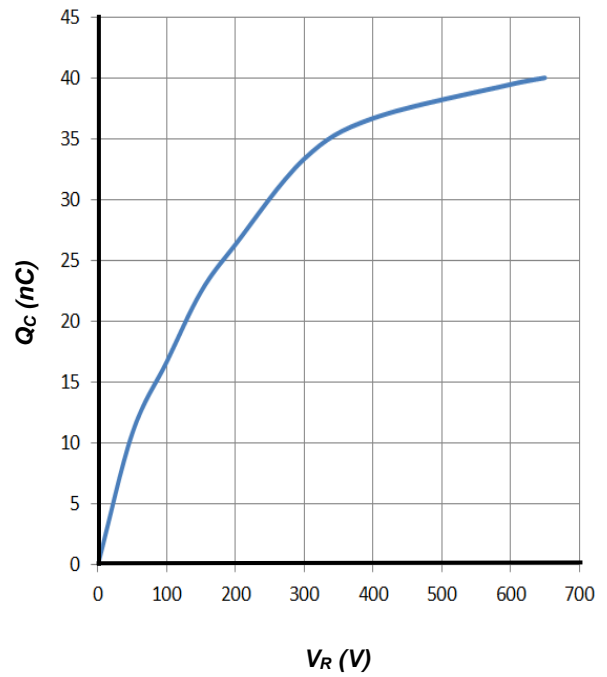


Figure 4. Total Capacitive Charge vs. Reverse Voltage

Typical Performance

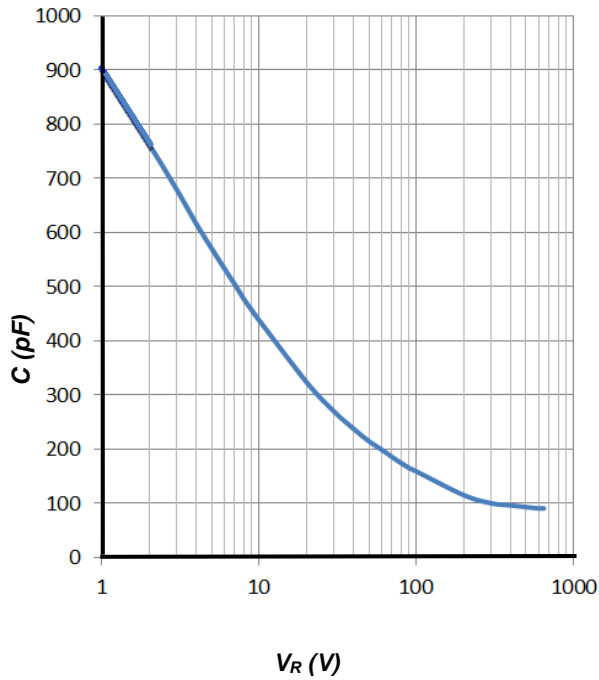


Figure 5. Total Capacitance vs. Reverse Voltage

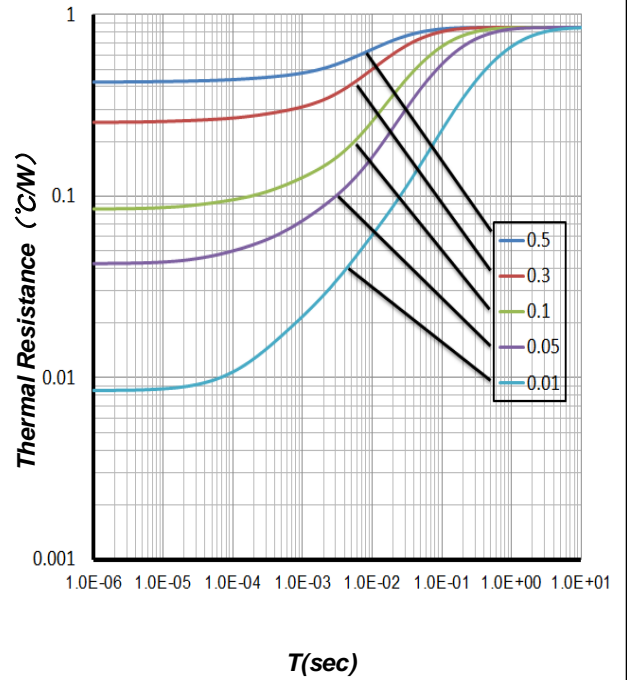
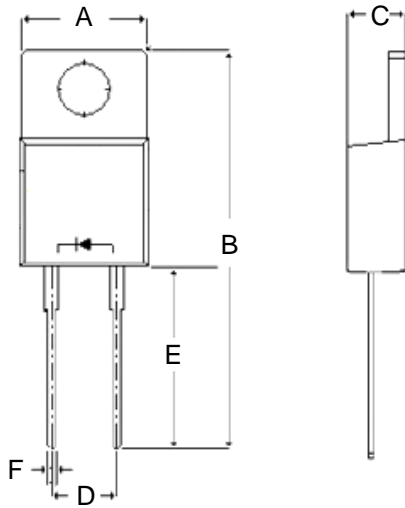


Figure 6. Transient Thermal Impedance

Package Dimensions

Package TO-220-2



Symbol	Min. (mm)	Typ. (mm)	Max. (mm)
A	9.17	10.08	10.91
B	27.00	28.58	30.00
C	3.89	4.50	5.00
D	4.20	5.10	5.80
E	11.70	13.30	14.97
F	0.50	0.80	1.21