

Features

- Fully Automotive Qualified to AEC-Q101
- Zero Reverse Recovery Current
- Positive Temperature Coefficient
- Maximum working temperature at 175 °C
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant(Note 2) ("P" Suffix designates RoHS Compliant. See ordering information)

Benefits

- Temperature-independent switching
- Essentially no switching losses
- Reduction of heat sink requirements

Applications

- Solar Inverter
- Power Factor Correction
- Motor Drive
- Photovoltaic Inverter

Maximum Ratings

Parameter	Symbol	Rating	Unit
Peak Repetitive Reverse Voltage@ $T_J=25^{\circ}\text{C}$	V_{RRM}	650	V
Surge Peak Reverse Voltage@ $T_J=25^{\circ}\text{C}$	V_{RSM}	650	V
DC Reverse Voltage@ $T_J=25^{\circ}\text{C}$	V_{DC}	650	V
Continuous forward Current @ $T_C=25^{\circ}\text{C}$	I_F	5.5	A
Continuous forward Current @ $T_C=135^{\circ}\text{C}$	I_F	2.4	A
Continuous forward Current @ $T_C=163^{\circ}\text{C}$	I_F	1.0	A
Non-repetitive Peak Forward Surge Current @ $T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse	I_{FSM}	18	A
Repetitive peak forward surge current @ $T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	I_{FRM}	10	A
Power Dissipation @ $T_C=25^{\circ}\text{C}$	P_D	16.4	W
Power Dissipation @ $T_C=110^{\circ}\text{C}$	P_D	7.1	W
i^2t Value@ $T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$	$\int i^2 dt$	1.62	A^2S

Note:

- Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- High Temperature Solder Exemptions Applied, see EU Directive Annex 7a.

Internal Structure

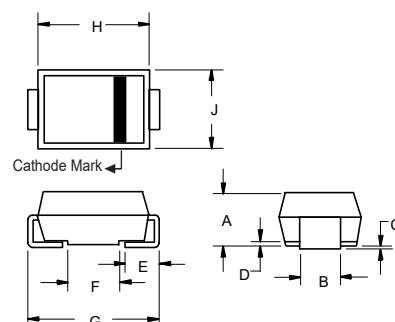


Device Marking:



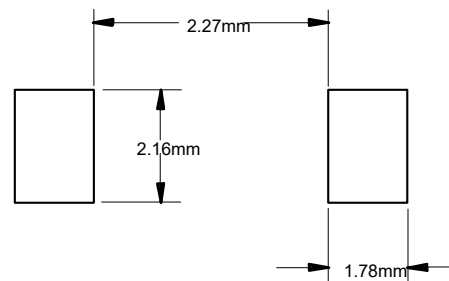
1 Amp Silicon Carbide Schottky Diode 650 Volts

SMA (DO-214AC)



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.075	0.096	1.90	2.44	
B	0.050	0.064	1.27	1.63	
C	0.002	0.008	0.051	0.203	
D	---	0.020	---	0.51	
E	0.030	0.060	0.76	1.52	
F	0.065	0.091	1.65	2.32	
G	0.189	0.220	4.80	5.59	
H	0.157	0.187	4.00	4.75	
J	0.090	0.115	2.25	2.92	

SUGGESTED SOLDER PAD LAYOUT



Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Conditions	Typ.	Max.	Units
Forward Voltage	V_F	$I_F=1A, T_J=25^{\circ}C$	1.13	1.30	V
		$I_F=1A, T_J=175^{\circ}C$	1.20		V
Reverse Leakage Current	I_R	$V_R=650V, T_J=25^{\circ}C$	0.02	0.5	μA
		$V_R=650V, T_J=175^{\circ}C$	0.1		μA
Total Capacitive Charge	Q_C	$V_R=400V$	8.3		nC
Total capacitance	C	$V_R=0V, f=1MHz$	142		pF
		$V_R=200V, f=1MHz$	15.7		pF
		$V_R=400V, f=1MHz$	15.3		pF
Capacitance Stored Energy	E_C	$V_R=400V$	1.30		μJ

Thermal characteristics

Parameter	Symbol	Min	Typ	Max	Units
Operating Junction Temperature Range	T_J	-55		175	$^{\circ}C$
Storage Temperature Range	T_{stg}	-55		175	$^{\circ}C$
Thermal Resistance from Junction to Case	$R_{th_{J-C}}$		9.12		$^{\circ}C/W$
Thermal resistance, junction to ambient	$R_{th_{J-A}}$		90		$^{\circ}C/W$

Curve Characteristics

Figure 1. Forward Characteristics

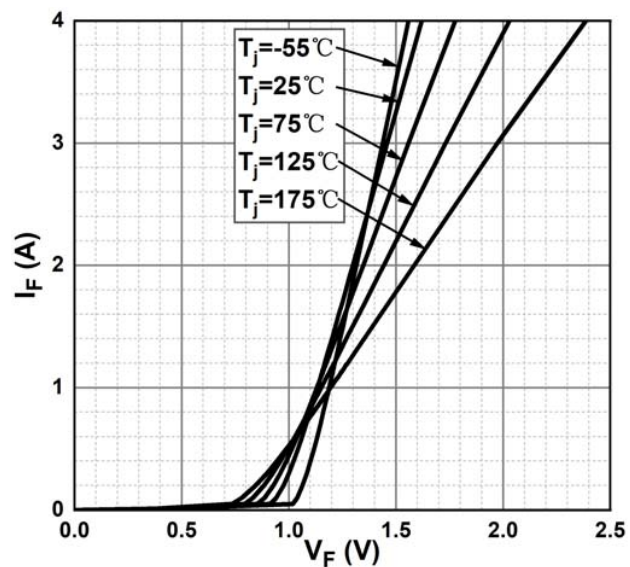


Figure 2. Reverse Characteristics

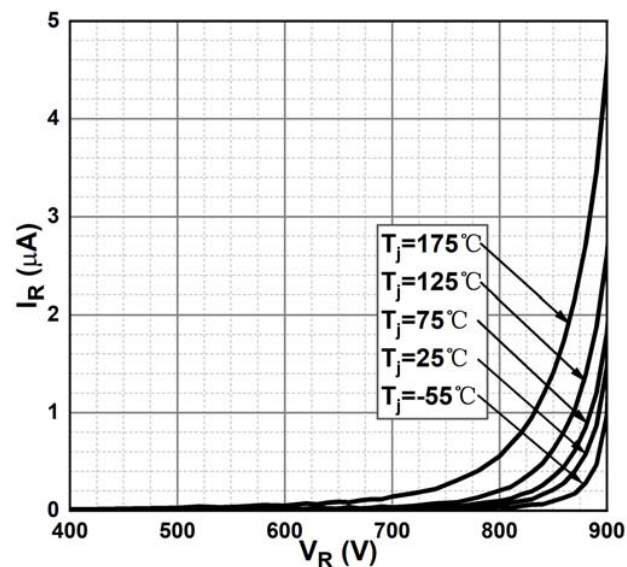


Figure 3. Capacitance vs. Reverse Voltage

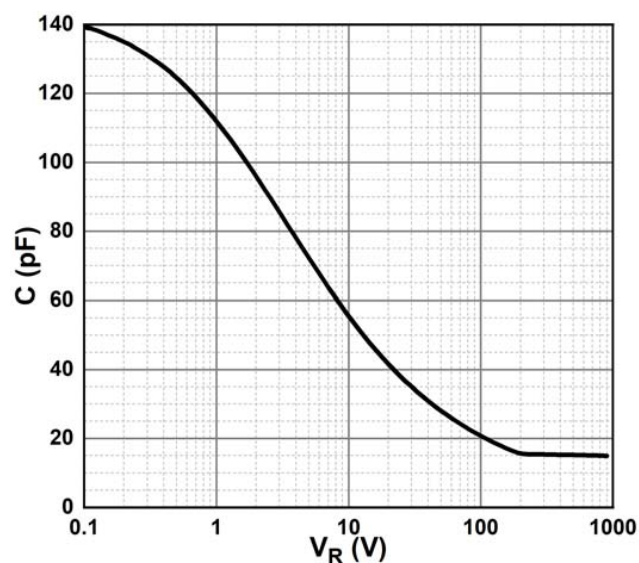


Figure 4. Total Capacitance Charge vs. Reverse Voltage

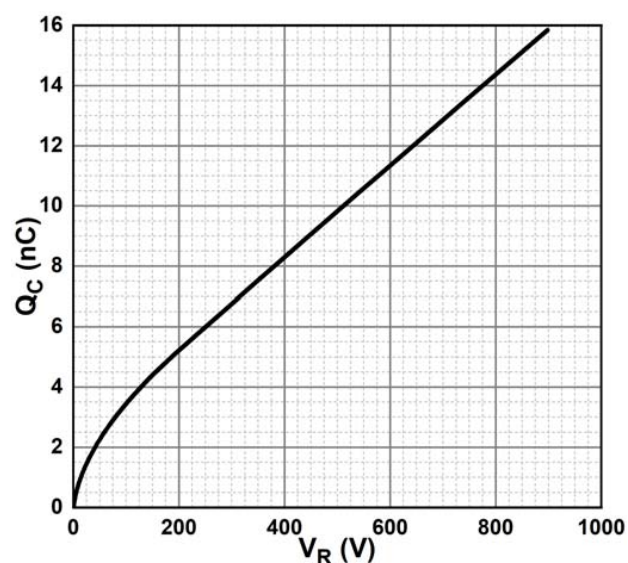


Figure 5. Capacitance Stored Energy

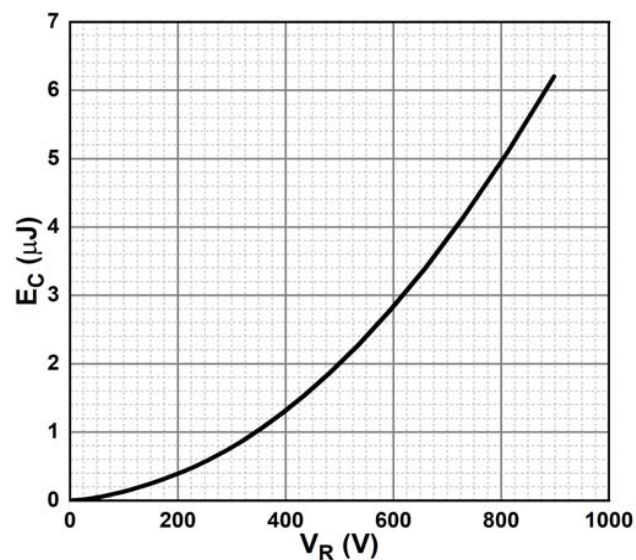
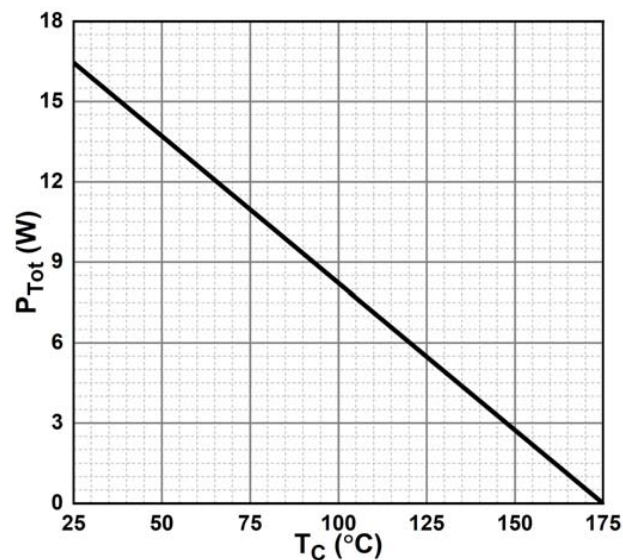


Figure 6. Power Derating



Curve Characteristics

Figure 7. Current Derating

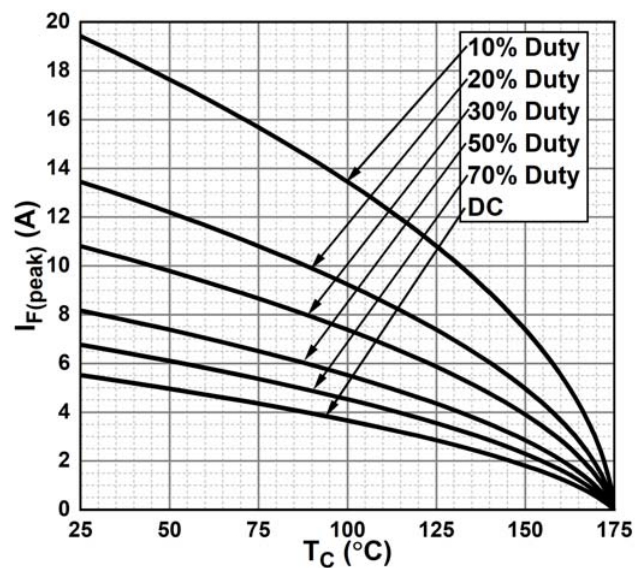
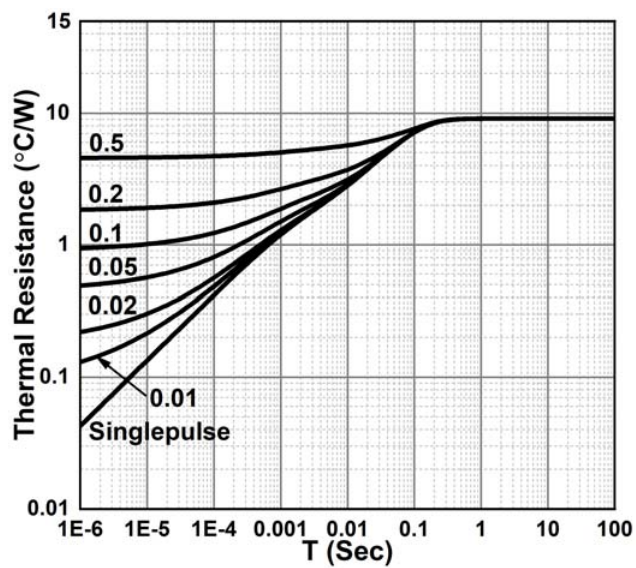


Figure 8. Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:7.5Kpcs/Reel

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