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Zero Recovery Silicon Carbide Schottky Diode

PRODUCT APPLICATIONS

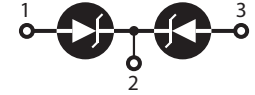
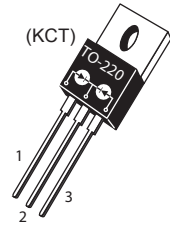
- Anti-Parallel Diode
 - Switchmode Power Supply
 - Inverters
- Power Factor Correction (PFC)

PRODUCT FEATURES

- Zero Recovery Time (t_{rr})
- Popular TO-220 Package
- Low Forward Voltage
- Low Leakage Current

PRODUCT BENEFITS

- Higher Reliability Systems
- Minimizes or eliminates snubber



- 1 - Anode 1
- 2 - Common Cathode
Back of Case - Cathode
- 3 - Anode 2

MAXIMUM RATINGS

All Ratings Per Leg: $T_C = 25^\circ\text{C}$ unless otherwise specified.

Symbol	Characteristic / Test Conditions	Ratings	Unit
V_R	Maximum D.C. Reverse Voltage	650	Volts
V_{RRM}	Maximum Peak Repetitive Reverse Voltage		
V_{RWM}	Maximum Working Peak Reverse Voltage		
I_F	Maximum D.C. Forward Current	$T_C = 25^\circ\text{C}$	17
		$T_C = 100^\circ\text{C}$	9
I_{FRM}	Repetitive Peak Forward Surge Current ($T_J = 45^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Wave)	50	Amps
I_{FSM}	Non-Repetitive Forward Surge Current ($T_J = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine)	110	
P_{TOT}	Power Dissipation	$T_C = 25^\circ\text{C}$	63
		$T_C = 110^\circ\text{C}$	20
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Lead Temperature for 10 Seconds	300	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	Min	Typ	Max	Unit
V_F	Forward Voltage		$I_F = 10\text{A}$, $T_J = 25^\circ\text{C}$	1.5	1.8
			$I_F = 10\text{A}$, $T_J = 150^\circ\text{C}$	2.0	
I_{RM}	Maximum Reverse Leakage Current		$V_R = 650\text{V}$, $T_J = 25^\circ\text{C}$	10	200
			$V_R = 650\text{V}$, $T_J = 150^\circ\text{C}$	125	
Q_c	Total Capacitive Charge $V_R = 300\text{V}$, $I_F = 10\text{A}$, $di/dt = -500\text{A}/\mu\text{s}$, $T_J = 25^\circ\text{C}$		80		nC
C_T	Junction Capacitance $V_R = 1\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$		300		pF
	Junction Capacitance $V_R = 100\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$		72		
	Junction Capacitance $V_R = 300\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$		47		

Symbol	Characteristic / Test Conditions	Min	Typ	Max	Unit
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			2.0	$^{\circ}C/W$
W_T	Package Weight		0.07		oz
			1.9		g
Torque	Maximum Mounting Torque			6.4	lb-in
				0.7	N-m

Microsemi reserves the right to change, without notice, the specifications and information contained herein.

TYPICAL PERFORMANCE CURVES

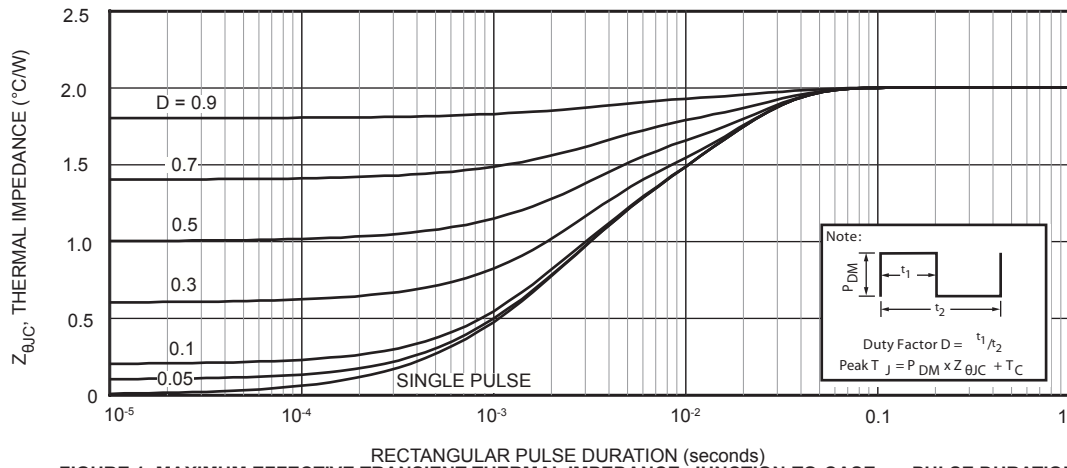


FIGURE 1. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

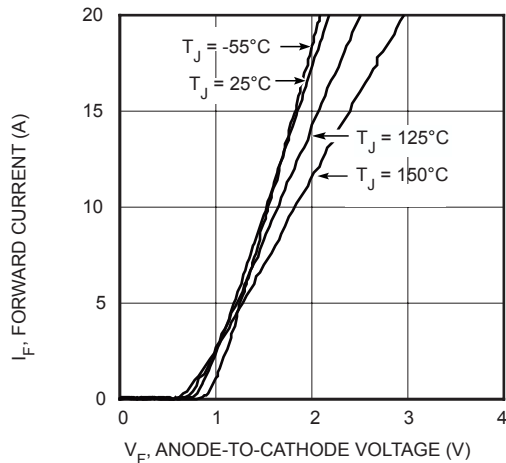


FIGURE 2, Forward Current vs. Forward Voltage

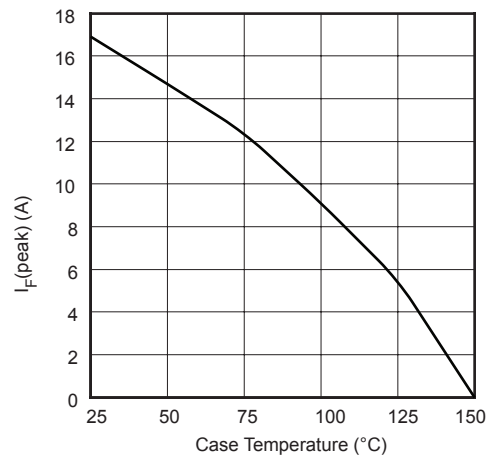


FIGURE 3, Maximum Forward Current vs. Case Temperature

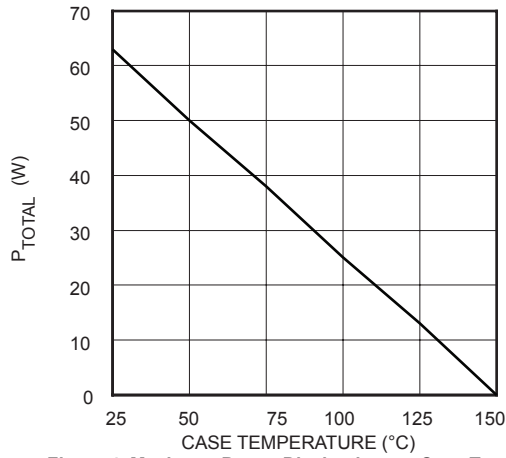


Figure 4. Maximum Power Dissipation vs. Case Temperature

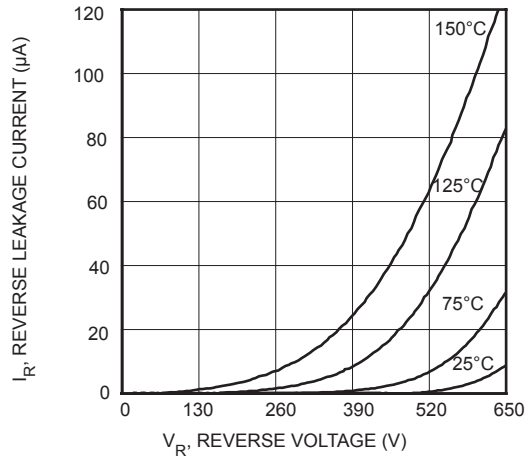


Figure 5. Reverse Leakage Currents vs. Reverse Voltage

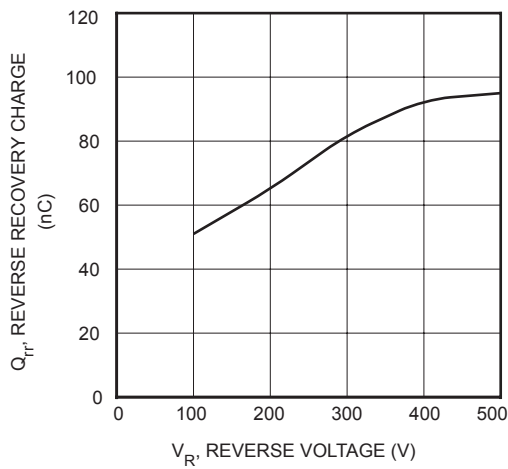


Figure 6. Reverse Recovery Charge vs. V_R

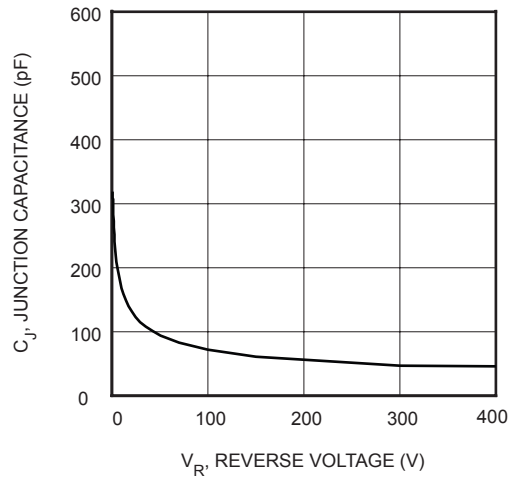
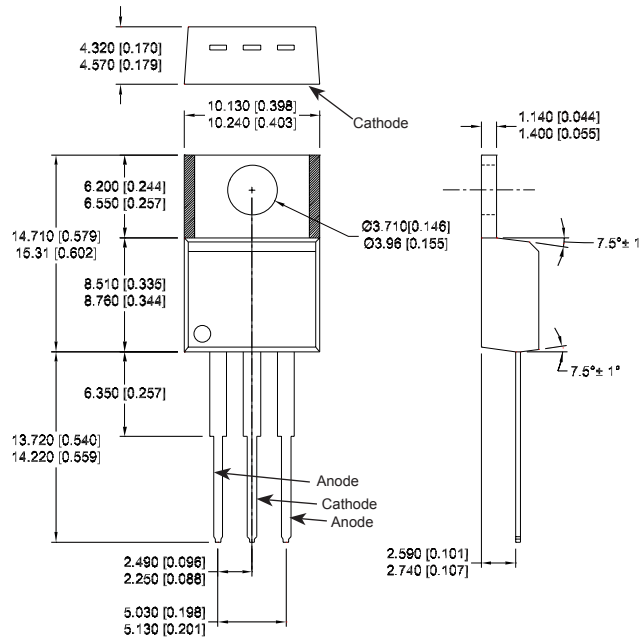


Figure 7. Junction Capacitance vs. Reverse Voltage

TO-220 (K) Package Outline

Ⓢ100% Sn Plated



Dimensions in Millimeters and (Inches)

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