

## Zero Recovery Silicon Carbide Schottky Diode

**PRODUCT APPLICATIONS**

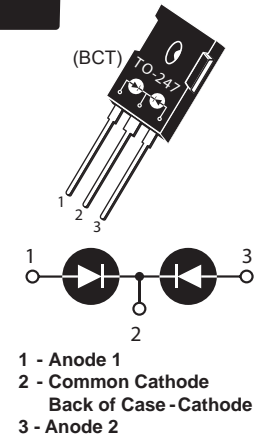
- Anti-Parallel Diode
  - Switchmode Power Supply
  - Inverters
- Power Factor Correction (PFC)

**PRODUCT FEATURES**

- Zero Recovery Times ( $t_{rr}$ )
- Popular TO-247 Package
- Low Forward Voltage
- Low Leakage Current

**PRODUCT BENEFITS**

- Higher Reliability Systems
- Minimizes or eliminates snubber


**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	1200	Volts
$V_{RRM}$	Maximum Peak Repetitive Reverse Voltage		
$V_{RWM}$	Maximum Working Peak Reverse Voltage		
$I_F$	Maximum D.C. Forward Current	$T_C = 25^\circ\text{C}$	36
		$T_C = 135^\circ\text{C}$	10
$I_{FRM}$	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	$T_C = 25^\circ\text{C}$	125
		$T_C = 110^\circ\text{C}$	45
$T_J, T_{STG}$	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
			$I_F = 10\text{A}$ , $T_J = 150^\circ\text{C}$	2.1	
$I_{RM}$	Maximum Reverse Leakage Current		$V_R = 1200\text{V}$ , $T_J = 25^\circ\text{C}$		200
			$V_R = 1200\text{V}$ , $T_J = 150^\circ\text{C}$		1000
$Q_c$	Total Capacitive Charge $V_R = 800\text{V}$ , $I_F = 10\text{A}$ , $di/dt = -100\text{A}/\mu\text{s}$ , $T_J = 25^\circ\text{C}$		30		nC
$C_T$	Junction Capacitance $V_R = 0\text{V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{MHz}$		600		pF
	Junction Capacitance $V_R = 200\text{V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{MHz}$		71		
	Junction Capacitance $V_R = 400\text{V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{MHz}$		52		

Symbol	Characteristic / Test Conditions	Min	Typ	Max	Unit
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			1.0	$^{\circ}C/W$
$W_T$	Package Weight		0.22		oz
			5.9		g
Torque	Maximum Mounting Torque			10	lb-in
				1.1	N-m

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

TYPICAL PERFORMANCE CURVES

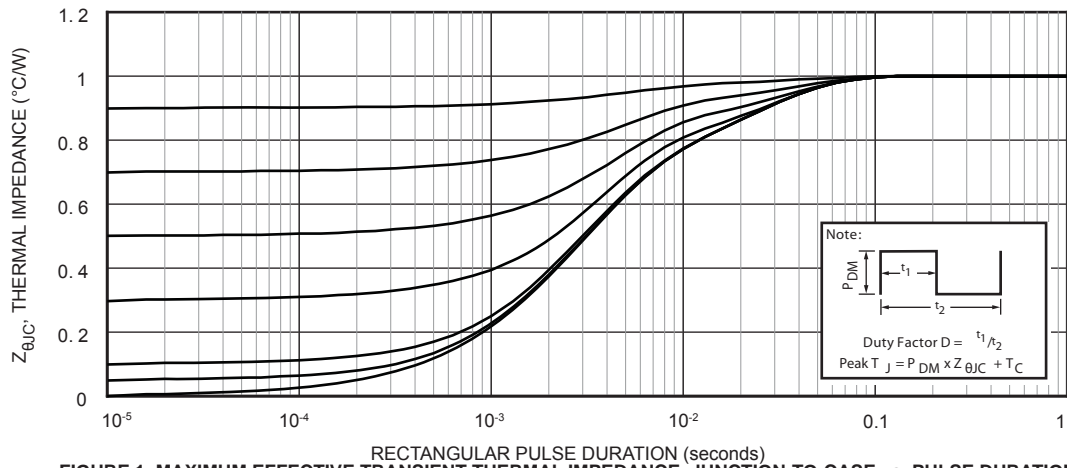


FIGURE 1. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

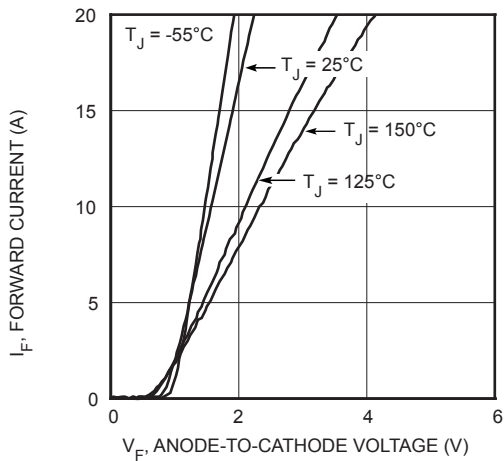


FIGURE 2. Forward Current vs. Forward Voltage

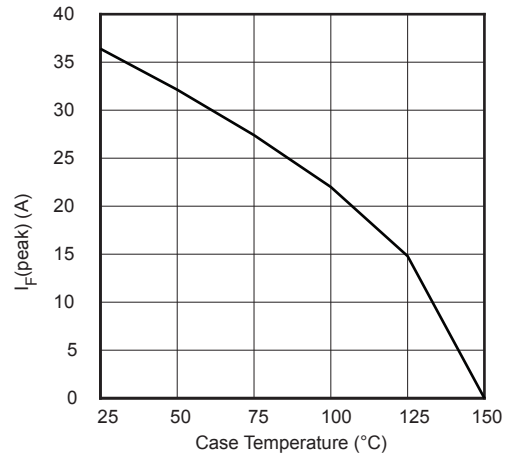


FIGURE 3. Maximum Forward Current vs. Case Temperature

# TYPICAL PERFORMANCE CURVES

# APT10SCD120BCT

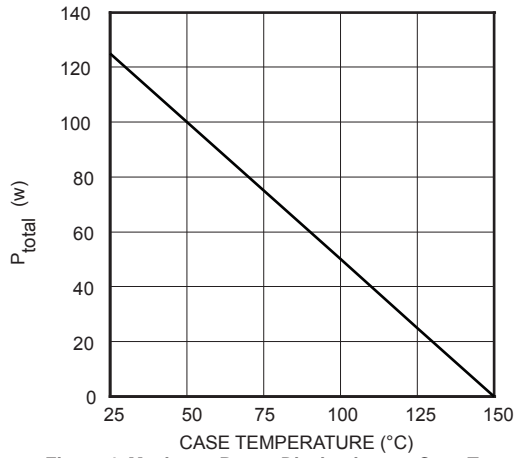


Figure 4. Maximum Power Dissipation vs. Case Temperature

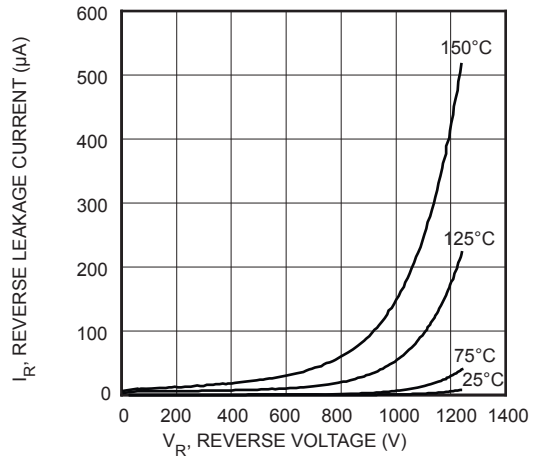


Figure 5. Reverse Leakage Currents vs. Reverse Voltage

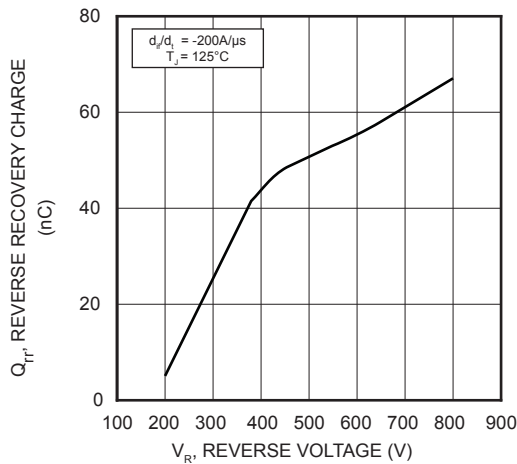


Figure 6. Reverse Recovery Charge vs. V<sub>R</sub>

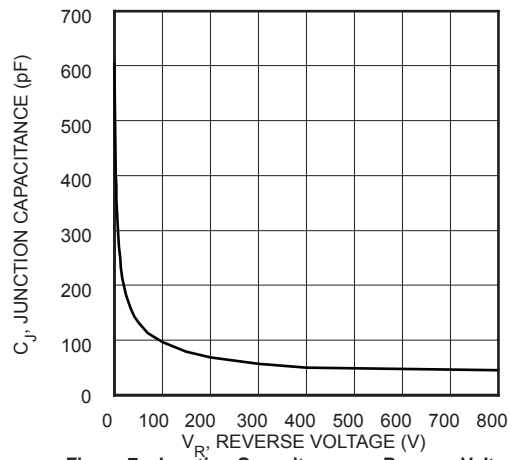
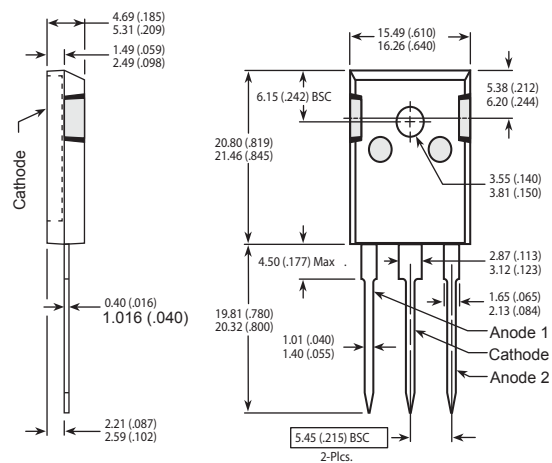


Figure 7. Junction Capacitance vs. Reverse Voltage

## TO-247 Package Outline



Dimensions in Millimeters and (Inches)

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