

## Zero Recovery Silicon Carbide Schottky Diode

**PRODUCT APPLICATIONS**

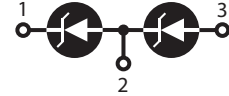
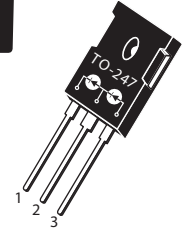
- Anti-Parallel Diode
  - Switchmode Power Supply
  - Inverters
- Power Factor Correction (PFC)

**PRODUCT FEATURES**

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

**PRODUCT BENEFITS**

- Higher Reliability Systems
- Minimizes or eliminates snubber



1 - Cathode 1  
 2 - Anode 1  
     Cathode 2  
 3 - Anode 2

**MAXIMUM RATINGS**
 $T_C = 25^\circ\text{C}$  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	$T_C = 25^\circ\text{C}$	37
		$T_C = 106^\circ\text{C}$	20
$I_{FSM}$	Non-Repetitive Forward Surge Current ( $T_J = 25^\circ\text{C}$ , $t_p = 8.3\text{ms}$ , Half Sine Wave)	110	Amps
$P_{tot}$	Power Dissipation	$T_C = 25^\circ\text{C}$	78
		$T_C = 110^\circ\text{C}$	25
$T_J, T_{STG}$	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		$I_F = 20\text{A}$ , $T_J = 25^\circ\text{C}$	1.5	1.8
			$I_F = 20\text{A}$ , $T_J = 150^\circ\text{C}$	2.2	
$I_{RM}$	Maximum Reverse Leakage Current		$V_R = 1200\text{V}$ , $T_J = 25^\circ\text{C}$	20	400
			$V_R = 1200\text{V}$ , $T_J = 150^\circ\text{C}$	1000	
$Q_c$	Total Capacitive Charge $V_R = 800\text{V}$ , $I_F = 10\text{A}$ , $di/dt = -100\text{A}/\mu\text{s}$ , $T_J = 25^\circ\text{C}$		108		nC
$C_T$	Junction Capacitance $V_R = 0\text{V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{MHz}$		1100		pF
	Junction Capacitance $V_R = 200\text{V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{MHz}$		97		
	Junction Capacitance $V_R = 400\text{V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{MHz}$		88		

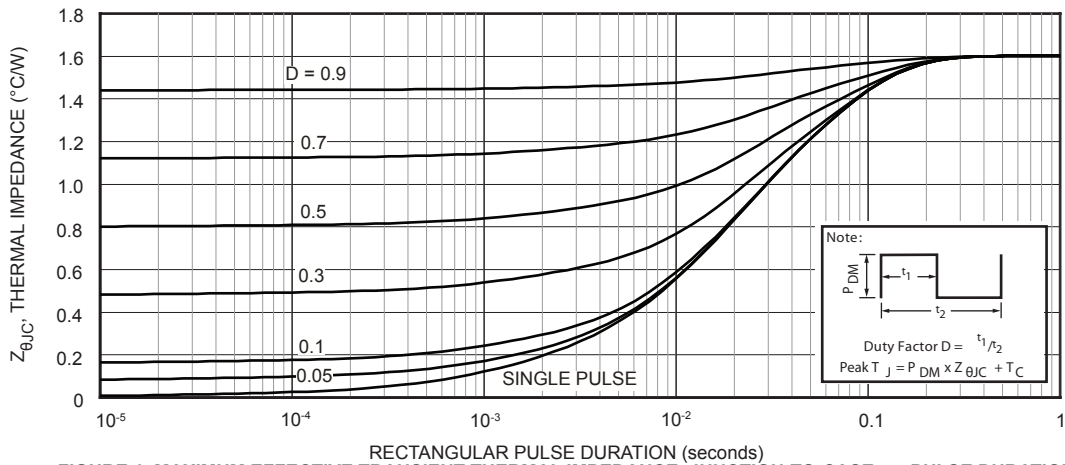
**THERMAL AND MECHANICAL CHARACTERISTICS**

**APT20SCD120BHB**

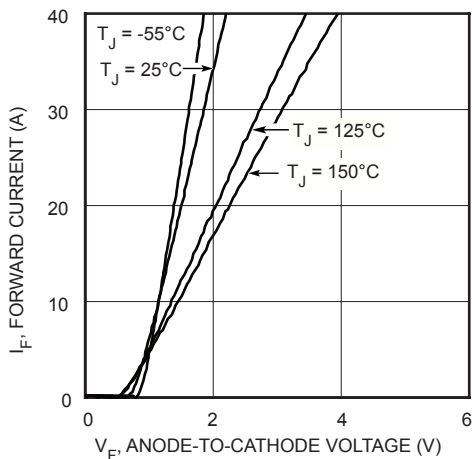
Symbol	Characteristic / Test Conditions	Min	Typ	Max	Unit
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			1.6	°C/W
$W_T$	Package Weight		0.22		oz
			5.9		g
Torque	Maximum Mounting Torque			10	lb-in
				1.1	N-m

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

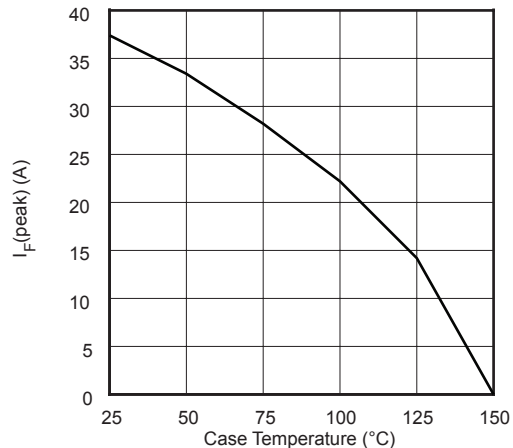
**TYPICAL PERFORMANCE CURVES**



**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

APT20SCD120BHB

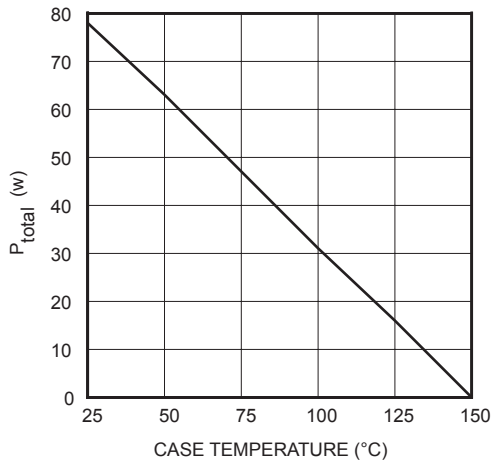


Figure 4. Maximum Power Dissipation vs. Case Temperature

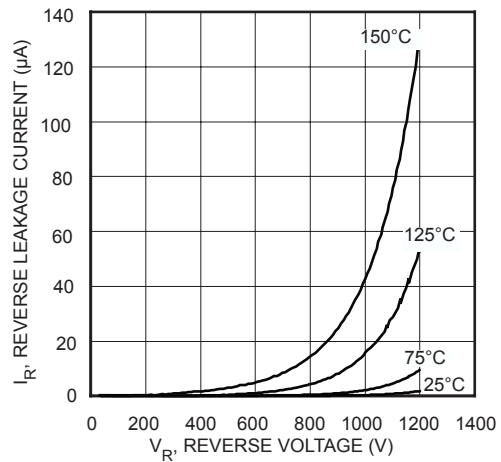


Figure 5. Reverse Leakage Currents vs. Reverse Voltage

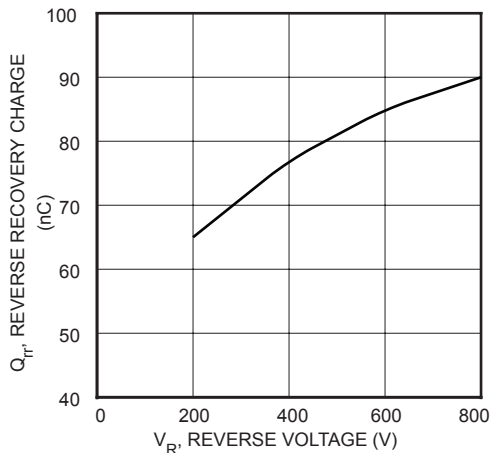


Figure 6. Reverse Recovery Charge vs. V<sub>R</sub>

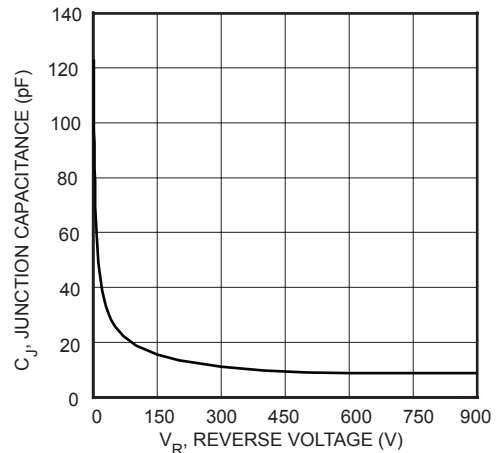
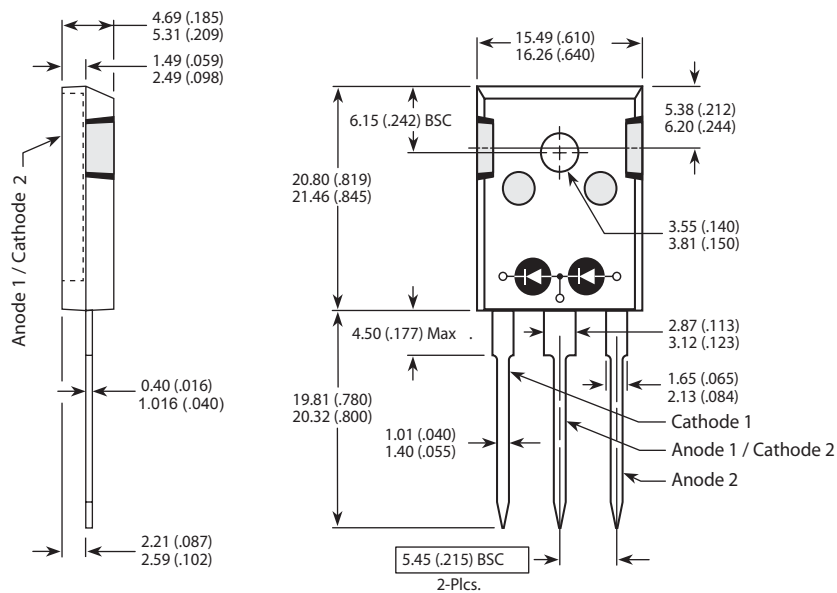


Figure 7. Junction Capacitance vs. Reverse Voltage

## TO-247 Package Outline



Dimensions in Millimeters and (Inches)

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