

## Zero Recovery Silicon Carbide Schottky Diode

**PRODUCT APPLICATIONS**

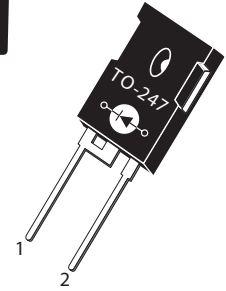
- Anti-Parallel Diode
  - Switchmode Power Supply
  - Inverters
- Applications
  - PFC
  - Hardswitching

**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



1 - Cathode  
2 - Anode  
Back of Case - Cathode

**MAXIMUM RATINGS**

 All 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		
$I_{F(AV)}$	Maximum Average Forward current	$T_C = 25^\circ\text{C}$	37
		$T_C = 135^\circ\text{C}$	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 $V_R = 600\text{V}$ , $I_F = 10\text{A}$ , $di/dt = -500\text{A}/\mu\text{s}$ , $T_J = 25^\circ\text{C}$		22		nC
$C_T$	Junction Capacitance $V_R = 1\text{V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{MHz}$		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.

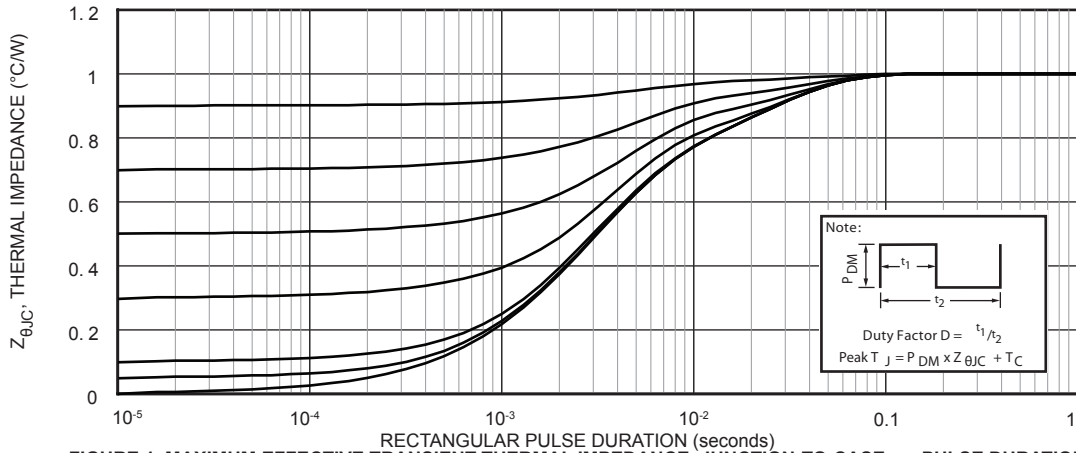


FIGURE 1. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

TYPICAL PERFORMANCE CURVES

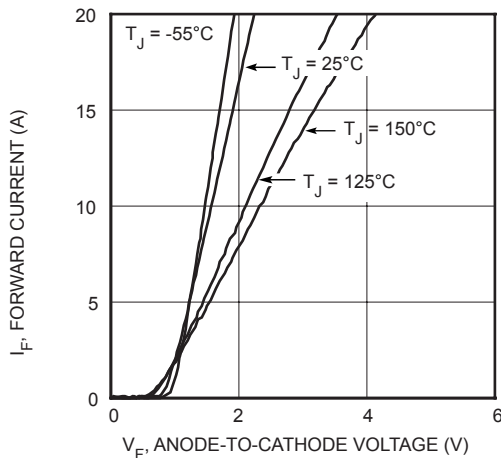


FIGURE 2. Forward Current vs. Forward Voltage

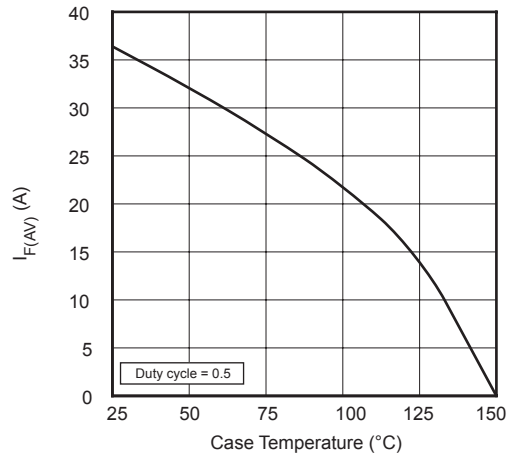


FIGURE 3. Maximum Average Forward Current vs. Case Temperature

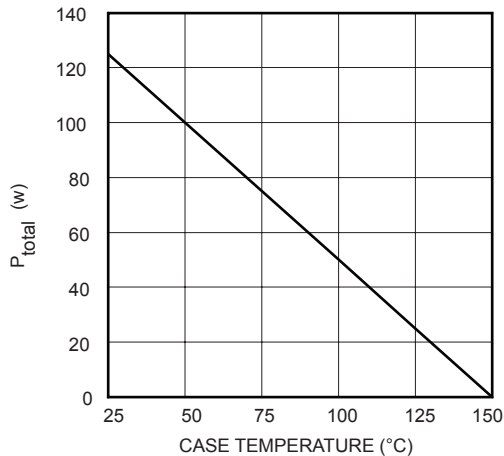


Figure 4. Maximum Power Dissipation vs. Case Temperature

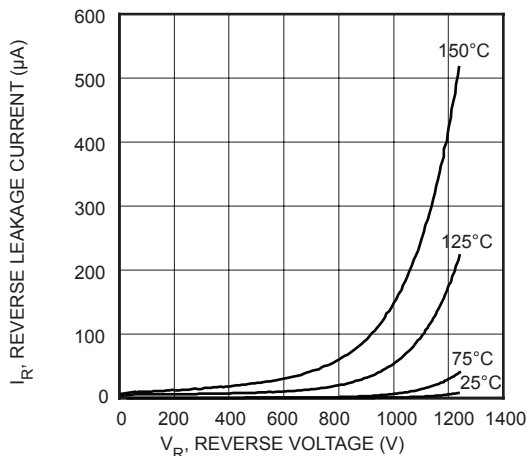


Figure 5. Reverse Leakage Currents vs. Reverse Voltage

# TYPICAL PERFORMANCE CURVES

APT10SCD120B

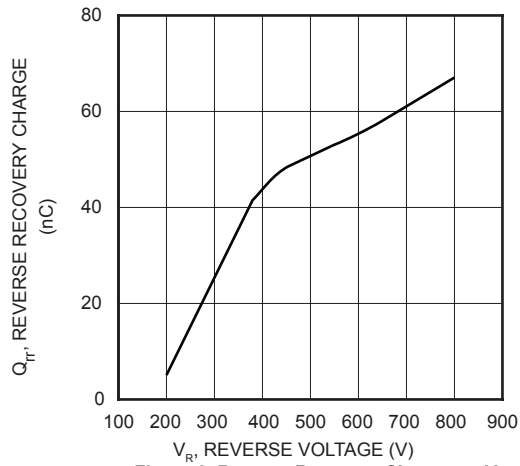


Figure 6. Reverse Recovery Charge vs. V<sub>R</sub>

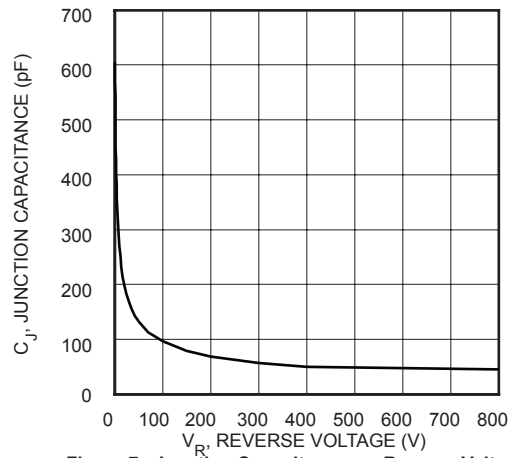
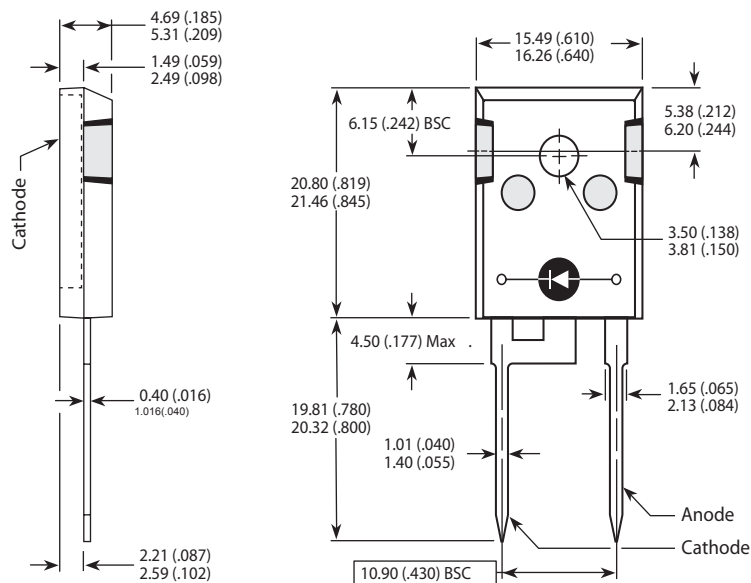


Figure 7. Junction Capacitance vs. Reverse Voltage

## TO-247 Package Outline



Dimensions in Millimeters and (Inches)

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