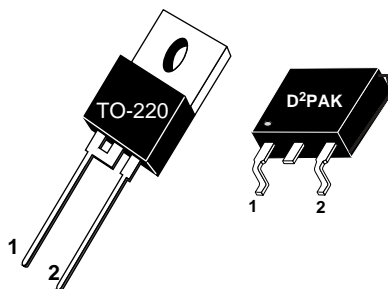


1 - Cathode
2 - Anode
Back of Case - Cathode



APT6SC60K 600V 6A

APT6SC60SA 600V 6A

SILICON CARBIDE SCHOTTKY RECTIFIER DIODE

PRODUCT APPLICATIONS	PRODUCT FEATURES	PRODUCT BENEFITS
<ul style="list-style-type: none"> • PFC And Forward Topologies • Hard Or Soft Switched Topologies • High Frequency High Performance 	<ul style="list-style-type: none"> • Schottky Barrier Majority Carrier Only • Wide Energy Gap • High Breakdown Electric Field • High Thermal Conductivity • High Pulse Capability • Positive Vf Temp Coefficient • Low Forward Voltage • No dv/dt Limitation • Popular TO-220 & TO-263 (D2) Surface Mount Package 	<ul style="list-style-type: none"> • Switching Losses Nearly Eliminated <i>zero recovery</i>TM • Greatly Reduced Turn On Loss • Improved Overall Efficiency • Enables Higher Freq. Operation • Simplify Or Eliminate Snubber Circuits • High Temperature Operation • Low Leakage Current • Radiation Hardness • High Power Density • Thermally Stable Paralleling

MAXIMUM RATINGS

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

Symbol	Characteristic / Test Conditions	APT6SC60K_SA	UNIT
V_R	Maximum D.C. Reverse Voltage	600	Volts
V_{RRM}	Maximum Peak Repetitive Reverse Voltage		
V_{RWM}	Maximum Working Peak Reverse Voltage		
$I_F(\text{AV})$	Maximum Average Forward Current ($T_C = 138^\circ\text{C}$, Duty Cycle = 0.5)	6	Amps
$I_F(\text{RMS})$	RMS Forward Current (Square wave, 50% duty)	13	
I_{FSM}	Non-Repetitive Forward Surge Current ($T_J = 25^\circ\text{C}$, $t_p = 10\mu\text{s}$)	210	
P_{TOT}	Power Dissipation ($T_C = 25^\circ\text{C}$)	83	Watts
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 175	$^\circ\text{C}$
T_L	Lead Temperature for 10 Sec.	300	

STATIC ELECTRICAL CHARACTERISTICS

Symbol		MIN	TYP	MAX	UNIT
V_F	Forward Voltage	$I_F = 6\text{A}, T_J = 25^\circ\text{C}$		1.6	Volts
		$I_F = 12\text{A}, T_J = 25^\circ\text{C}$		2.4	
		$I_F = 6\text{A}, T_J = 175^\circ\text{C}$		2.0	
I_{RM}	Maximum Reverse Leakage Current	$V_R = V_R \text{ Rated}, T_J = 25^\circ\text{C}$		200	μA
		$V_R = V_R \text{ Rated}, T_J = 175^\circ\text{C}$		1000	

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DYNAMIC CHARACTERISTICS

APT6SC60K_SA

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
C	Capacitance ($V_R = 400V$, $T_C = 25^\circ C$, $F = 1\text{ MHz}$)	-	30		pF
Q_C	Total Capacitive Charge ($V_R = 600V$, $I_F = 6A$, $di_F/dt = 500A/\mu s$, $T_C = 25^\circ C$)	-	17		nC
t_{fr}	Forward Recovery Time ^①		N/A		ns
t_{rr}	Reverse Recovery Time ^①		N/A		
dv/dt	Peak Diode Recovery ($V_R = 480V$, $di/dt = 1000A/\mu s$, $T_C = 25^\circ C$)	50			V/ns

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			1.8	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			80	
W_T	Package Weight		0.07		oz
			1.9		g
Torque	Maximum Mounting Torque			10	lb•in
				1.1	N•m

① As a majority carrier device, there is no reverse recovery charge.

APT Reserves the right to change, without notice, the specifications and information contained herein.

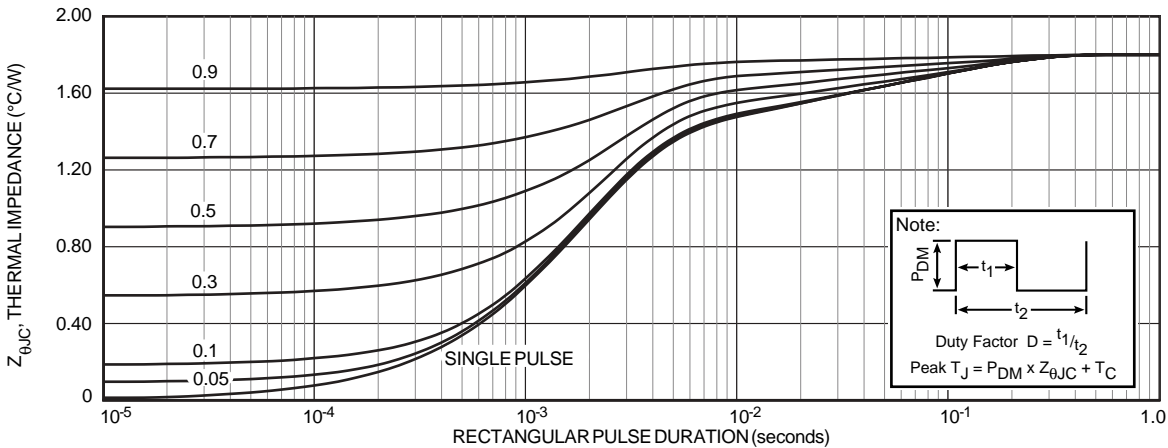


FIGURE 1a. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

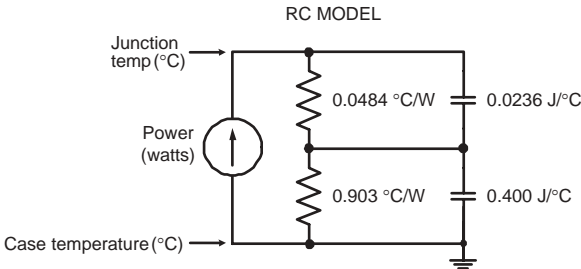


FIGURE 1b, TRANSIENT THERMAL IMPEDANCE MODEL

TYPICAL PERFORMANCE CURVES

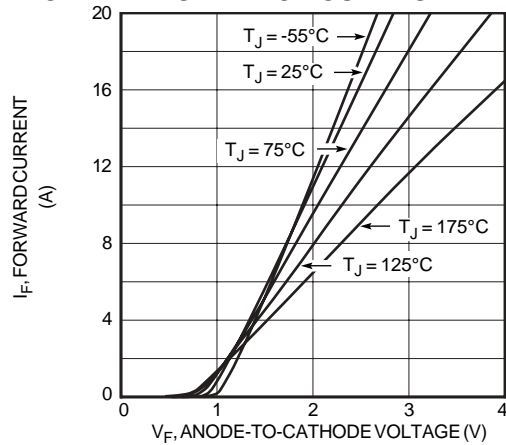


Figure 2. Forward Current vs. Forward Voltage

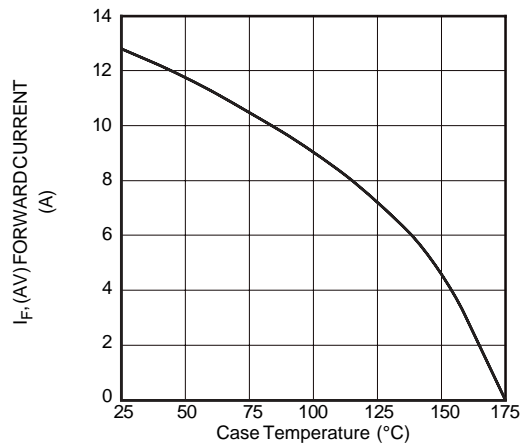


Figure 4. Current Derating

APT6SC60K_SA

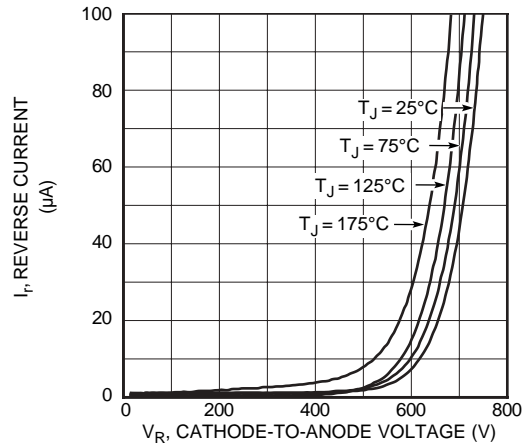


Figure 3. Reverse Current vs. Reverse Voltage

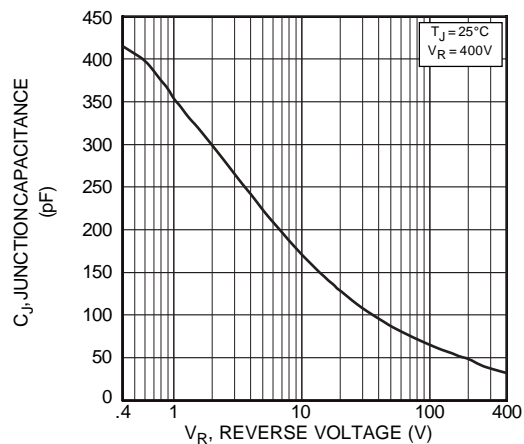
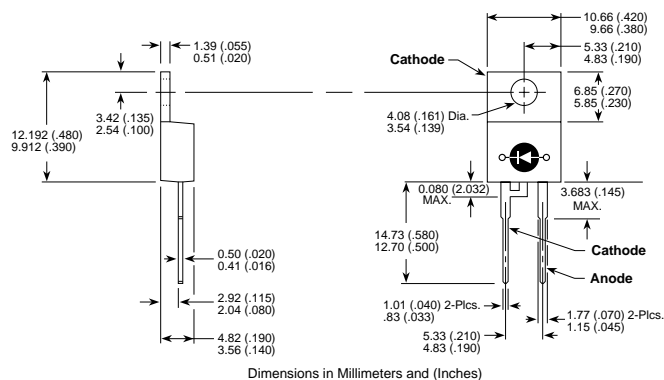


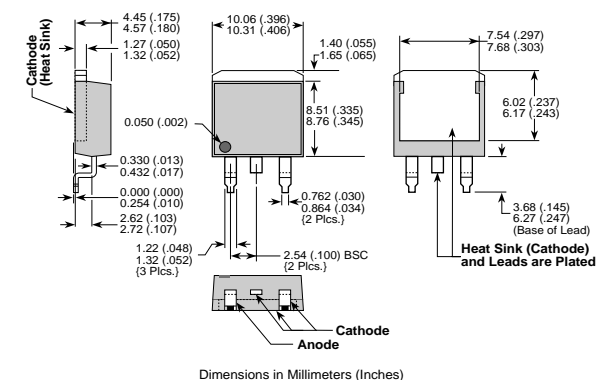
Figure 5. Junction Capacitance vs. Reverse Voltage

TO-220AB Package Outline



Dimensions in Millimeters and (Inches)

TO-263 (D²) Surface mount Package outline



Dimensions in Millimeters (Inches)

APT's products are covered by one or more of U.S. patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522

5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 and foreign patents. US and Foreign patents pending. All Rights Reserved.