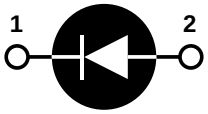
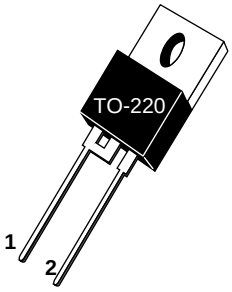


1 - Cathode
2 - Anode
Back of Case - Cathode



APT6SC60K 600V 6A
APT6SC60SA 600V 6A

SILICON CARBIDE SCHOTTKY RECTIFIER DIODE

PRODUCT APPLICATIONS	PRODUCT FEATURES	PRODUCT BENEFITS
• PFC And Forward Topologies	• Schottky Barrier Majority Carrier Only	• Switching Losses Nearly Eliminated *zero recovery*™
• Hard Or Soft Switched Topologies	• Wide Energy Gap	• Greatly Reduced Turn On Loss
• High Frequency High Performance	• High Breakdown Electric Field	• Improved Overall Efficiency
	• High Thermal Conductivity	• Enables Higher Freq. Operation
	• High Pulse Capability	• Simplify Or Eliminate Snubber Circuits
	• Positive Vf Temp Coefficient	• High Temperature Operation
	• Low Forward Voltage	• Low Leakage Current
	• No dv/dt Limitation	• Radiation Hardness
	• Popular TO-220 & TO-263 (D2) Surface Mount Package	• High Power Density
		• Thermally Stable Paralleling

MAXIMUM RATINGS All Ratings: T_C = 25°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(AV)	Maximum Average Forward Current (T_C =138°C, Duty Cycle = 0.5)	6	Amps
I_F(RMS)	RMS Forward Current (Square wave, 50% duty)	13	
I_{FSM}	Non-Repetitive Forward Surge Current (T_J = 25°C, t_p = 10µs)	210	
P_{TOT}	Power Dissipation (T_C = 25°C)	83	Watts
T_J,T_{STG}	Operating and StorageTemperature Range	-55 to 175	°C
T_L	Lead Temperature for 10 Sec.	300	

STATIC ELECTRICAL CHARACTERISTICS

Symbol			MIN	TYP	MAX	UNIT
V_F	Forward Voltage	I_F = 6A, T_J = 25°C		1.6	1.8	Volts
		I_F = 12A, T_J = 25°C		2.4		
		I_F = 6A, T_J = 175°C		2.0	2.4	
I_{RM}	Maximum Reverse Leakage Current	V_R = V_R Rated, T_J = 25°C			200	µA
		V_R = V_R Rated, T_J = 175°C			1000	

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050-7506 Rev B 2-2004

DYNAMIC CHARACTERISTICS

APT6SC60K_SA

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
C	Capacitance (V_R = 400V, T_C = 25°C, F = 1 MHz)	-	30		pF
Q_C	Total Capacitive Charge (V_R = 600V, I_F = 6A, di_F/dt = 500A/µs, T_C = 25°C)	-	17		nC
t_{fr}	Forward Recovery Time①		N/A		ns
t_{rr}	Reverse Recovery Time①		N/A		
$^{dv}/_{dt}$	Peak Diode Recovery (V_R = 480V, di/dt = 1000A/µs, T_C = 25°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	°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.

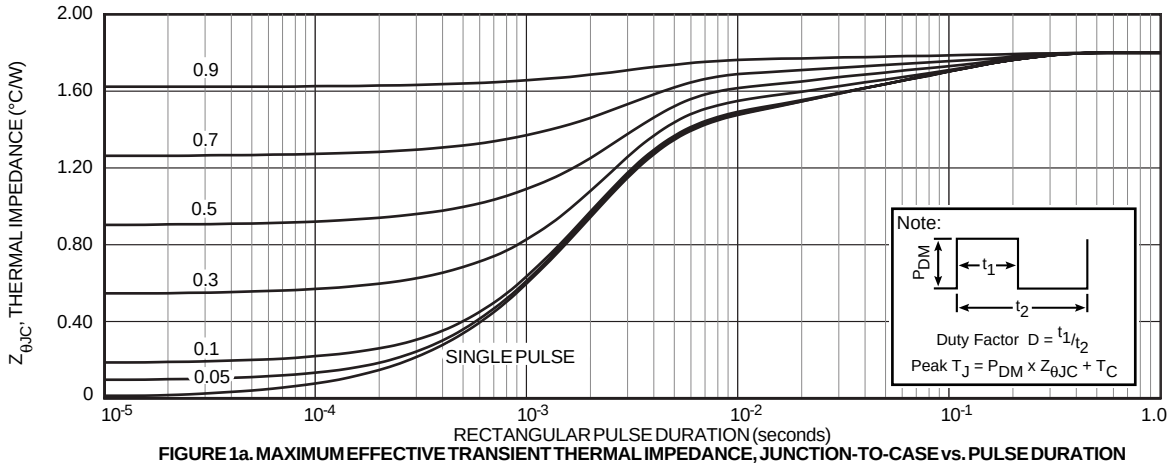


FIGURE 1a. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

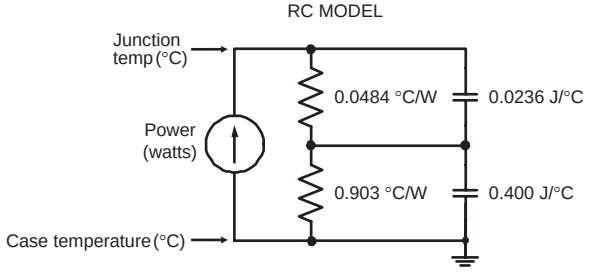


FIGURE 1b, TRANSIENT THERMAL IMPEDANCE MODEL

TYPICAL PERFORMANCE CURVES

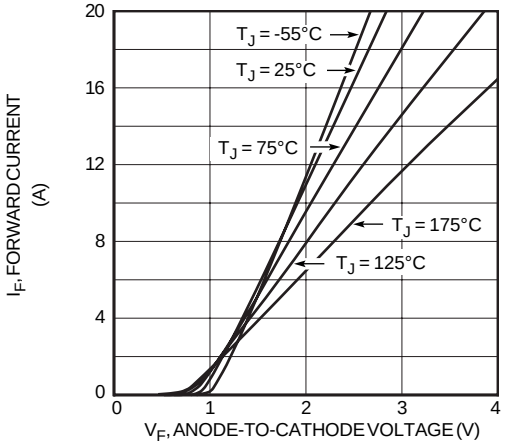


Figure 2. Forward Current *vs.* Forward Voltage

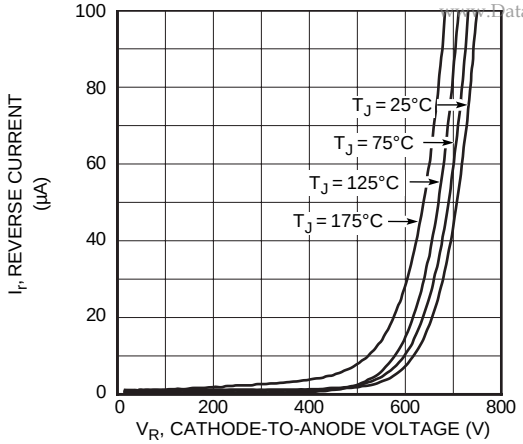


Figure 3. Reverse Current *vs.* Reverse Voltage

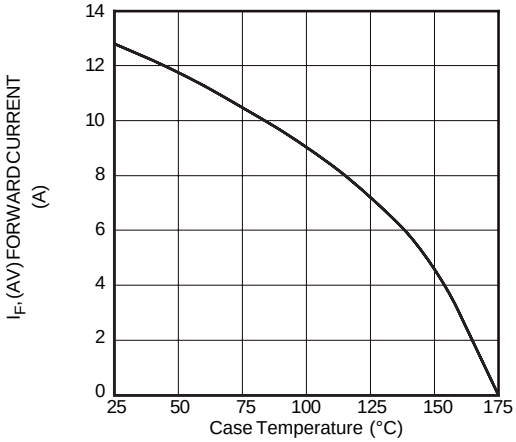


Figure 4. Current Derating

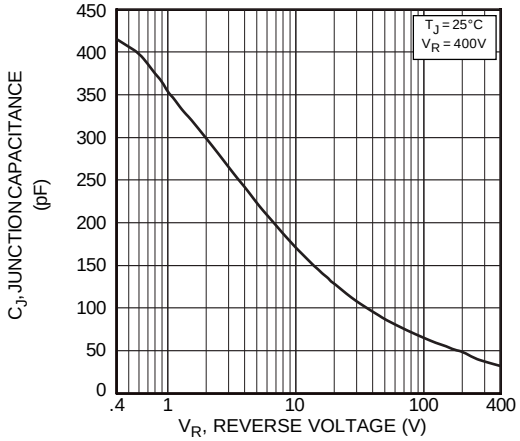
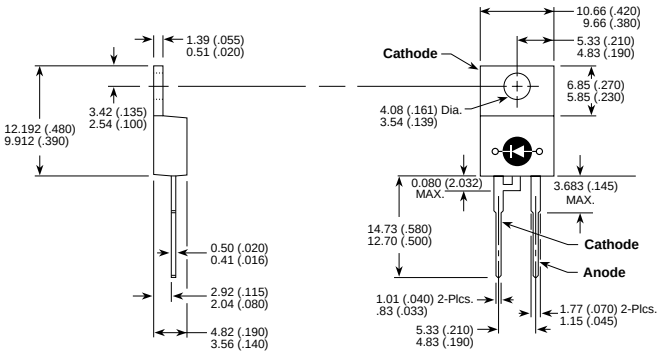


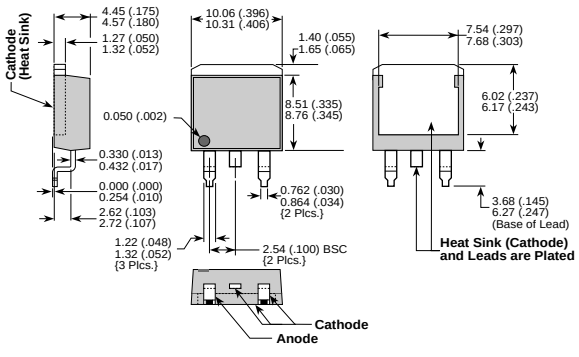
Figure 5. Junction Capacitance *vs.* Reverse Voltage

TO-220AB Package Outline



Dimensions in Millimeters and (Inches)

TO-263 (D^2) Surface mount Package outline



Dimensions in Millimeters (Inches)