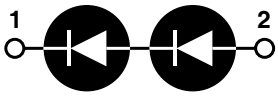
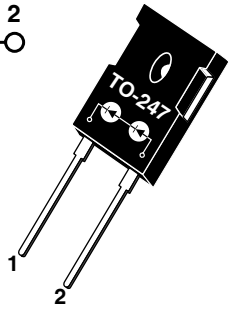
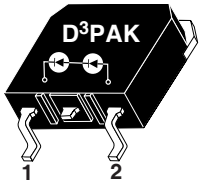


1 - Cathode 2
2 - Anode 1





Microsemi
POWER PRODUCTS GROUP

APT15DS60BG 600V 13A
APT15DS60SG 600V 13A

*G Denotes RoHS Compliant, Pb Free Terminal Finish.

2-300V HIGH FREQUENCY SOFT RECOVERY RECTIFIER DIODES IN SERIES

PRODUCT APPLICATIONS	PRODUCT FEATURES	PRODUCT BENEFITS
• Anti-Parallel Diode -Switchmode Power Supply -Inverters	• Ultrafast Recovery Times	• Low Losses
• Free Wheeling Diode -Motor Controllers -Converters	• Soft Recovery Characteristics	• Low Noise Switching
• Snubber Diode	• Popular TO-247 Package or Surface Mount D³PAK Package	• Cooler Operation
• Uninterruptible Power Supply (UPS)	• Low Forward Voltage	• Higher Reliability Systems
• Induction Heating	• High Blocking Voltage	• Increased System Power Density
• High Speed Rectifiers	• Low Leakage Current	

MAXIMUM RATINGS

All Ratings: T_C = 25°C unless otherwise specified.

Symbol	Characteristic / Test Conditions	APT15DS60B_SG	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 = 77°C, Duty Cycle = 0.5)	13	Amps
$I_F(RMS)$	RMS Forward Current (Square wave, 50% duty)	17	
I_{FSM}	Non-Repetitive Forward Surge Current (T_J = 45°C, 8.3ms)	110	
T_J,T_{STG}	Operating and StorageTemperature Range	-55 to 150	°C
T_L	Lead Temperature for 10 Sec.	300	

STATIC ELECTRICAL CHARACTERISTICS

Symbol			MIN	TYP	MAX	UNIT
V_F	Forward Voltage	I_F = 15A		3.2	4.0	Volts
		I_F = 30A		4.2		
		I_F = 15A, T_J = 125°C		2.4		
I_{RM}	Maximum Reverse Leakage Current	V_R = 600V			150	µA
		V_R = 600V, T_J = 125°C			500	
C_T	Junction Capacitance, V_R = 200V			24		pF

053-3006 Rev C 2-2007

DYNAMIC CHARACTERISTICS

APT15DS60B_SG

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
t_{rr}	Reverse Recovery Time	I_F = 1A, di_F/dt = -100A/µs, V_R = 30V, T_J = 25°C	-	13		ns
t_{rr}	Reverse Recovery Time	I_F = 15A, di_F/dt = -200A/µs, V_R = 400V, T_C = 25°C	-	14		ns
Q_{rr}	Reverse Recovery Charge		-	12		nC
I_{RRM}	Maximum Reverse Recovery Current		-	1.5	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 15A, di_F/dt = -200A/µs, V_R = 400V, T_C = 125°C	-	31		ns
Q_{rr}	Reverse Recovery Charge		-	85		nC
I_{RRM}	Maximum Reverse Recovery Current		-	4.7	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 15A, di_F/dt = -1000A/µs, V_R = 400V, T_C = 125°C	-	20		ns
Q_{rr}	Reverse Recovery Charge		-	160		nC
I_{RRM}	Maximum Reverse Recovery Current		-	18		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			1.5	°C/W
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			40	°C/W
W_T	Package Weight		0.22		oz
			5.9		g
Torque	Maximum Mounting Torque			10	lb•in
				1.1	N•m

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

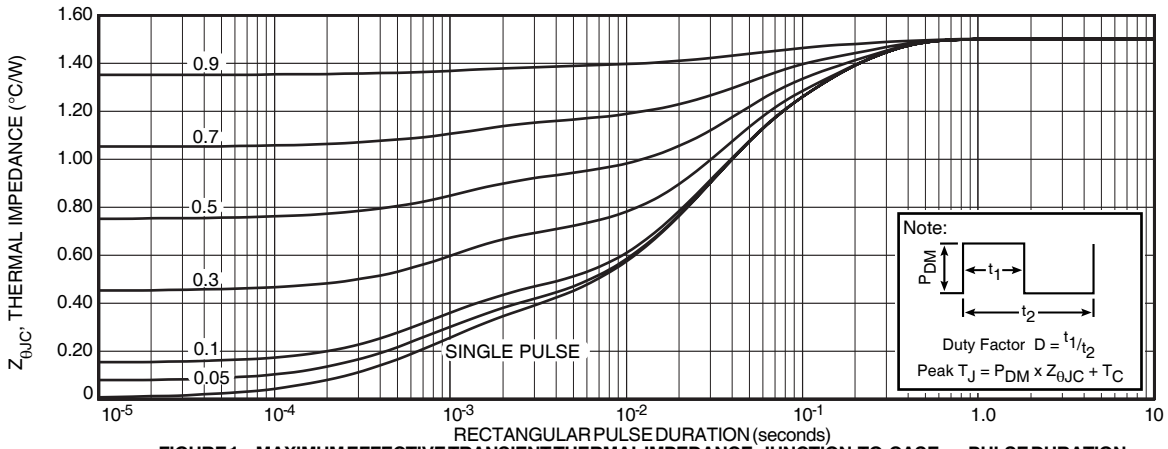


FIGURE 1a. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

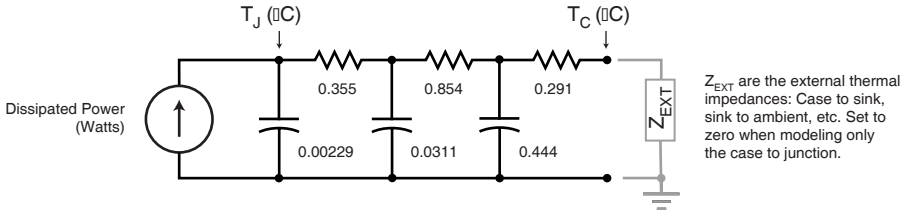


FIGURE 1b, TRANSIENT THERMAL IMPEDANCE MODEL

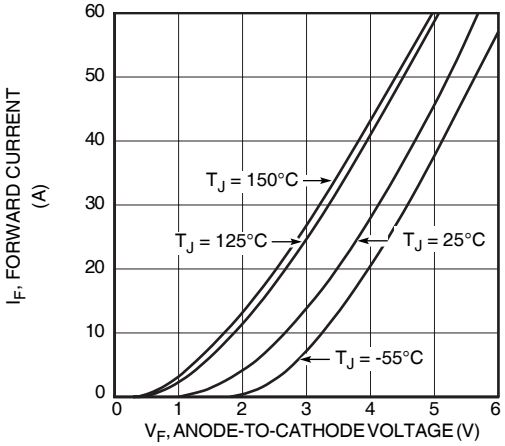


Figure 2. Forward Current *vs.* Forward Voltage

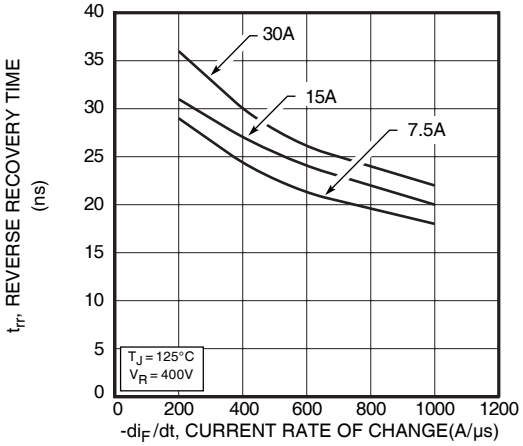


Figure 3. Reverse Recovery Time *vs.* Current Rate of Change

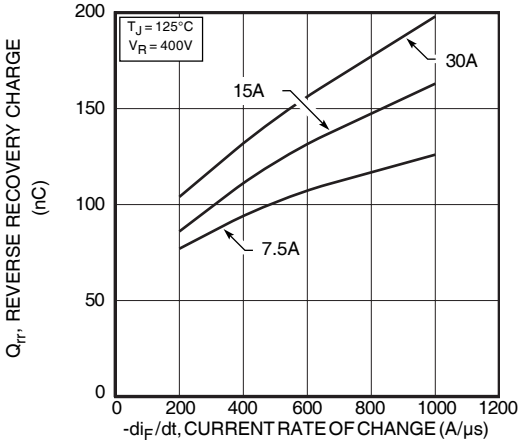


Figure 4. Reverse Recovery Charge *vs.* Current Rate of Change

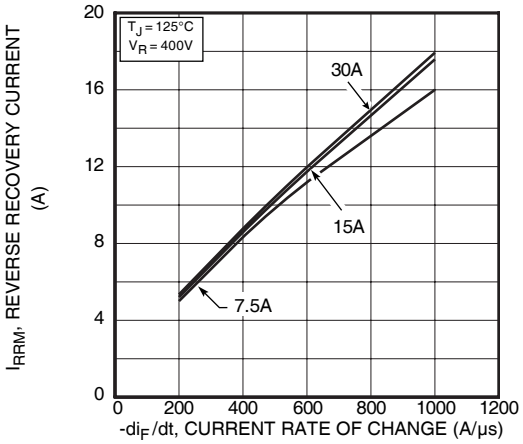


Figure 5. Reverse Recovery Current *vs.* Current Rate of Change

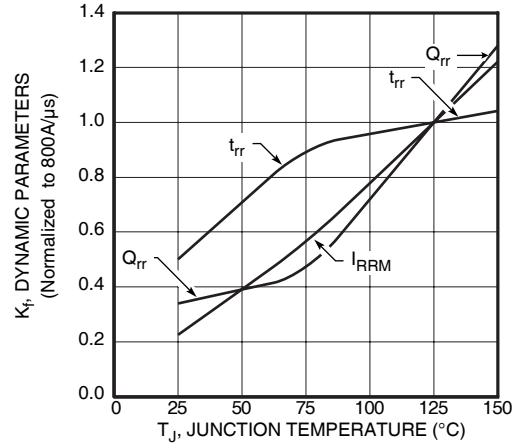


Figure 6. Dynamic Parameters *vs.* Junction Temperature

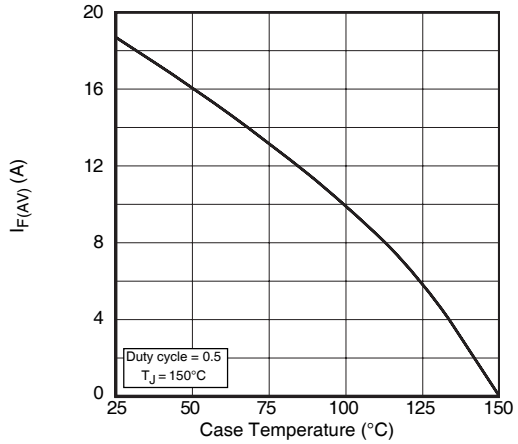


Figure 7. Maximum Average Forward Current *vs.* CaseTemperature

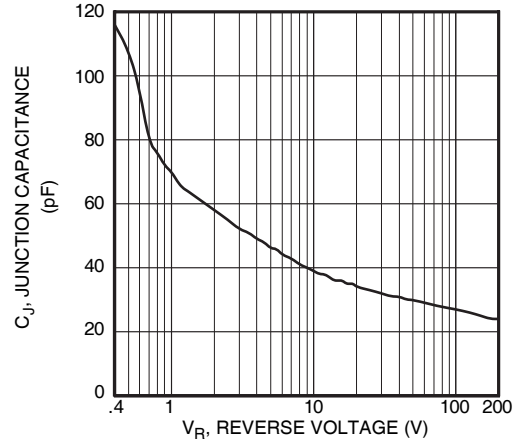


Figure 8. Junction Capacitance *vs.* Reverse Voltage

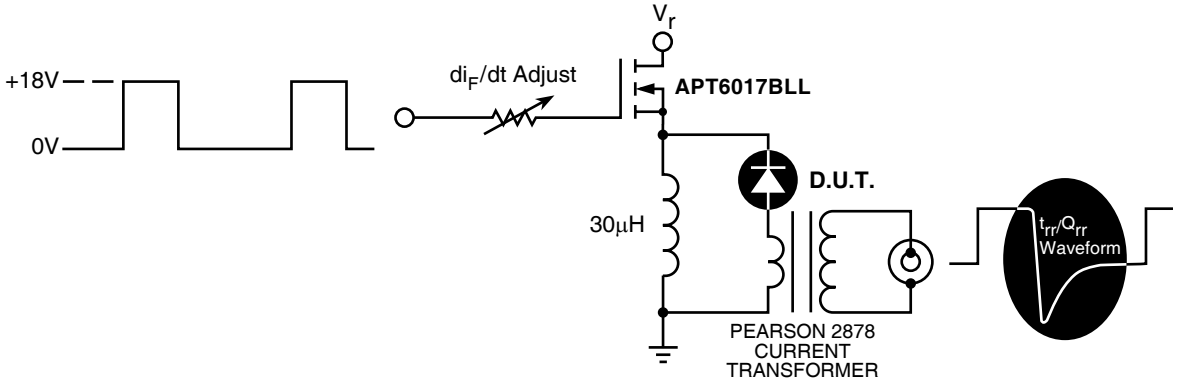
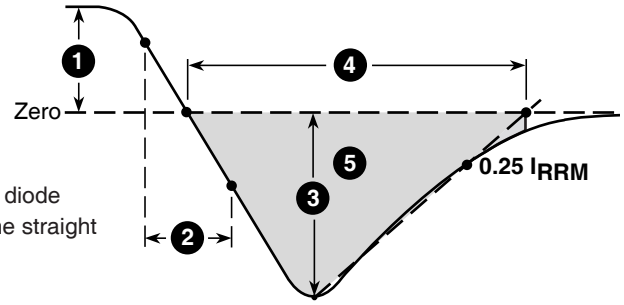


Figure 9. Diode Test Circuit

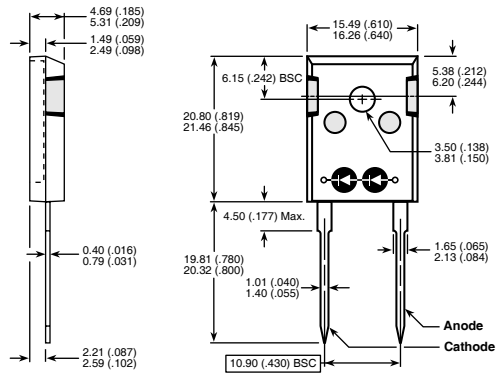


1. I_F - Forward Conduction Current
2. di_F/dt - Rate of Diode Current Change Through Zero Crossing.
3. I_{RRM} - Maximum Reverse Recovery Current.
4. t_{rr} - Reverse Recovery Time, measured from zero crossing where diode current goes from positive to negative, to the point at which the straight line through I_{RRM} and $0.25 \bullet I_{RRM}$ passes through zero.
5. Q_{rr} - Area Under the Curve Defined by I_{RRM} and t_{rr}.

Figure 10, Diode Reverse Recovery Waveform and Definitions

e1 SAC: Tin, Silver, Copper

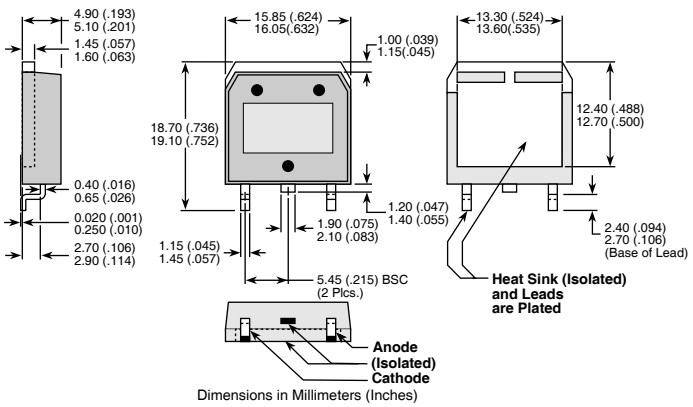
TO-247 Package Outline



Dimensions in Millimeters and (Inches)

e3 100% Sn

D^3PAK Package Outline



Dimensions in Millimeters (Inches)

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