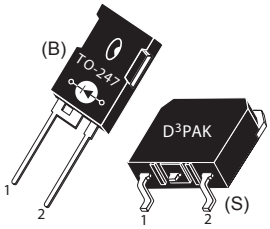
APT100DL60B(G)
APT100DL60S(G)
600V 100A

*G Denotes RoHS Compliant, Pb Free Terminal Finish.

Ultrasoft Recovery Rectifier Diode



PRODUCT APPLICATIONS

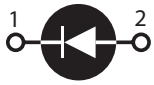
- Anti-Parallel Diode
  - -Switchmode Power Supply
  - -Inverters
- Applications
  - - Induction Heating
- Resonant Mode Circuits
  - -ZVS and ZCS Topologies
  - - Phase Shifted Bridge

PRODUCT FEATURES

- Ultrasoft Recovery Times (t_{rr})
- Popular TO-247 Package or Surface Mount D³PAK Package
- Ultra Low Forward Voltage
- Low Leakage Current

PRODUCT BENEFITS

- Soft Switching - High Q_{rr}
- Low Noise Switching
  - - Reduced Ringing
- Higher Reliability Systems
- Minimizes or eliminates snubber



1 - Cathode
2 - Anode
Back of Case - Cathode

MAXIMUM RATINGS

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

Symbol	Characteristic / Test Conditions	Ratings	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 ① (T_C = 124°C, Duty Cycle = 0.5)	100	Amps
$I_{F(RMS)}$	RMS Forward Currrent (Square wave, 50% duty)	131	
I_{FSM}	Non-Repetitive Forward Surge Current (T_J = 45°C, 8.3 ms)	600	
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 175	°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 = 100A		1.25	1.6	Volts
		I_F = 200A		2.0		
		I_F = 100A, T_J = 125°C		1.28		
I_{RM}	Maximum Reverse Leakage Current	V_R = 600V			25	µA
		V_R = 600V, T_J = 125°C			250	
C_T	Junction Capacitance, V_R = 200V			97		pF

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DYNAMIC CHARACTERISTICS

APT100DL60B_S(G)

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		45		ns
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -200A/µs V_R = 400V, T_C = 25°C		487		ns
Q_{rr}	Reverse Recovery Charge			2328		nC
I_{RRM}	Maximum Reverse Recovery Current			11		Amps
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -200A/µs V_R = 400V, T_C = 125°C		716		ns
Q_{rr}	Reverse Recovery Charge			5954		nC
I_{RRM}	Maximum Reverse Recovery Current			18		Amps
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -1000A/µs V_R = 400V, T_C = 125°C		333		ns
Q_{rr}	Reverse Recovery Charge			10002		nC
I_{RRM}	Maximum Reverse Recovery Current			49		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	Min	Typ	Max	Unit
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			0.34	°C/W
W_T	Package Weight		0.22		oz
			5.9		g
Torque	Maximum Mounting Torque			10	lb·in
				1.1	N·m

① Continuous current limited by package lead temperature.

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

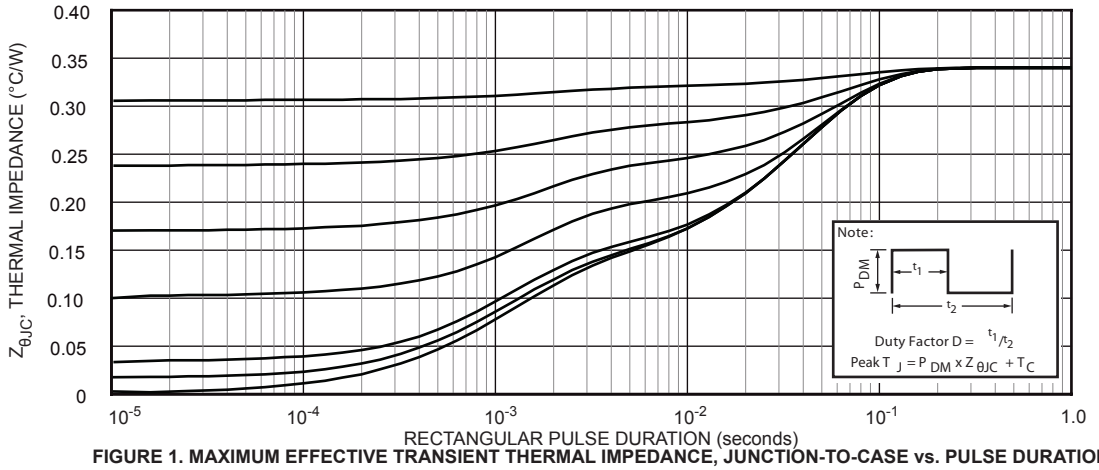

FIGURE 1. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

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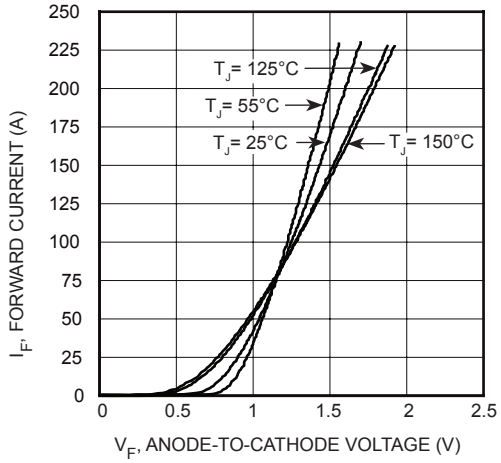

FIGURE 2, Forward Current vs. Forward Voltage

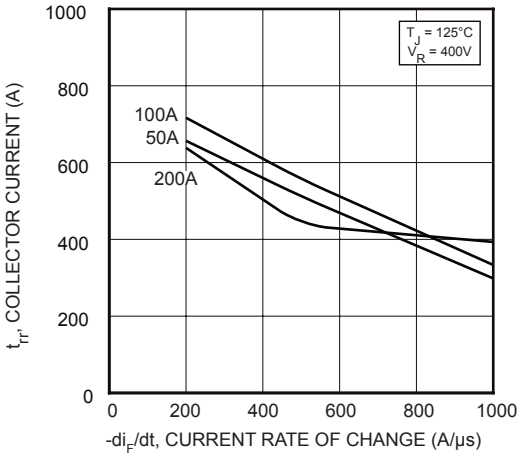

FIGURE 3, Reverse Recovery Time vs. Current Rate of Change

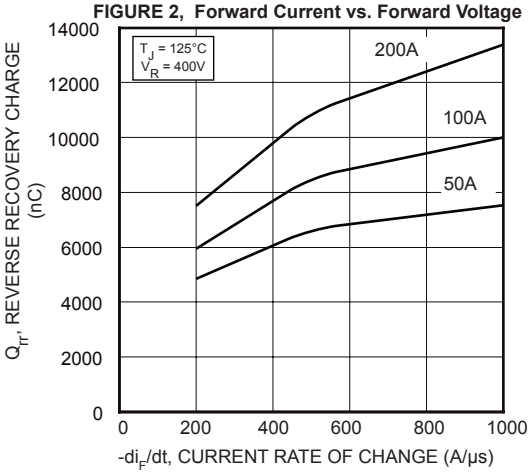

FIGURE 4, Reverse Recovery Charge vs. Current Rate of Change

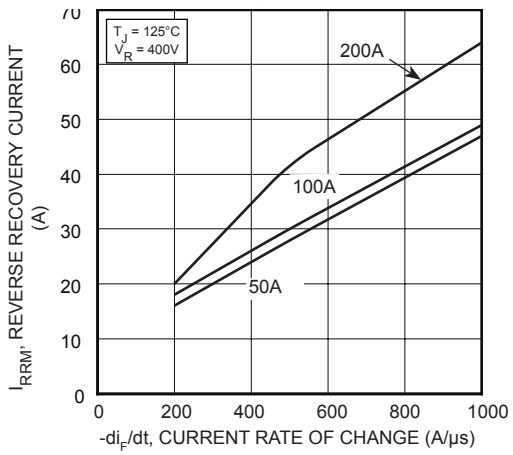

FIGURE 5, Reverse Recovery Current vs. Current Rate of Change

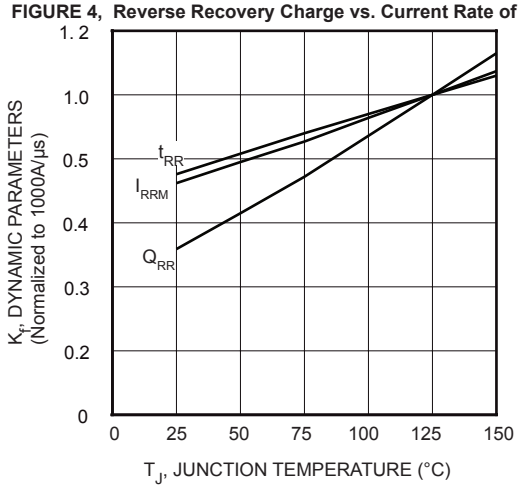

FIGURE 6, Dynamic Parameters vs Junction Temperature

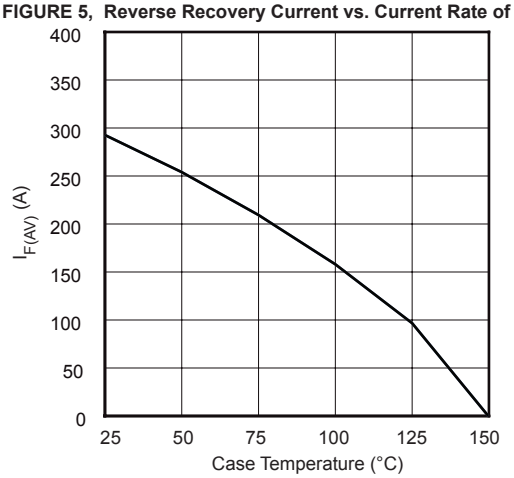

FIGURE 7, Maximum Average Forward Current vs. Case Temperature

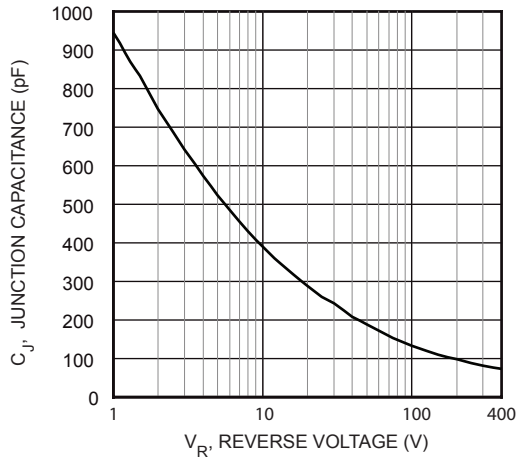

FIGURE 8, Junction Capacitance vs. Reverse Voltage

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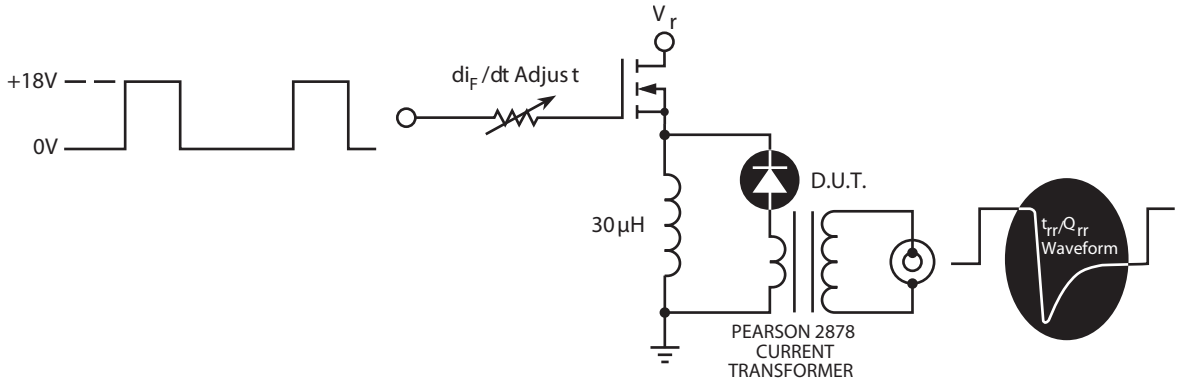


Figure 9. Diode Test Circuit

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, I_{RRM} passes through zero.
5. Q_{rr} - Area Under the Curve Defined by I_{RRM} and t_{RR}.

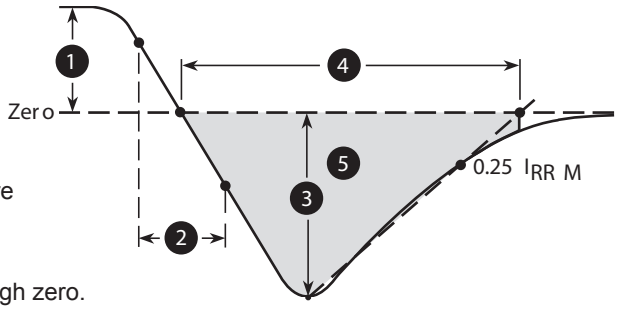
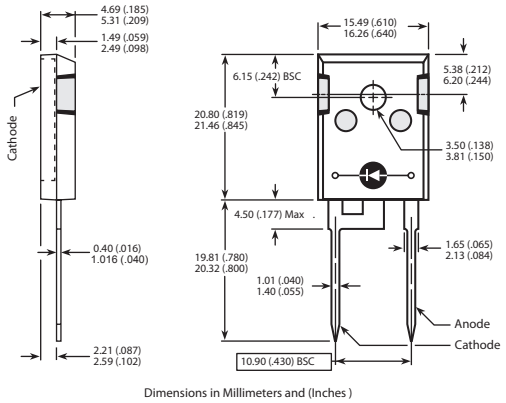


Figure 10. Diode Reverse Recovery Waveform Definition

TO-247 Package Outline

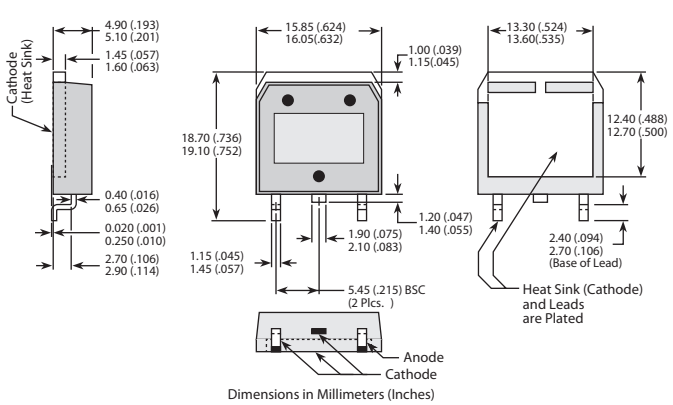
e1 SAC: Tin, Silver, Copper



Dimensions in Millimeters and (Inches)

D³PAK Package Outline

e3 100% Sn



Dimensions in Millimeters (Inches)

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