



ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

PRODUCT APPLICATIONS

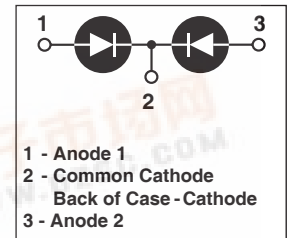
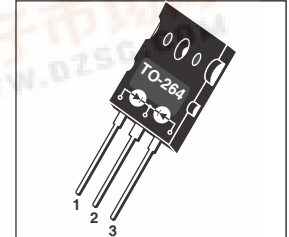
- Anti-Parallel Diode
 - Switchmode Power Supply
 - Inverters
- Free Wheeling Diode
 - Motor Controllers
 - Converters
 - Inverters
- Snubber Diode
- PFC

PRODUCT FEATURES

- Ultrafast Recovery Times
- Soft Recovery Characteristics
- Popular TO-264 Package
- Low Forward Voltage
- Low Leakage Current

PRODUCT BENEFITS

- Low Losses
- Low Noise Switching
- Cooler Operation
- Higher Reliability Systems
- Increased System Power Density



MAXIMUM RATINGS

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

Symbol	Characteristic / Test Conditions	APT60D30LCT(G)	UNIT
V_R	Maximum D.C. Reverse Voltage	300	Volts
V_{RRM}	Maximum Peak Repetitive Reverse Voltage		
V_{RWM}	Maximum Working Peak Reverse Voltage		
$I_{F(AV)}$	Maximum Average Forward Current ($T_C = 143^\circ\text{C}$, Duty Cycle = 0.5)	60	Amps
$I_{F(AV)}$	RMS Forward Current (Square wave, 50% duty)	142	
I_{FSM}	Non-Repetitive Forward Surge Current ($T_J = 45^\circ\text{C}$, 8.3ms)	600	
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	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
V_F	Forward Voltage		$I_F = 60\text{A}$	1.2	Volts
			$I_F = 120\text{A}$	1.5	
			$I_F = 60\text{A}, T_J = 125^\circ\text{C}$	1.0	
I_{RM}	Maximum Reverse Leakage Current		$V_R = V_R \text{ Rated}$	250	μA
			$V_R = V_R \text{ Rated}, T_J = 125^\circ\text{C}$	500	
C_T	Junction Capacitance, $V_R = 200\text{V}$		150		pF

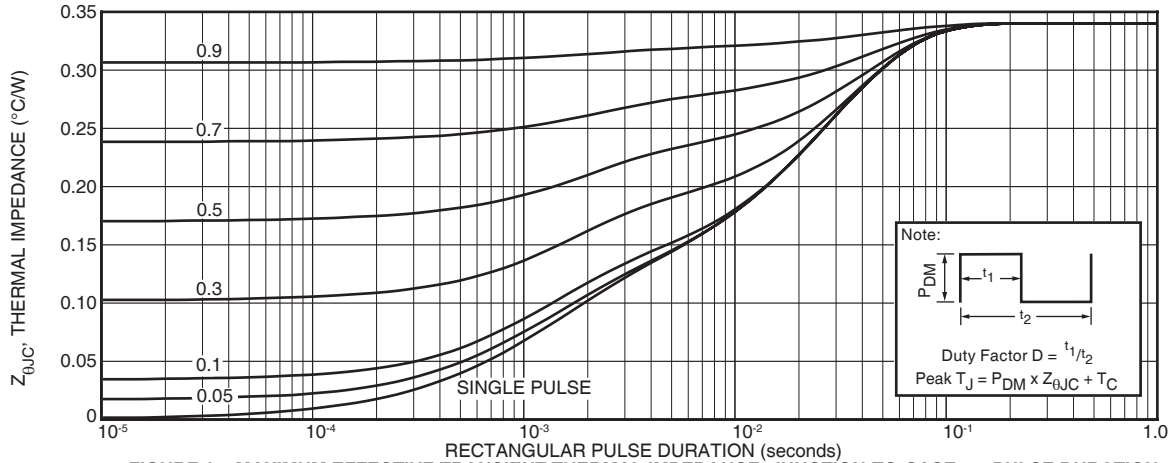
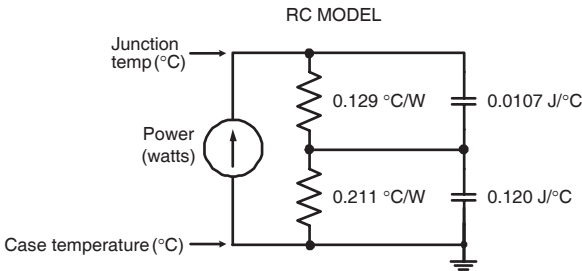
DYNAMIC CHARACTERISTICS**APT60D30LCT(G)**

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
t_{rr}	Reverse Recovery Time	$I_F = 1A, di_F/dt = -100A/\mu s, V_R = 30V, T_J = 25^\circ C$	-	29		ns
t_{rr}	Reverse Recovery Time		-	38		
Q_{rr}	Reverse Recovery Charge	$I_F = 60A, di_F/dt = -200A/\mu s, V_R = 200V, T_C = 25^\circ C$	-	75		nC
I_{RRM}	Maximum Reverse Recovery Current		-	4	-	Amps
t_{rr}	Reverse Recovery Time	$I_F = 60A, di_F/dt = -200A/\mu s, V_R = 200V, T_C = 125^\circ C$	-	80		ns
Q_{rr}	Reverse Recovery Charge		-	370		nC
I_{RRM}	Maximum Reverse Recovery Current		-	8	-	Amps
t_{rr}	Reverse Recovery Time	$I_F = 60A, di_F/dt = -800A/\mu s, V_R = 200V, T_C = 125^\circ C$	-	55		ns
Q_{rr}	Reverse Recovery Charge		-	740		nC
I_{RRM}	Maximum Reverse Recovery Current		-	23		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			.34	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			40	
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**

TYPICAL PERFORMANCE CURVES

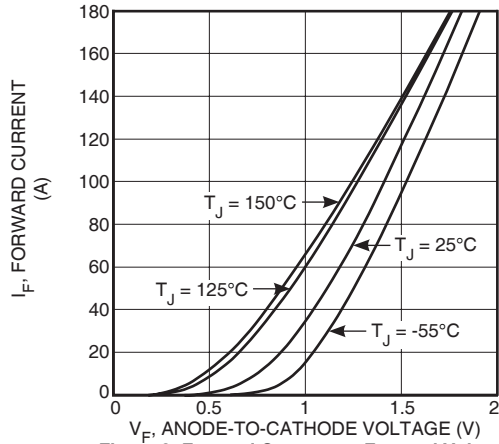


Figure 2. Forward Current vs. Forward Voltage

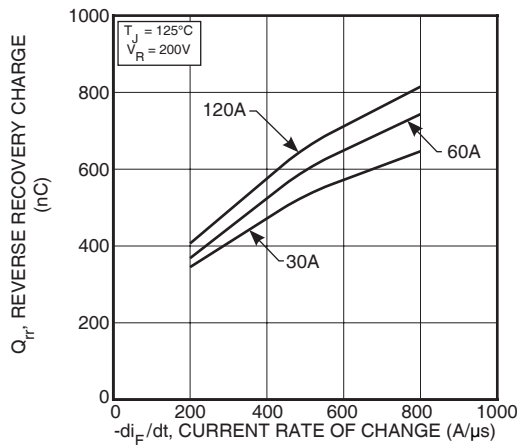


Figure 4. Reverse Recovery Charge vs. Current Rate of Change

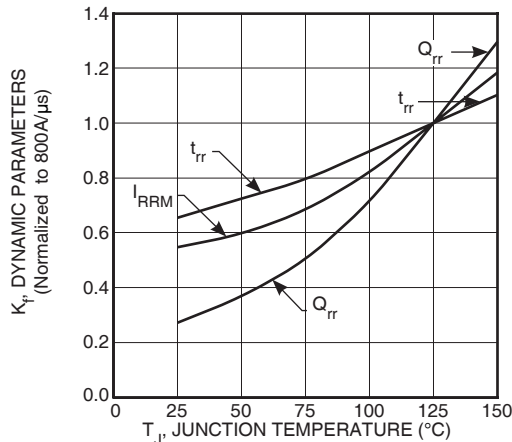


Figure 6. Dynamic Parameters vs. Junction Temperature

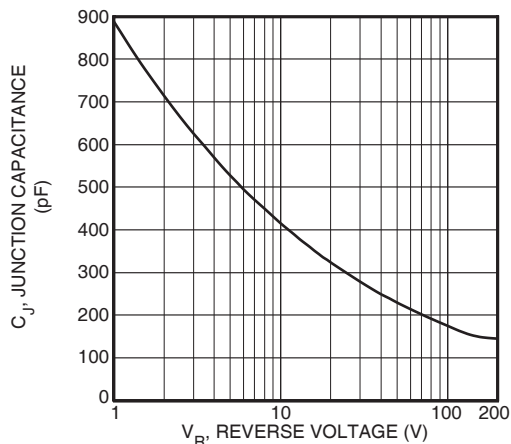


Figure 8. Junction Capacitance vs. Reverse Voltage

APT60D30LCT(G)

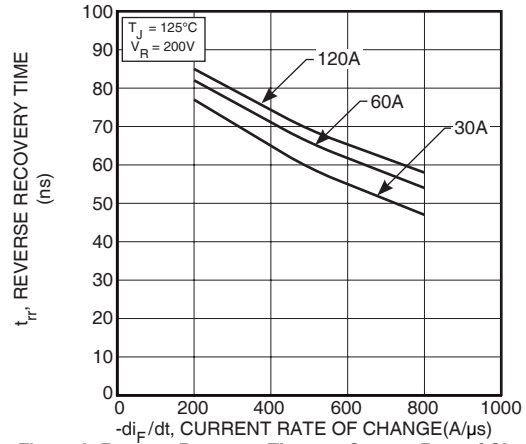


Figure 3. Reverse Recovery Time vs. Current Rate of Change

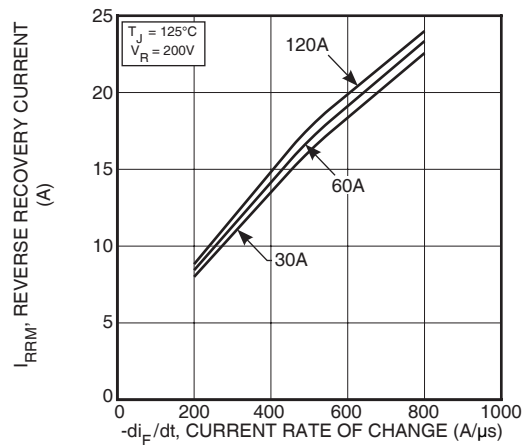


Figure 5. Reverse Recovery Current vs. Current Rate of Change

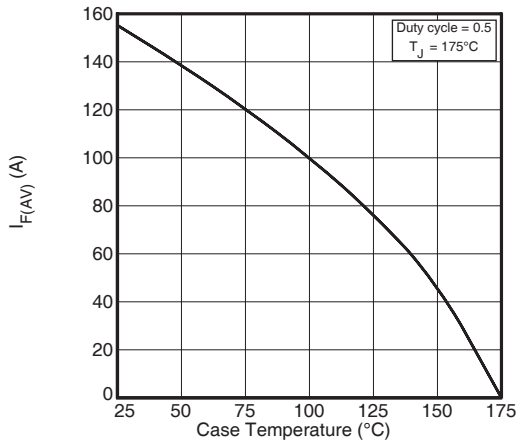


Figure 7. Maximum Average Forward Current vs. Case Temperature

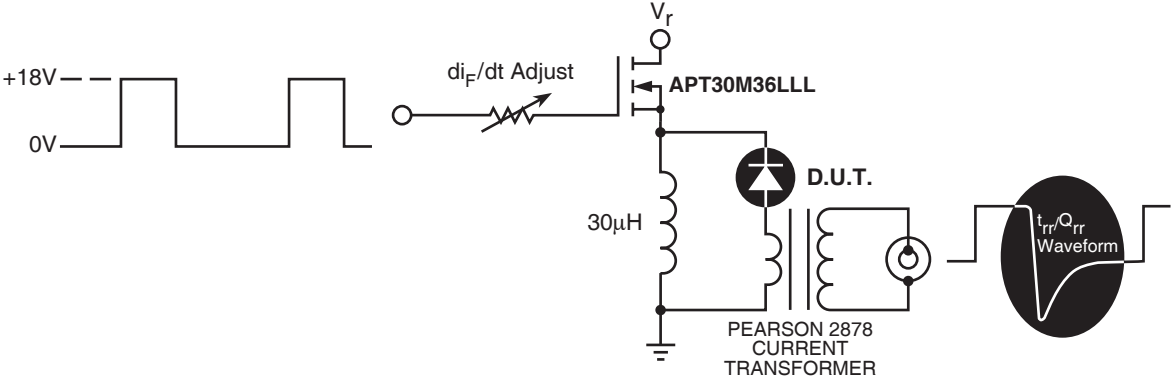


Figure 9. Diode Test Circuit

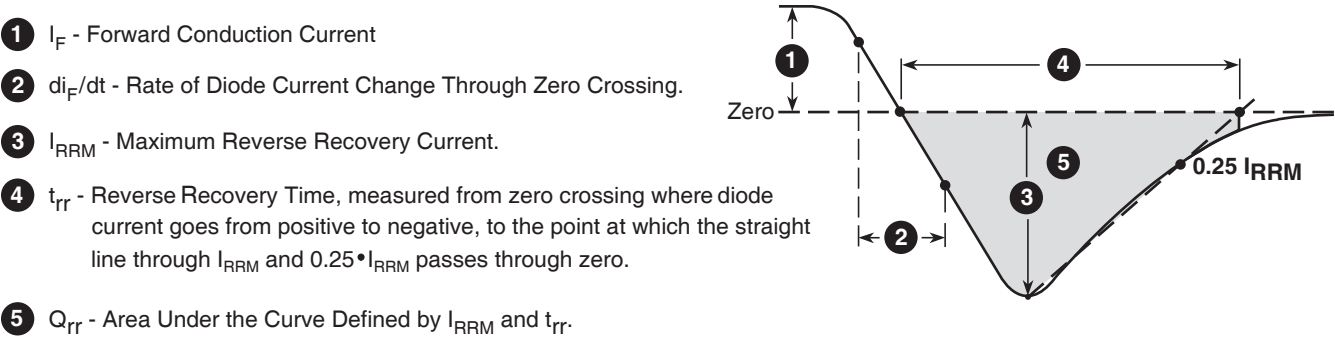
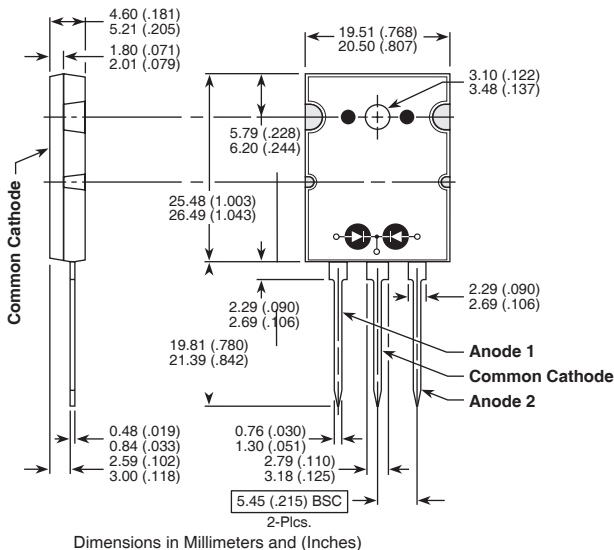


Figure 10, Diode Reverse Recovery Waveform and Definitions

TO-264 (LCT) Package Outline

(e1) SAC: Tin, Silver, Copper



Dimensions in Millimeters and (Inches)