Anti-Parallel
APT2X100D60J

Parallel
APT2X101D60J

ADVANCED POWER TECHNOLOGY®
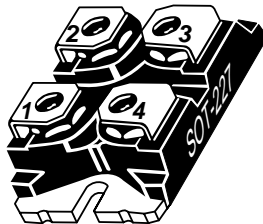
APT2X101D60J   600V   100A
APT2X100D60J   600V   100A

DUAL DIE ISOTOP® PACKAGE
ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

PRODUCT APPLICATIONS	PRODUCT FEATURES	PRODUCT BENEFITS
• Anti-Parallel Diode 　-Switchmode Power Supply 　-Inverters • Free Wheeling Diode 　-Motor Controllers 　-Converters • Snubber Diode • Uninterruptible Power Supply (UPS) • Induction Heating • High Speed Rectifiers	• Ultrafast Recovery Times • Soft Recovery Characteristics • Popular SOT-227 Package • Low Forward Voltage • High Blocking Voltage • Low Leakage Current	• Low Losses • Low Noise Switching • Cooler Operation • Higher Reliability Systems • Increased System Power Density

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

Symbol	Characteristic / Test Conditions	APT2X101_100D60J	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 = 87°C, Duty Cycle = 0.5)	100	Amps
$I_F(RMS)$	RMS Forward Current (Square wave, 50% duty)	141	
I_{FSM}	Non-Repetitive Forward Surge Current (T_J = 45°C, 8.3ms)	1000	
T_J, T_{STG}	Operating and StorageTemperature Range	-55 to 150	°C

STATIC ELECTRICAL CHARACTERISTICS

Symbol			MIN	TYP	MAX	UNIT
V_F	Forward Voltage	I_F = 100A		1.6	1.8	Volts
		I_F = 200A		1.9		
		I_F = 100A, T_J = 125°C		1.4		
I_{RM}	Maximum Reverse Leakage Current	V_R = V_R Rated			250	μA
		V_R = V_R Rated, T_J = 125°C			500	
C_T	Junction Capacitance, V_R = 200V			170		pF

APT Website - http://www.advancedpower.com

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DYNAMIC CHARACTERISTICS

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
t_{rr}	Reverse Recovery Time	$I_F = 1A$, $di_F/dt = -100A/\mu s$, $V_R = 30V$, $T_J = 25°C$	-	34		ns
t_{rr}	Reverse Recovery Time	$I_F = 100A$, $di_F/dt = -200A/\mu s$ $V_R = 400V$, $T_C = 25°C$	-	180		ns
Q_{rr}	Reverse Recovery Charge		-	390		nC
I_{RRM}	Maximum Reverse Recovery Current		-	5	-	Amps
t_{rr}	Reverse Recovery Time	$I_F = 100A$, $di_F/dt = -200A/\mu s$ $V_R = 400V$, $T_C = 125°C$	-	220		ns
Q_{rr}	Reverse Recovery Charge		-	1450		nC
I_{RRM}	Maximum Reverse Recovery Current		-	13	-	Amps
t_{rr}	Reverse Recovery Time	$I_F = 100A$, $di_F/dt = -1000A/\mu s$ $V_R = 400V$, $T_C = 125°C$	-	110		ns
Q_{rr}	Reverse Recovery Charge		-	2550		nC
I_{RRM}	Maximum Reverse Recovery Current		-	40		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			.33	°C/W
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			20	°C/W
W_T	Package Weight		1.03		oz
			29.2		g
Torque	Maximum Terminal & Mounting Torque			10	lb•in
				1.1	N•m

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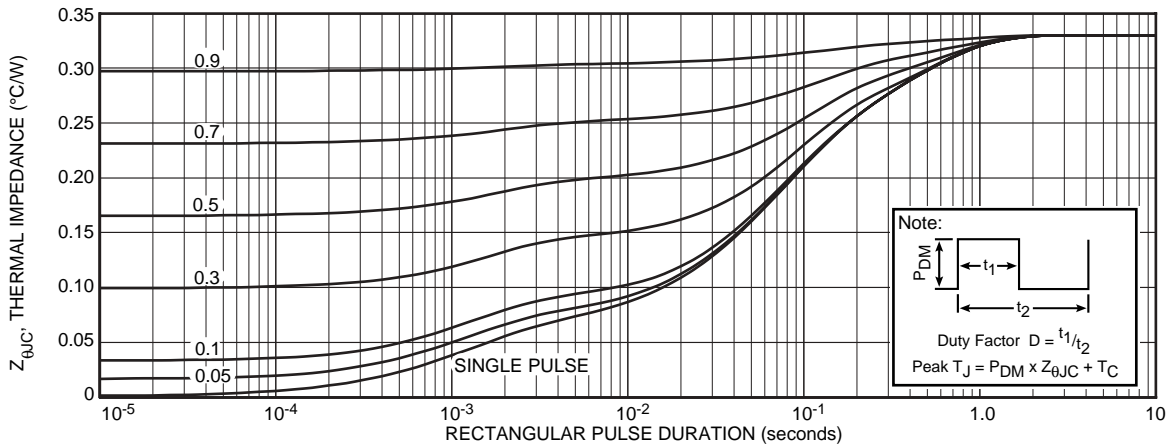

FIGURE 1a. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION
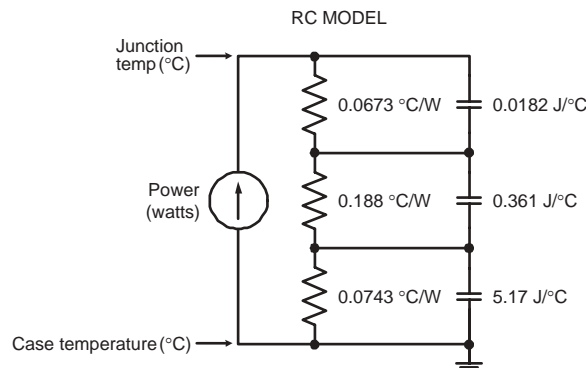
RC MODEL

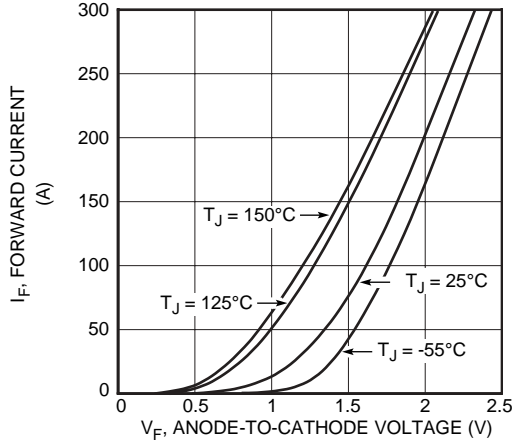**FIGURE 1b, TRANSIENT THERMAL IMPEDANCE MODEL**

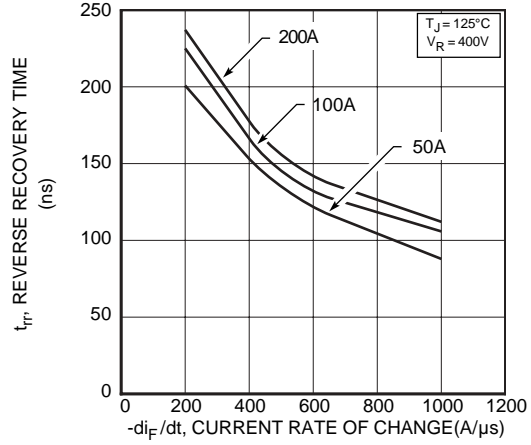**Figure 2. Forward Current *vs.* Forward Voltage**

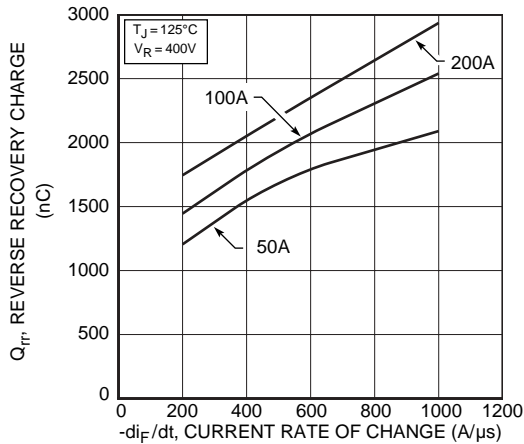**Figure 3. Reverse Recovery Time *vs.* Current Rate of Change**

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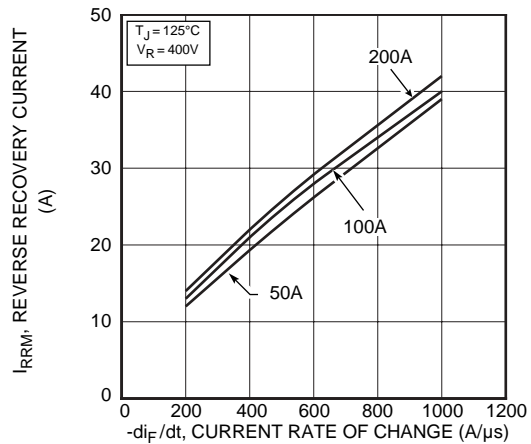

Figure 5. Reverse Recovery Current *vs.* Current Rate of Change
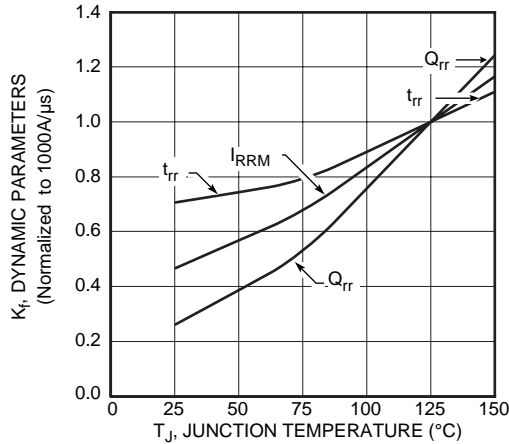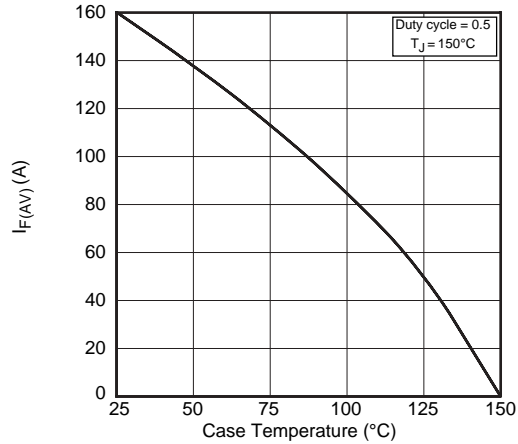

Figure 6. Dynamic Parameters *vs.* Junction Temperature

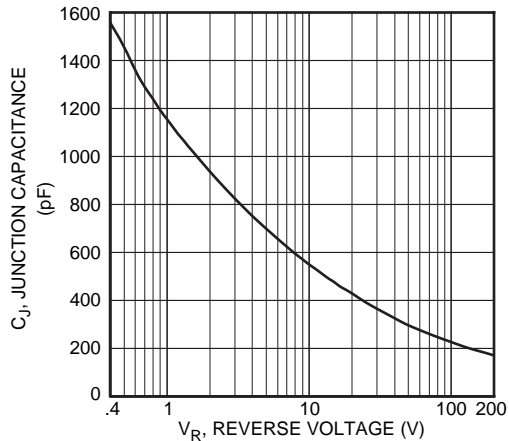**Figure 7. Maximum Average Forward Current *vs.* CaseTemperature**

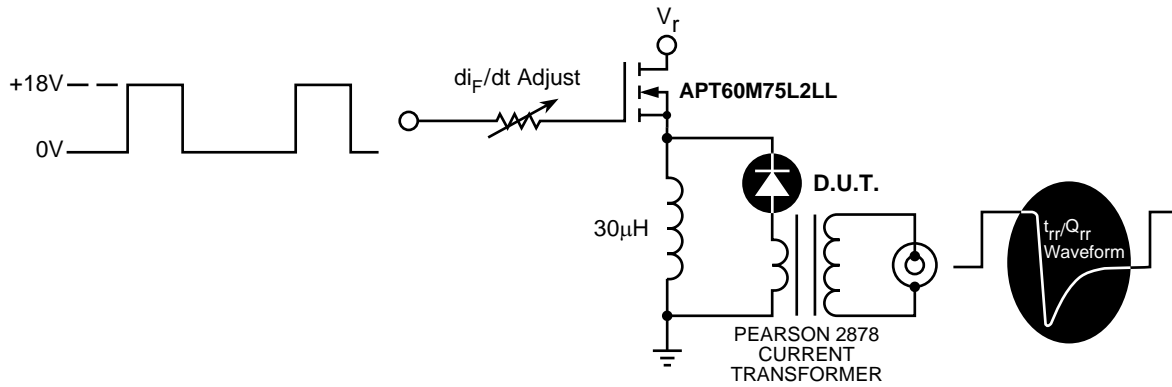**Figure 8. Junction Capacitance *vs.* Reverse Voltage**

V_r

+18V

0V

di_F/dt Adjust

APT60M75L2LL

30μH

D.U.T.

t_rr/Q_rr Waveform

PEARSON 2878
CURRENT
TRANSFORMER

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 $0.25 \cdot I_{RRM}$ passes through zero.

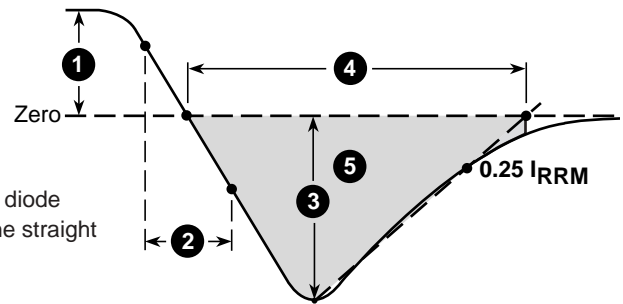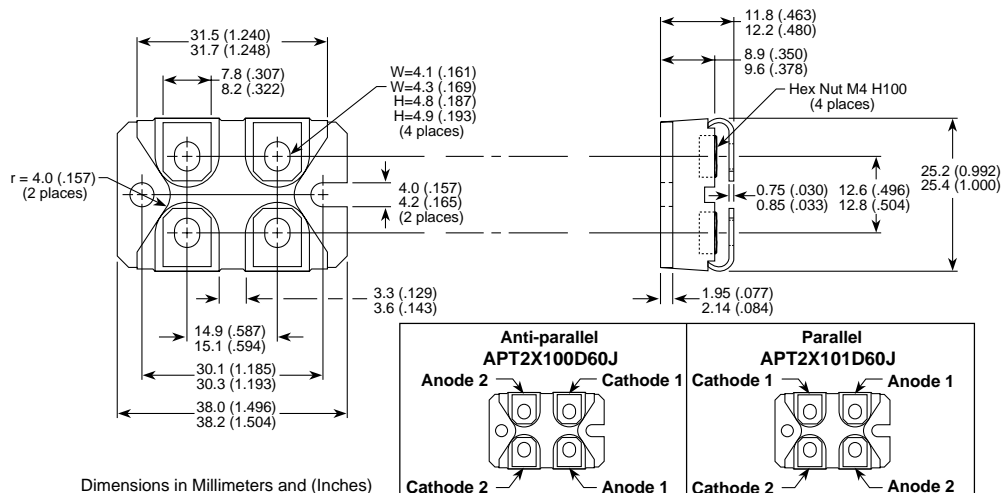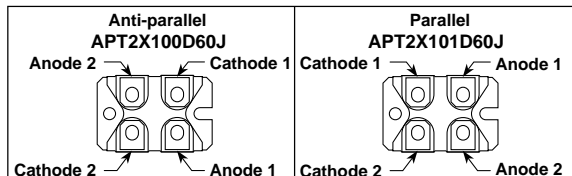**5** Q_{rr} - Area Under the Curve Defined by I_{RRM} and t_{rr}.

Zero

0.25 I_{RRM}

Figure 10, Diode Reverse Recovery Waveform and Definitions

SOT-227 Package Outline

31.5 (1.240)
31.7 (1.248)

7.8 (.307)
8.2 (.322)

W=4.1 (.161)
W=4.3 (.169)
H=4.8 (.187)
H=4.9 (.193)
(4 places)

r = 4.0 (.157)
(2 places)

4.0 (.157)
4.2 (.165)
(2 places)

3.3 (.129)
3.6 (.143)

14.9 (.587)
15.1 (.594)

30.1 (1.185)
30.3 (1.193)

38.0 (1.496)
38.2 (1.504)

11.8 (.463)
12.2 (.480)

8.9 (.350)
9.6 (.378)

Hex Nut M4 H100
(4 places)

25.2 (0.992)
25.4 (1.000)

0.75 (.030) 12.6 (.496)
0.85 (.033) 12.8 (.504)

1.95 (.077)
2.14 (.084)

Dimensions in Millimeters and (Inches)

Anti-parallel
APT2X100D60J

Anode 2   Cathode 1

Cathode 2   Anode 1

Parallel
APT2X101D60J

Cathode 1   Anode 1

Cathode 2   Anode 2