Anti-Parallel
APT2X60D60J

Parallel
APT2X61D60J

ISOTOP®

"UL Recognized"

ADVANCED POWER TECHNOLOGY®

APT2X61D60J   **600V**   **60A**
APT2X60D60J   **600V**   **60A**

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	APT2X61_60D60J	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 = 106°C, Duty Cycle = 0.5)	60	Amps
$I_{F(RMS)}$	RMS Forward Current (Square wave, 50% duty)	90	
I_{FSM}	Non-Repetitive Forward Surge Current (T_J = 45°C, 8.3ms)	600	
T_J, T_{STG}	Operating and StorageTemperature Range	-55 to 175	°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 = 60A		1.6	1.8	Volts
		I_F = 120A		1.9		
		I_F = 60A, 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			90		pF

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
t_{rr}	Reverse Recovery Time	$I_F = 1A$, $di_F/dt = -100A/\mu s$, $V_R = 30V$, $T_J = 25°C$	-	40		ns
t_{rr}	Reverse Recovery Time	$I_F = 60A$, $di_F/dt = -200A/\mu s$ $V_R = 400V$, $T_C = 25°C$	-	130		
Q_{rr}	Reverse Recovery Charge		-	220		nC
I_{RRM}	Maximum Reverse Recovery Current		-	4	-	Amps
t_{rr}	Reverse Recovery Time	$I_F = 60A$, $di_F/dt = -200A/\mu s$ $V_R = 400V$, $T_C = 125°C$	-	170		ns
Q_{rr}	Reverse Recovery Charge		-	920		nC
I_{RRM}	Maximum Reverse Recovery Current		-	10	-	Amps
t_{rr}	Reverse Recovery Time	$I_F = 60A$, $di_F/dt = -1000A/\mu s$ $V_R = 400V$, $T_C = 125°C$	-	80		ns
Q_{rr}	Reverse Recovery Charge		-	1900		nC
I_{RRM}	Maximum Reverse Recovery Current		-	38		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			.60	°C/W
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			20	
W_T	Package Weight		1.03		oz
			29.2		g
Torque	Maximum Mounting Torque			10	lb•in
				1.1	N•m

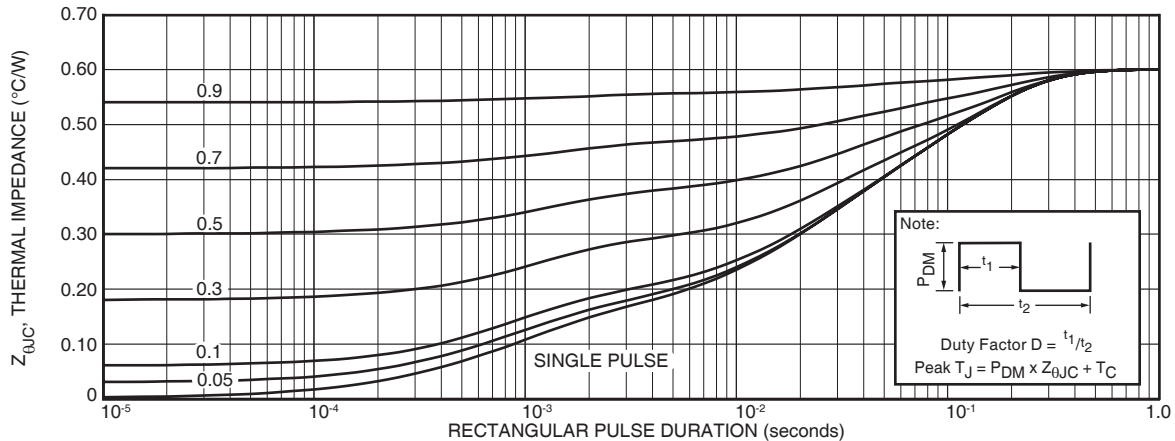APT Reserves the right to change, without notice, the specifications and information contained herein.

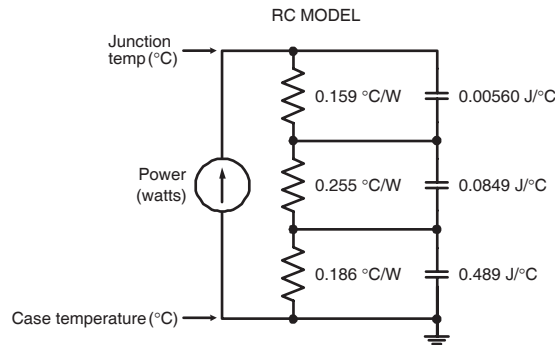FIGURE 1a. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

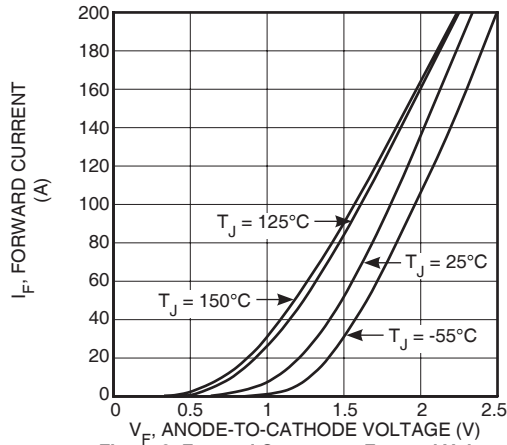FIGURE 1b. TRANSIENT THERMAL IMPEDANCE MODEL

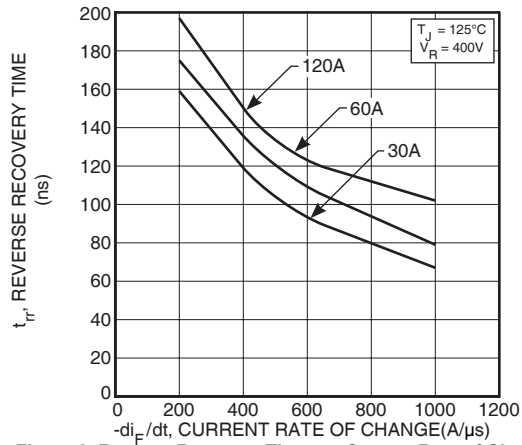**Figure 2. Forward Current vs. Forward Voltage**

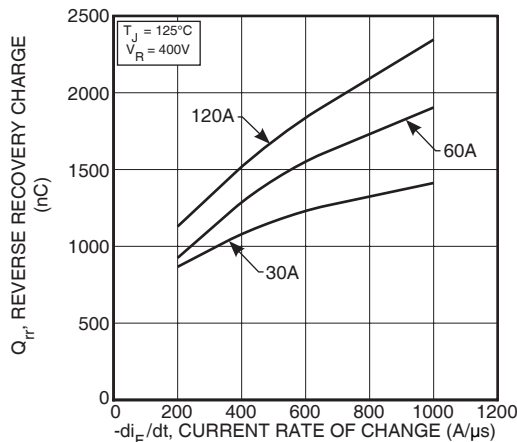**Figure 3. Reverse Recovery Time vs. Current Rate of Change**

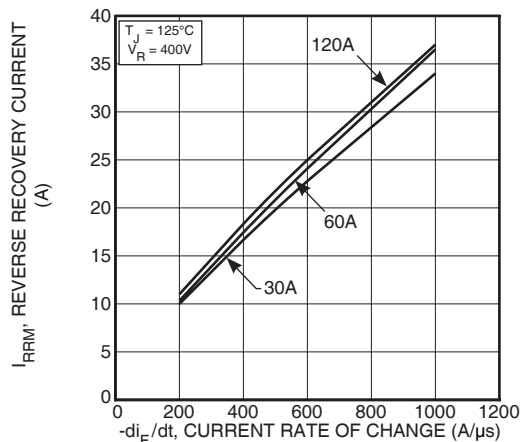**Figure 4. Reverse Recovery Charge vs. Current Rate of Change**

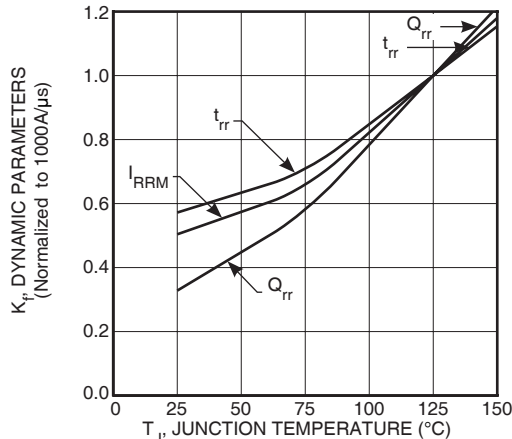**Figure 5. Reverse Recovery Current vs. Current Rate of Change**

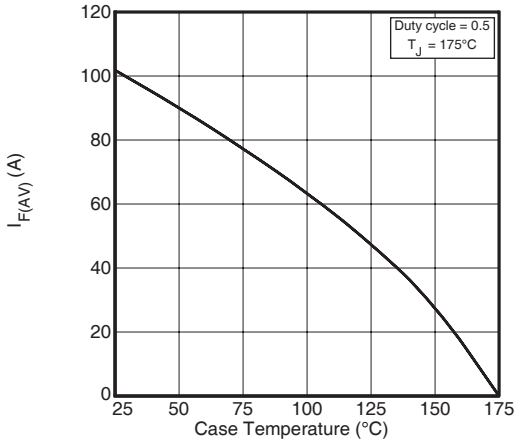**Figure 6. Dynamic Parameters vs. Junction Temperature**

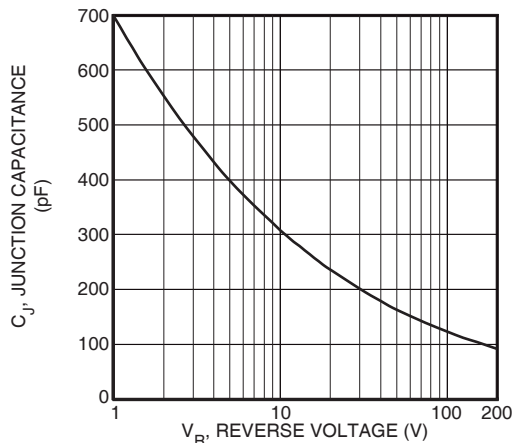**Figure 7. Maximum Average Forward Current vs. CaseTemperature**

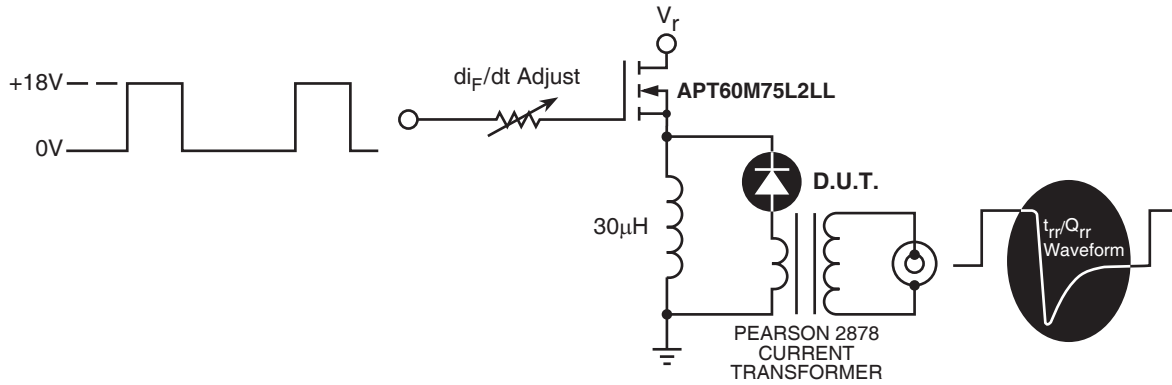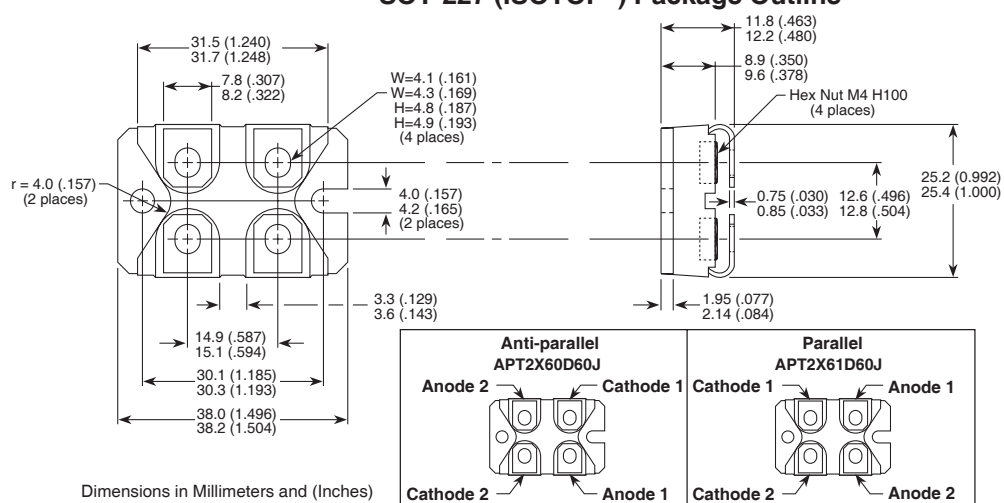**Figure 8. Junction Capacitance vs. Reverse Voltage**

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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 $0.25 \cdot I_{RRM}$ 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

SOT-227 (ISOTOP®) Package Outline

Dimensions in Millimeters and (Inches)