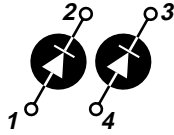
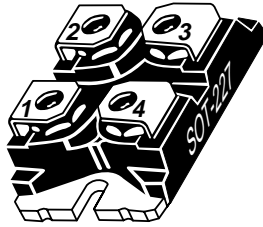


Anti-Parallel  
APT2X60D100J



Parallel  
APT2X61D100J



APT2X60D100J 1000V 60A  
APT2X61D100J 1000V 60A

## DUAL DIE ISOTOP® PACKAGE

## ULTRAFast SOFT RECOVERY DUAL RECTIFIER DIODES

### PRODUCT APPLICATIONS

- Anti-Parallel Diode
  - Switchmode Power Supply
  - Inverters
- Free Wheeling Diode
  - Motor Controllers
  - Converters
- Snubber Diode
- Uninterruptible Power Supply (UPS)
- Induction Heating
- High Speed Rectifiers

### PRODUCT FEATURES

- Ultrafast Recovery Times
- Soft Recovery Characteristics
- Popular SOT-227 Package
- Low Forward Voltage
- High Blocking Voltage
- Low Leakage Current

### PRODUCT BENEFITS

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

### MAXIMUM RATINGS

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

Symbol	Characteristic / Test Conditions	APT2X60/2X61D100J	UNIT
$V_R$	Maximum D.C. Reverse Voltage	1000	Volts
$V_{RRM}$	Maximum Peak Repetitive Reverse Voltage		
$V_{RWM}$	Maximum Working Peak Reverse Voltage		
$I_F(AV)$	Maximum Average Forward Current ( $T_C = 50^\circ\text{C}$ , Duty Cycle = 0.5)	60	Amps
$I_F(RMS)$	RMS Forward Current	100	
$I_{FSM}$	Non-Repetitive Forward Surge Current ( $T_J = 45^\circ\text{C}$ , 8.3ms)	540	
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$T_L$	Lead Temperature: 0.063" from Case for 10 Sec.	300	

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT	
$V_F$	Maximum Forward Voltage			2.5	Volts	
				$I_F = 120\text{A}$		2.1
				$I_F = 60\text{A}, T_J = 150^\circ\text{C}$		2.0
$I_{RM}$	Maximum Reverse Leakage Current			250	$\mu\text{A}$	
				$V_R = V_R$ Rated, $T_J = 125^\circ\text{C}$		500
$C_T$	Junction Capacitance, $V_R = 200\text{V}$		65		pF	
$L_S$	Series Inductance (Lead to Lead 5mm from Base)		10		nH	

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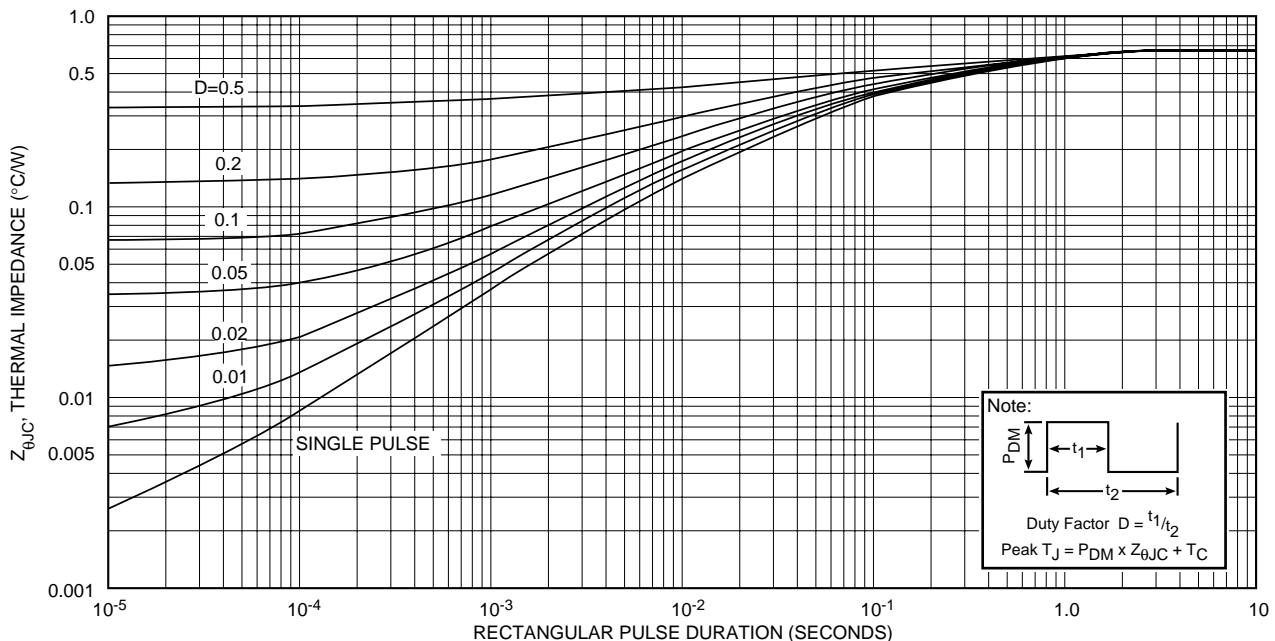
**DYNAMIC CHARACTERISTICS**

**APT2X60/2X61D100J**

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$t_{rr1}$	Reverse Recovery Time, $I_F = 1.0A$ , $di_F/dt = -15A/\mu s$ , $V_R = 30V$ , $T_J = 25^\circ C$		70	85	ns
$t_{rr2}$	Reverse Recovery Time		70		
$t_{rr3}$	$I_F = 60A$ , $di_F/dt = -480A/\mu s$ , $V_R = 540V$		130		
$t_{fr1}$	Forward Recovery Time		200		
$t_{fr2}$	$I_F = 60A$ , $di_F/dt = 480A/\mu s$ , $V_R = 540V$		200		
$I_{RRM1}$	Reverse Recovery Current		14	26	Amps
$I_{RRM2}$	$I_F = 60A$ , $di_F/dt = -480A/\mu s$ , $V_R = 540V$		26	36	
$Q_{rr1}$	Recovery Charge		500		nC
$Q_{rr2}$	$I_F = 60A$ , $di_F/dt = -480A/\mu s$ , $V_R = 540V$		1700		
$V_{fr1}$	Forward Recovery Voltage		15.5		Volts
$V_{fr2}$	$I_F = 60A$ , $di_F/dt = 480A/\mu s$ , $V_R = 540V$		15.5		
$diM/dt$	Rate of Fall of Recovery Current		900		A/ $\mu s$
	$I_F = 60A$ , $di_F/dt = -480A/\mu s$ , $V_R = 540V$ (See Figure 10)		600		

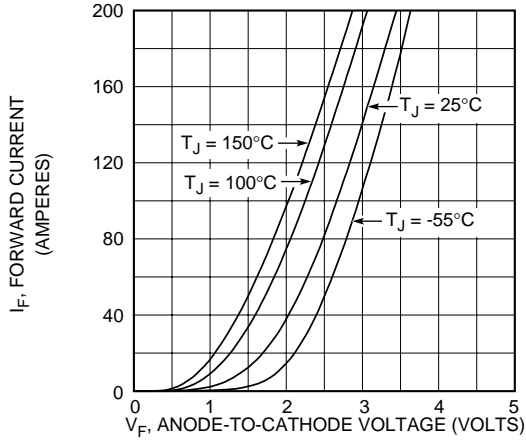
**THERMAL AND MECHANICAL CHARACTERISTICS**

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			0.66	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			20	
$V_{Isolation}$	RMS Voltage (50-60 Hz Sinusoidal Waveform from Terminals to Mounting Base for 1 Min.)	2500			Volts
$W_T$	Package Weight		1.03		oz
			29.2		gm
Torque	Maximum Torque (Mounting = 8-32 or 4mm Machine and Terminals = 4mm Machine)			13.6	lb•in
				1.5	N•m

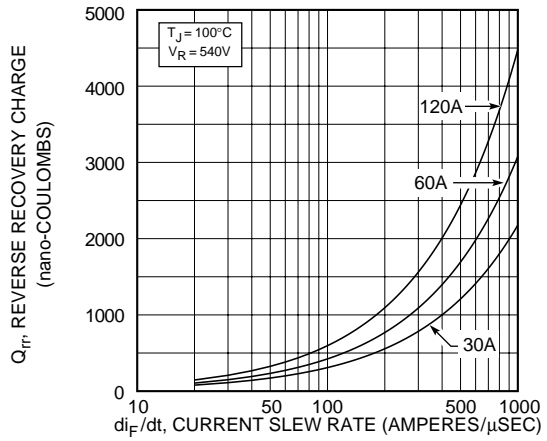


**FIGURE 1, MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs PULSE DURATION**

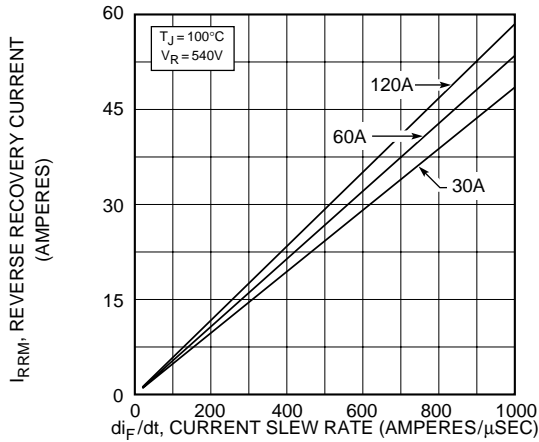
**APT2X60/2X61D100J**



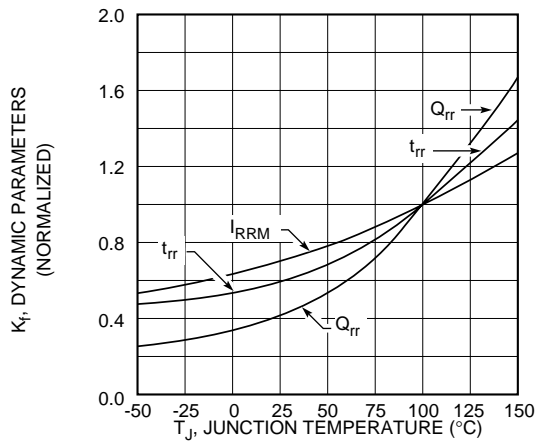
**Figure 2, Forward Voltage Drop vs Forward Current**



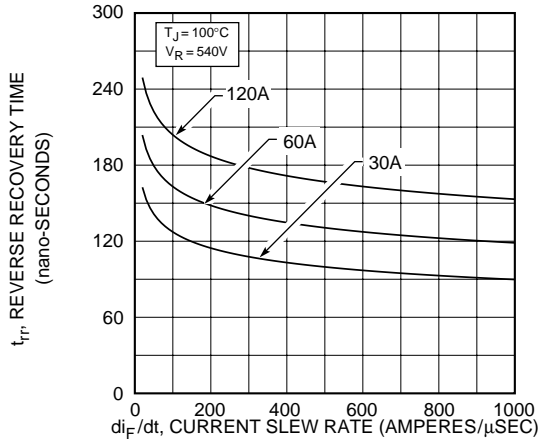
**Figure 3, Reverse Recovery Charge vs Current Slew Rate**



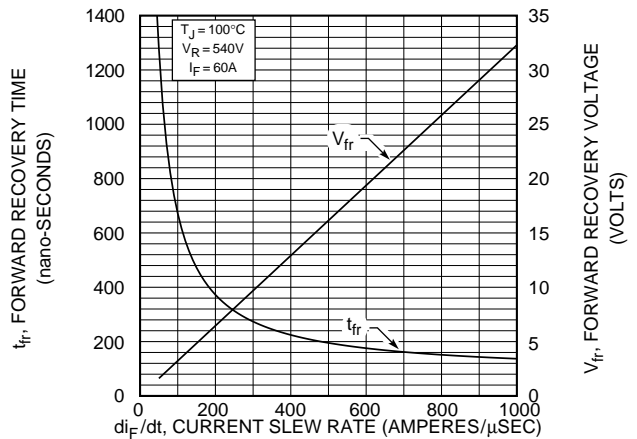
**Figure 4, Reverse Recovery Current vs Current Slew Rate**



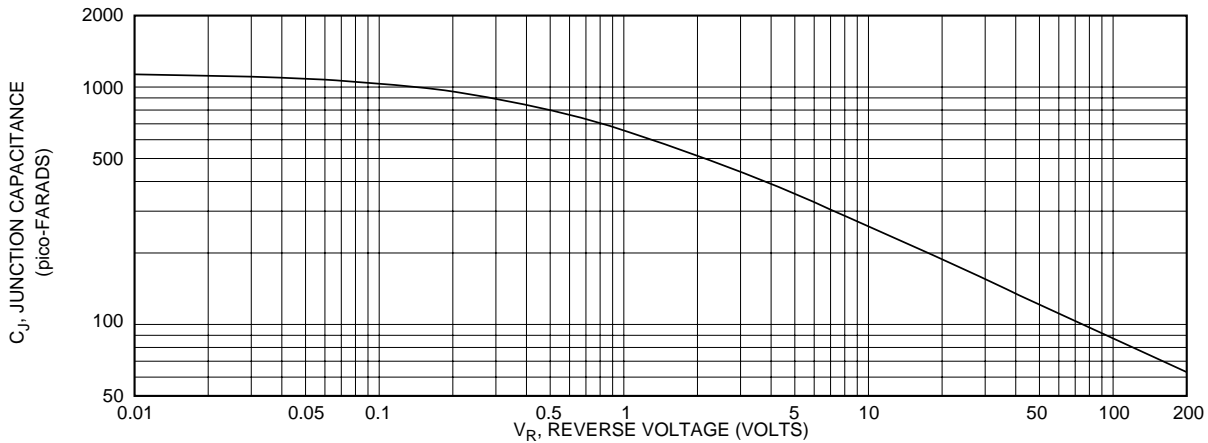
**Figure 5, Dynamic Parameters vs Junction Temperature**



**Figure 6, Reverse Recovery Time vs Current Slew Rate**



**Figure 7, Forward Recovery Voltage/Time vs Current Slew Rate**



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

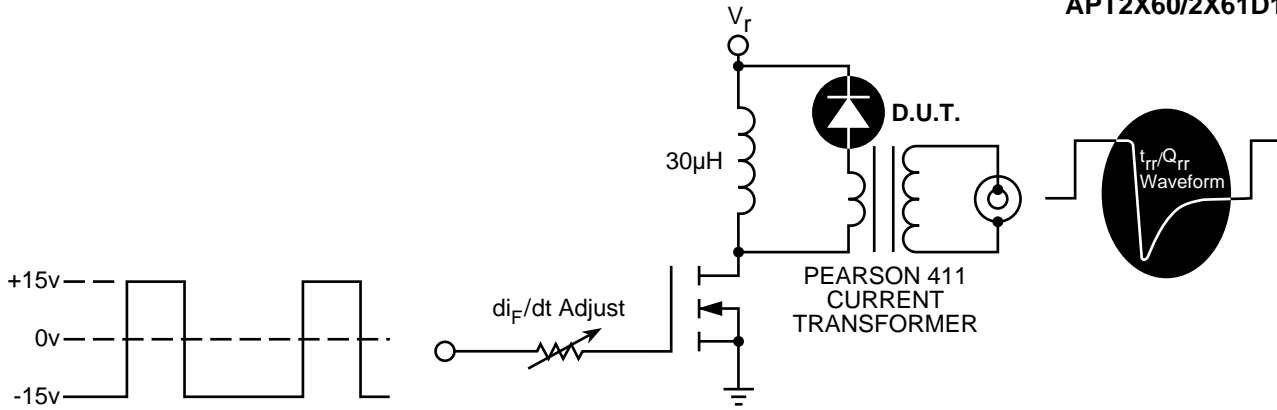


Figure 9, Diode Reverse Recovery Test Circuit and Waveforms

- 1  $I_F$  - Forward Conduction Current
- 2  $di_F/dt$  - Current Slew Rate, Rate of Forward Current Change Through Zero Crossing.
- 3  $I_{RRM}$  - Peak Reverse Recovery Current.
- 4  $t_{rr}$  - Reverse Recovery Time Measured from Point of  $I_F$  Current Falling Through Zero to a Tangent Line {6  $diM/dt$ } Extrapolated Through Zero Defined by 0.75 and 0.50  $I_{RRM}$ .
- 5  $Q_{rr}$  - Area Under the Curve Defined by  $I_{RRM}$  and  $t_{rr}$ .
- 6  $diM/dt$  - Maximum Rate of Current Change During the Trailing Portion of  $t_{rr}$ .

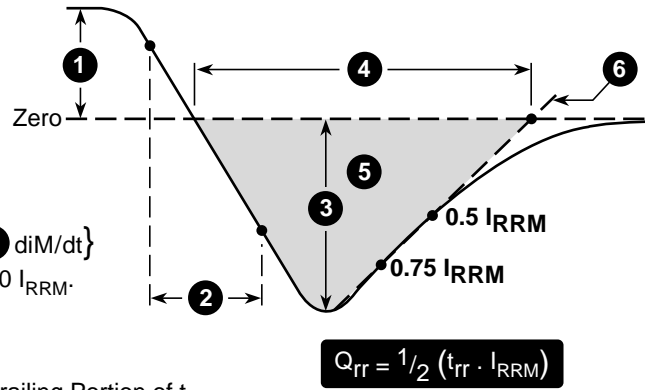


Figure 10, Diode Reverse Recovery Waveform and Definitions

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

### SOT-227 Package Outline

