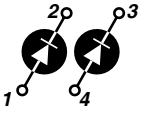
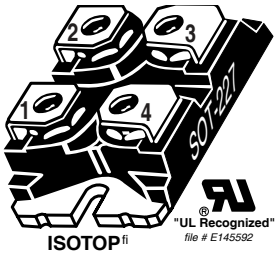


Parallel

APT2X61S20J



ISOTOP®

"UL Recognized"
file # E145592

Microsemi
POWER PRODUCTS GROUP

APT2X61S20J 200V 75A

HIGH VOLTAGE SCHOTTKY DIODES

PRODUCT BENEFITS

- **Parallel Diode**
  - **-Switchmode Power Supply**
  - **-Inverters**
- **Free Wheeling Diode**
  - **-Motor Controllers**
  - **-Converters**
- **Snubber Diode**
- **Uninterruptible Power Supply (UPS)**
- **48 Volt Output Rectifiers**
- **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	APT2X61S20J	UNIT
V_R	Maximum D.C. Reverse Voltage	200	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)	75	Amps
$I_{F(RMS)}$	RMS Forward Current (Square wave, 50% duty)	137	
I_{FSM}	Non-Repetitive Forward Surge Current (T_J = 45°C, 8.3ms)	600	
T_J,T_{STG}	Operating and StorageTemperature Range	-55 to 150	°C
E_{AVL}	Avalanche Energy (2A, 30mH)	60	mJ

STATIC ELECTRICAL CHARACTERISTICS

Symbol			MIN	TYP	MAX	UNIT
V_F	Forward Voltage	I_F = 60A		.83	.90	Volts
		I_F = 120A		.98		
		I_F = 60A, T_J = 125°C		.72		
I_{RM}	Maximum Reverse Leakage Current	V_R = 200V			1	mA
		V_R = 200V, T_J = 125°C			25	
C_T	Junction Capacitance, V_R = 200V			300		pF

053-6044 Rev C 7-2006

DYNAMIC CHARACTERISTICS

APT2X61S20J

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
t_{rr}	Reverse Recovery Time	I_F = 60A, di_F/dt = -200A/µs V_R = 133V, T_C = 25°C	-	55		ns
Q_{rr}	Reverse Recovery Charge		-	160		nC
I_{RRM}	Maximum Reverse Recovery Current		-	5	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 60A, di_F/dt = -200A/µs V_R = 133V, T_C = 125°C	-	100		ns
Q_{rr}	Reverse Recovery Charge		-	490		nC
I_{RRM}	Maximum Reverse Recovery Current		-	10	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 60A, di_F/dt = -700A/µs V_R = 133V, T_C = 125°C	-	80		ns
Q_{rr}	Reverse Recovery Charge		-	1100		nC
I_{RRM}	Maximum Reverse Recovery Current		-	27		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			.54	°C/W
$V_{Isolation}$	RMS Voltage (50-60hHz Sinusoidal Waveform from Terminals to Mounting Base for 1 Min.)	2500			Volts
W_T	Package Weight		1.03		oz
			29.2		g
Torque	Maximum Terminal & Mounting Torque			10	lb•in
				1.1	N•m

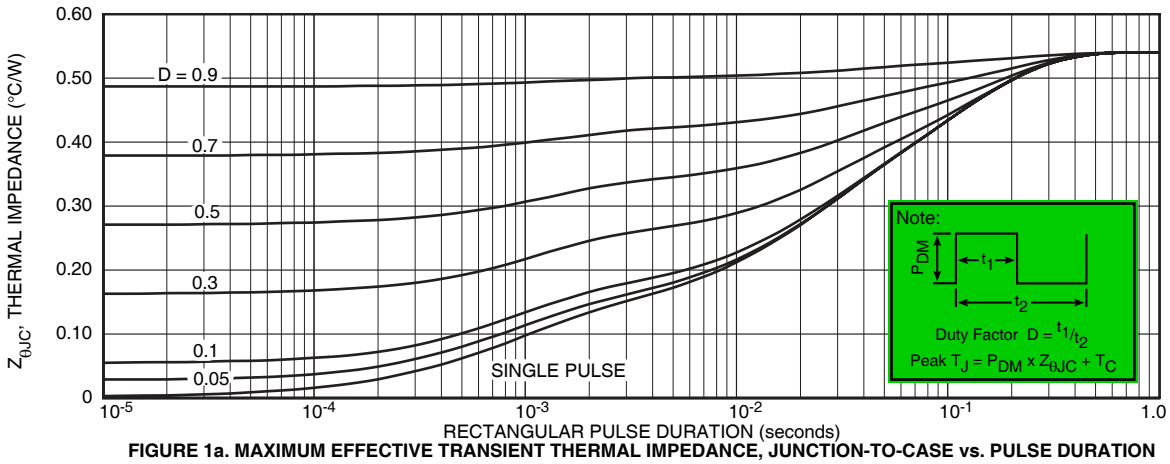


FIGURE 1a. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

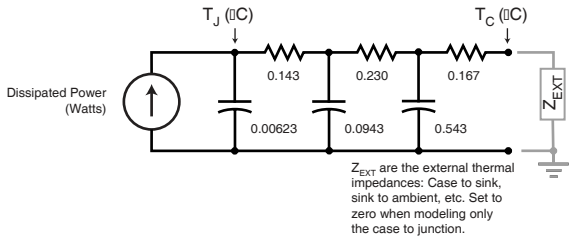


FIGURE 1b, TRANSIENT THERMAL IMPEDANCE MODEL

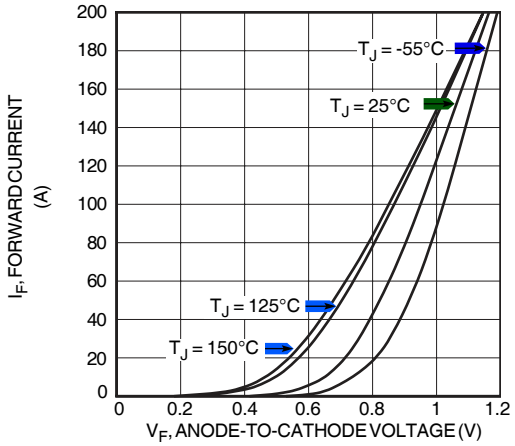


Figure 2. Forward Current *vs.* Forward Voltage

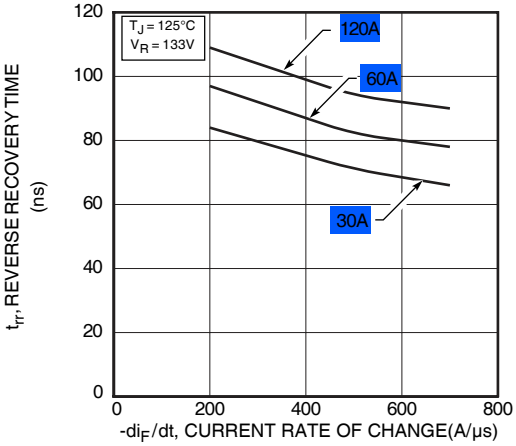


Figure 3. Reverse Recovery Time *vs.* Current Rate of Change

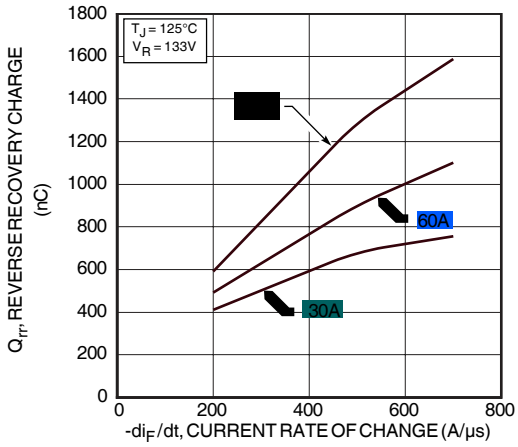


Figure 4. Reverse Recovery Charge *vs.* Current Rate of Change

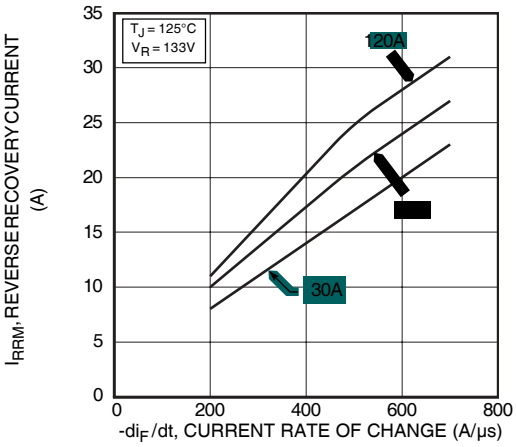


Figure 5. Reverse Recovery Current *vs.* Current Rate of Change

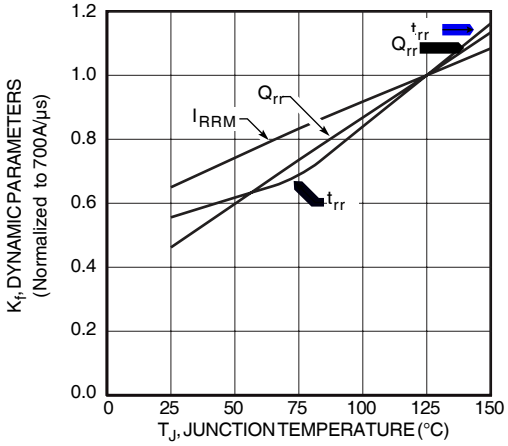


Figure 6. Dynamic Parameters *vs.* Junction Temperature

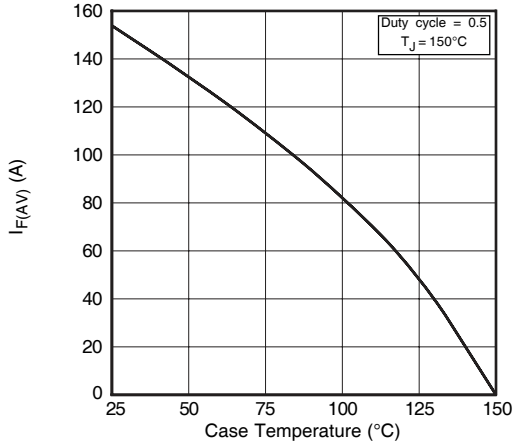


Figure 7. Maximum Average Forward Current *vs.* CaseTemperature

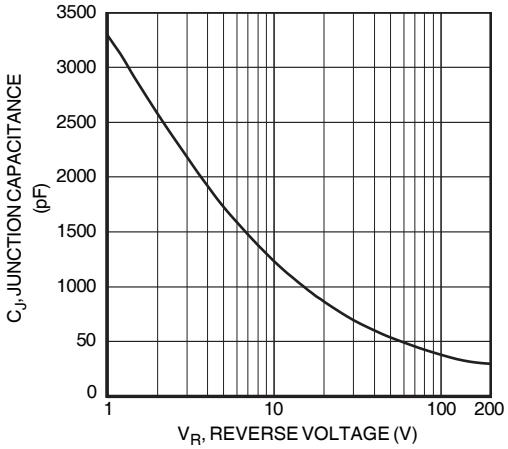


Figure 8. Junction Capacitance *vs.* Reverse Voltage

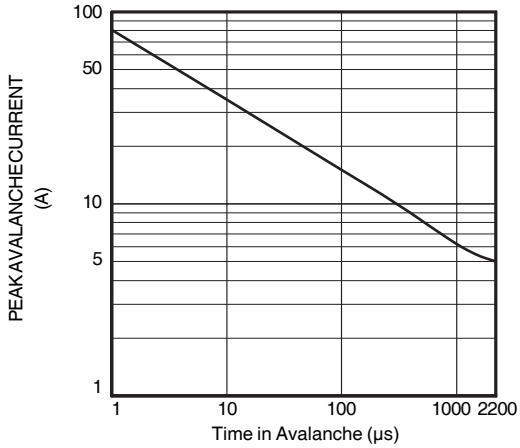


Figure 9. Single Pulse UIS SOA

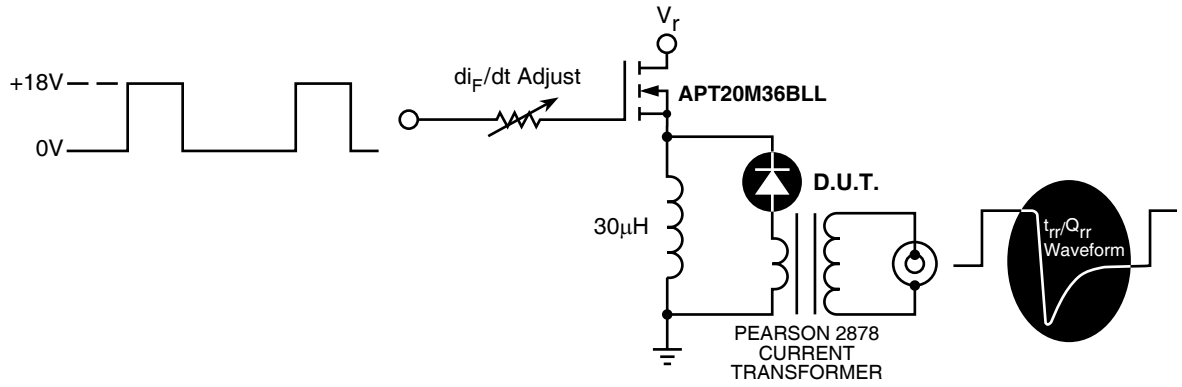


Figure 9. Diode Test Circuit

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 $0.25 \bullet I_{RRM}$ passes through zero.
5. Q_{rr} - Area Under the Curve Defined by I_{RRM} and t_{rr}.

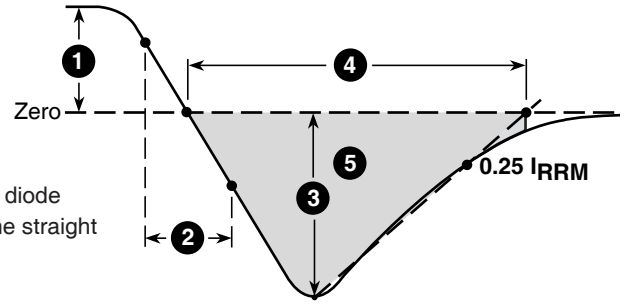
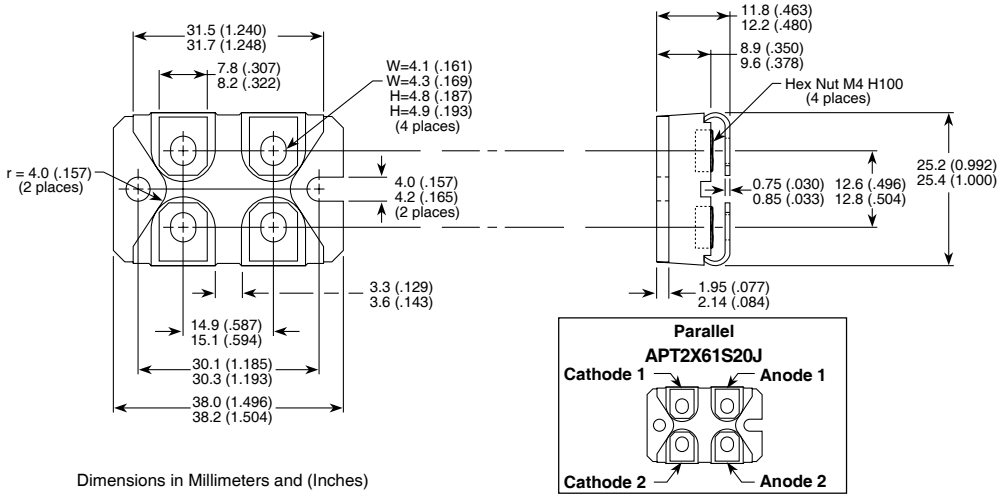


Figure 10, Diode Reverse Recovery Waveform and Definitions

SOT-227 Package Outline



Dimensions in Millimeters and (Inches)

ISOTOP® is a registered trademark of ST Microelectronics NV.