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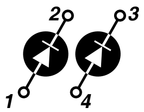
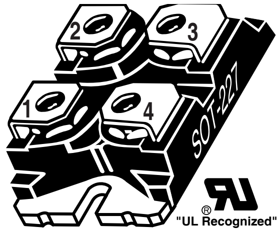


Parallel

APT2X101S20J



ISOTOP®

"UL Recognized"
file # E145592

Microsemi
POWER PRODUCTS GROUP

APT2X101S20J 200V 120A

DUAL DIE ISOTOP® PACKAGE

HIGH VOLTAGE SCHOTTKY DIODE

PRODUCT APPLICATIONS

- **Rectifiers in Switchmode Power Supplies (SMPS)**
- **Free Wheeling Diode in Low Voltage Converters**

PRODUCT FEATURES

- **Ultrafast Recovery Times**
- **Soft Recovery Characteristics**
- **Popular SOT-227 Package**
- **Rugged - Avalanche Energy Rated**
- **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°C unless otherwise specified.

Symbol	Characteristic / Test Conditions	APT2X101S20J	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 = 105°C, Duty Cycle = 0.5)	120	Amps
$I_{F(RMS)}$	RMS Forward Current (Square wave, 50% duty)	213	
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
E_{AVL}	Avalanche Energy (2A, 50mH)	100	mJ

STATIC ELECTRICAL CHARACTERISTICS

Symbol			MIN	TYP	MAX	UNIT
V_F	Forward Voltage	I_F = 100A		.89	.95	Volts
		I_F = 200A		1.06		
		I_F = 100A, T_J = 125°C		.76		
I_{RM}	Maximum Reverse Leakage Current	V_R = 200V			2	mA
		V_R = 200V, T_J = 125°C			40	
C_T	Junction Capacitance, V_R = 200V			470		pF

DYNAMIC CHARACTERISTICS

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -200A/µs V_R = 133V, T_C = 25°C	-	70		ns
Q_{rr}	Reverse Recovery Charge		-	240		nC
I_{RRM}	Maximum Reverse Recovery Current		-	6	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -200A/µs V_R = 133V, T_C = 125°C	-	110		ns
Q_{rr}	Reverse Recovery Charge		-	690		nC
I_{RRM}	Maximum Reverse Recovery Current		-	11	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -700A/µs V_R = 133V, T_C = 125°C	-	95		ns
Q_{rr}	Reverse Recovery Charge		-	1750		nC
I_{RRM}	Maximum Reverse Recovery Current		-	32		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			.33	°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

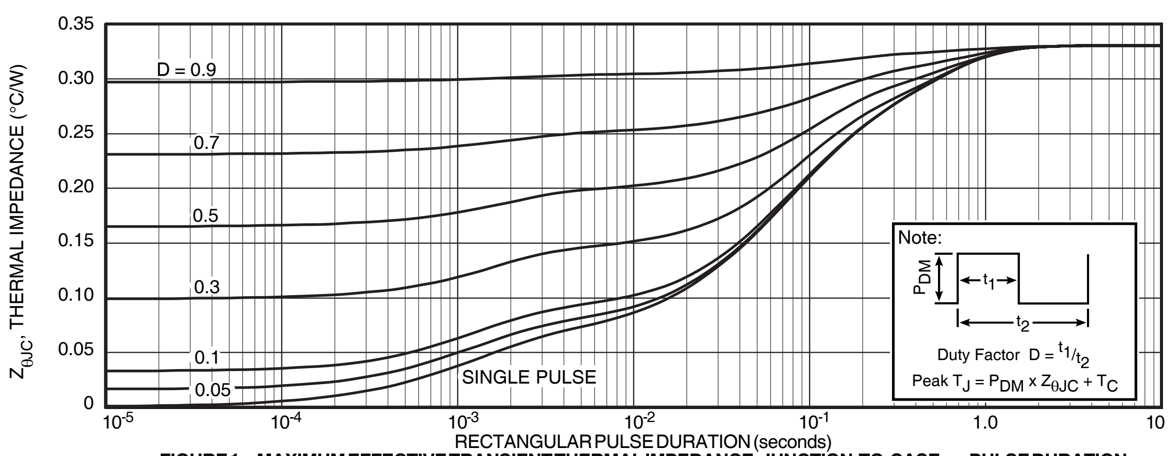


FIGURE 1a. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

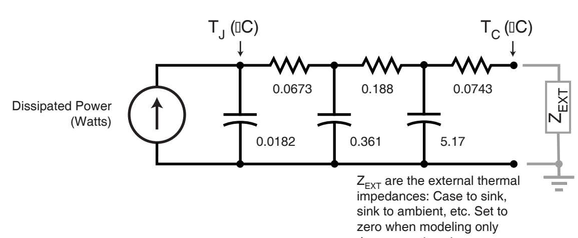


FIGURE 1b, TRANSIENT THERMAL IMPEDANCE MODEL

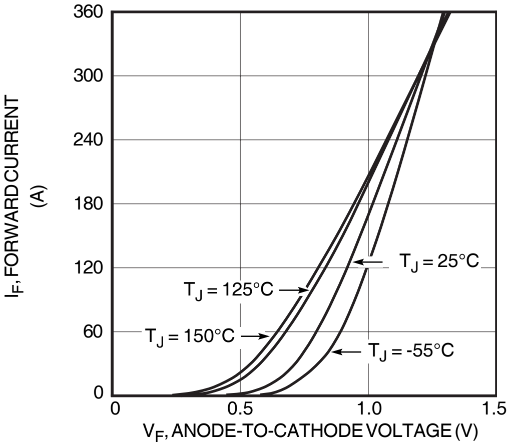


Figure 2. Forward Current *vs.* Forward Voltage

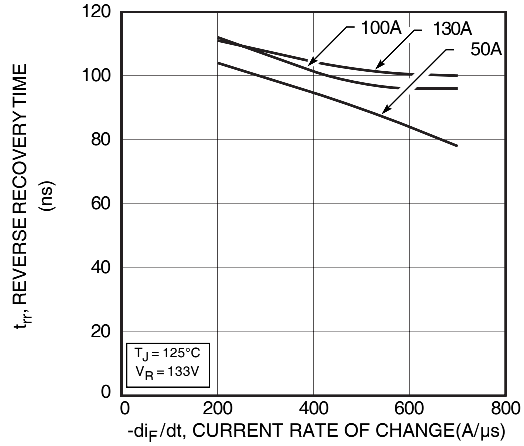


Figure 3. Reverse Recovery Time *vs.* Current Rate of Change

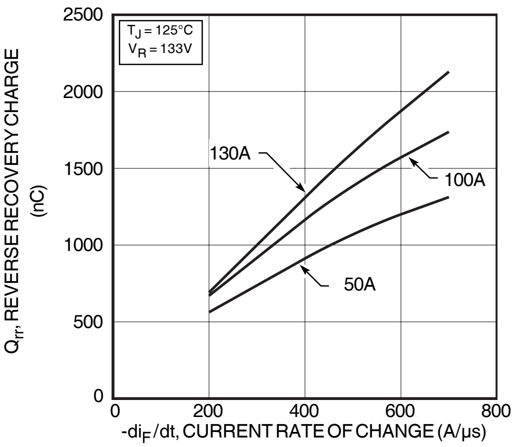


Figure 4. Reverse Recovery Charge *vs.* Current Rate of Change

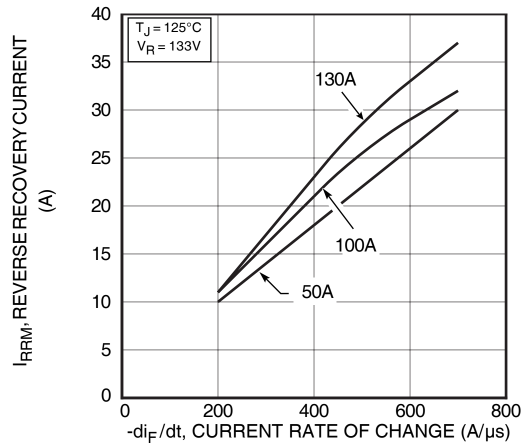


Figure 5. Reverse Recovery Current *vs.* Current Rate of Change

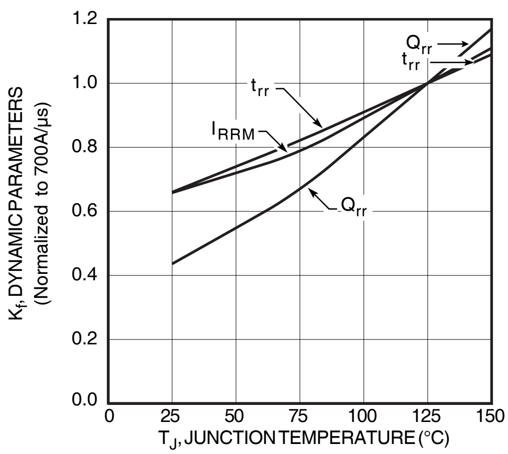


Figure 6. Dynamic Parameters *vs.* Junction Temperature

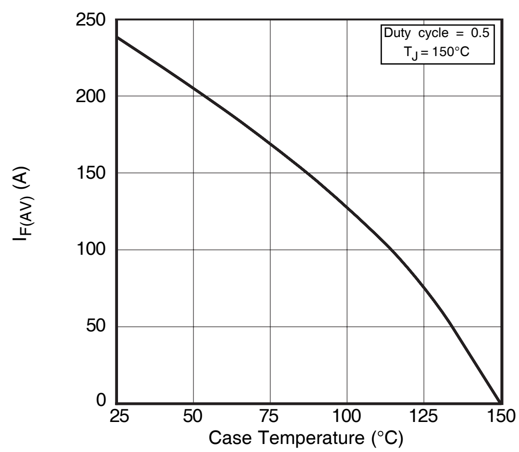


Figure 7. Maximum Average Forward Current *vs.* CaseTemperature

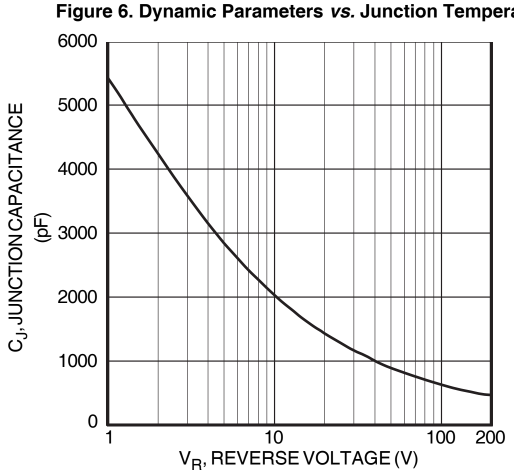


Figure 8. Junction Capacitance *vs.* Reverse Voltage

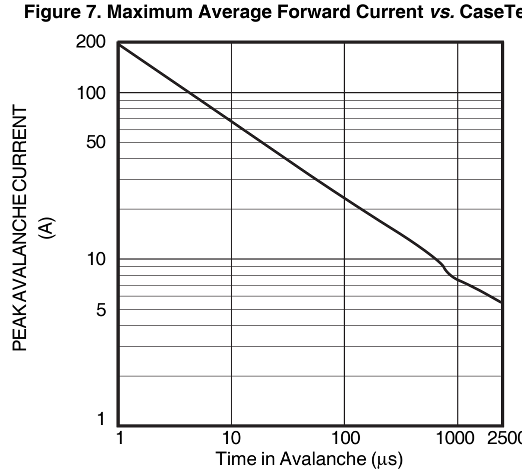


Figure 9. Single Pulse UIS SOA

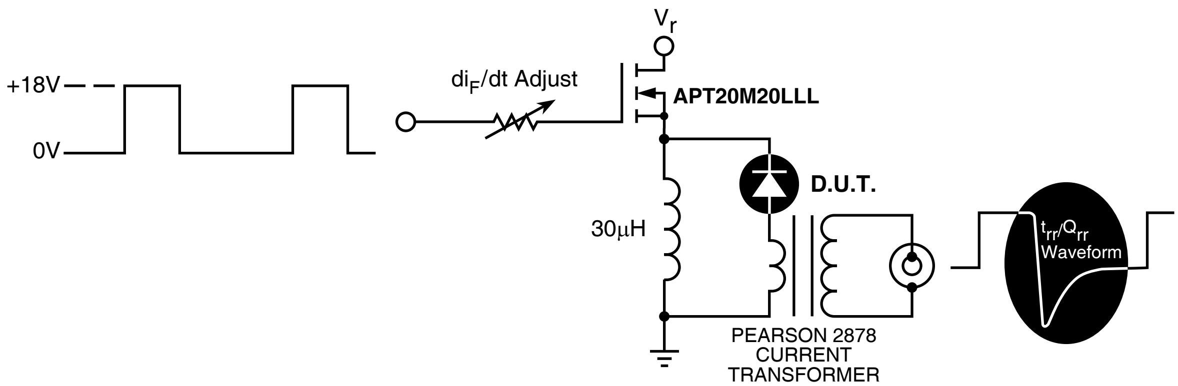


Figure 9. Diode Test Circuit

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}.

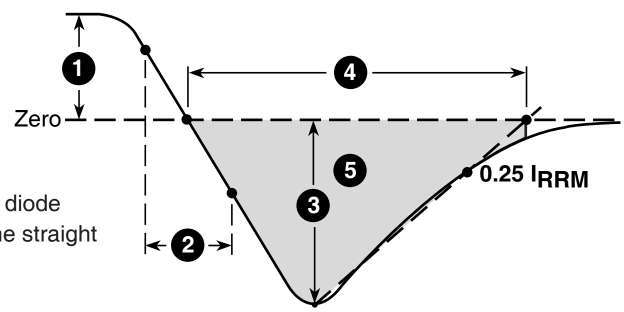
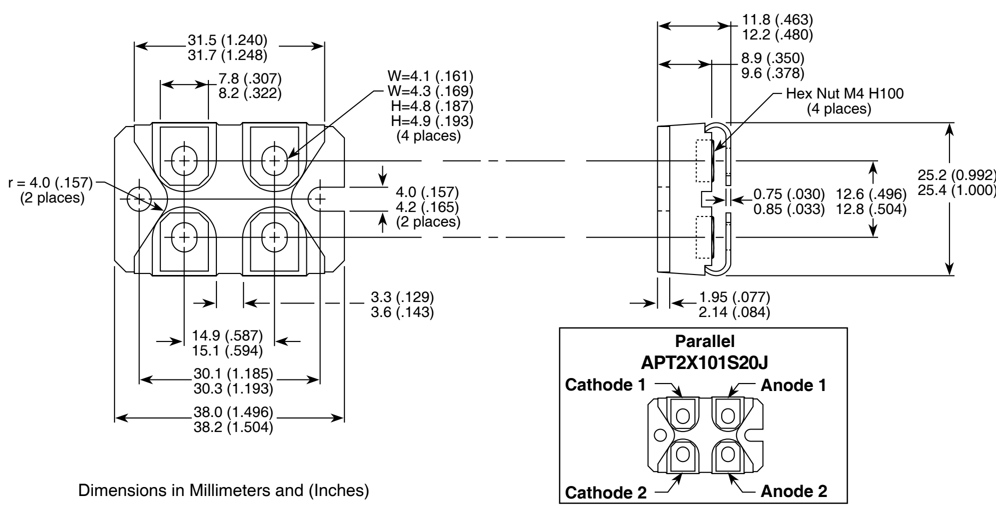


Figure 10, Diode Reverse Recovery Waveform and Definitions

SOT-227 Package Outline



Dimensions in Millimeters and (Inches)