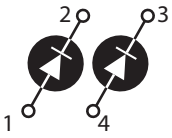
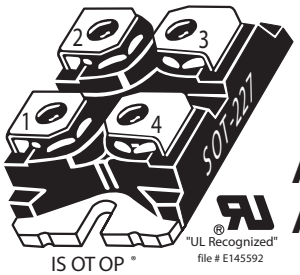


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APT2X100D120J



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Microsemi
POWER PRODUCTS GROUP

APT2X101D120J 1200V 93A
APT2X100D120J 1200V 93A

DUAL DIE ISOTOP® PACKAGE
ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

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°C unless otherwise specified.

Symbol	Characteristic / Test Conditions	APT2X101_100D120J	UNIT
V_R	Maximum D.C. Reverse Voltage	1200	Volts
V_{RRM}	Maximum Peak Repetitive Reverse Voltage		
V_{RWM}	Maximum Working Peak Reverse Voltage		
$I_F(AV)$	Maximum Average Forward Current (T_C = 80°C, Duty Cycle = 0.5)	93	Amps
$I_F(RMS)$	RMS Forward Current (Square wave, 50% duty)	115	
I_{FSM}	Non-Repetitive Forward Surge Current (T_J = 45°C, 8.3ms)	1000	
T_J,T_{STG}	Operating and StorageTemperature Range	-55 to 175	°C

STATIC ELECTRICAL CHARACTERISTICS

Symbol			MIN	TYP	MAX	UNIT
V_F	Forward Voltage	I_F = 100A		2.0	2.5	Volts
		I_F = 200A		2.3		
		I_F = 100A, T_J = 125°C		1.8		
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			120		pF

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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/µs, V_R = 30V, T_J = 25°C	-	47		ns
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -200A/µs V_R = 800V, T_C = 25°C	-	420		ns
Q_{rr}	Reverse Recovery Charge		-	1250		nC
I_{RRM}	Maximum Reverse Recovery Current		-	7	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -200A/µs V_R = 800V, T_C = 125°C	-	580		ns
Q_{rr}	Reverse Recovery Charge		-	5350		nC
I_{RRM}	Maximum Reverse Recovery Current		-	19	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -1000A/µs V_R = 800V, T_C = 125°C	-	220		ns
Q_{rr}	Reverse Recovery Charge		-	10300		nC
I_{RRM}	Maximum Reverse Recovery Current		-	70		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			.41	°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

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

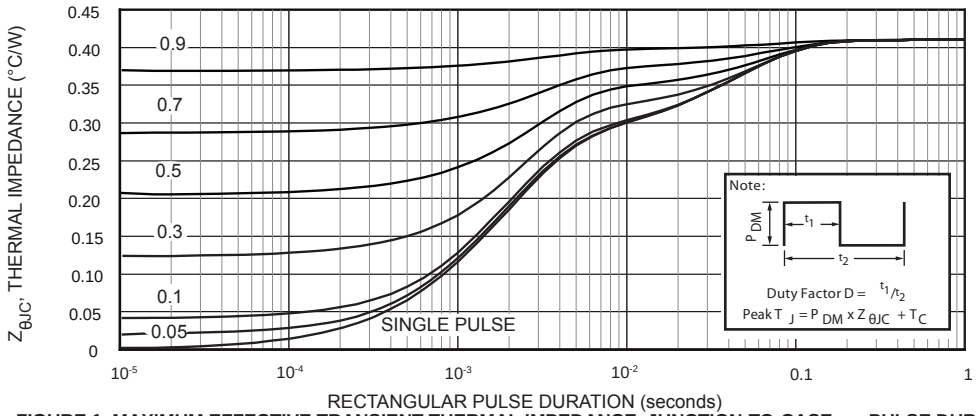


FIGURE 1. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

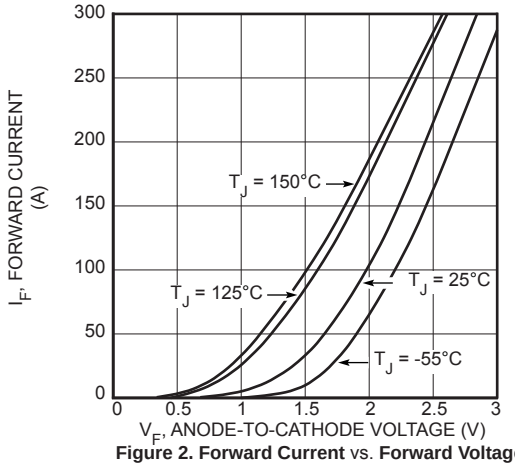


Figure 2. Forward Current vs. **Forward Voltage**

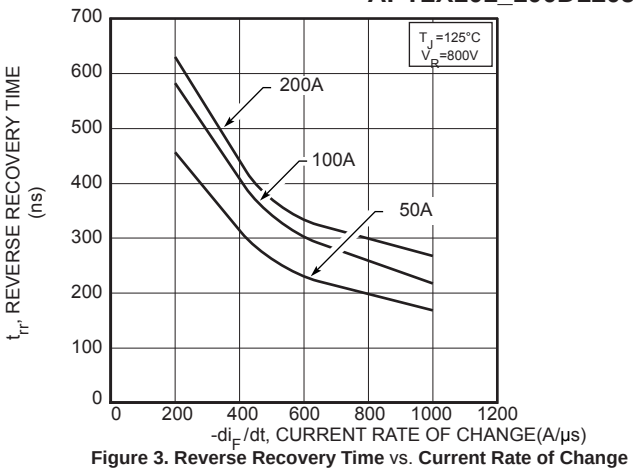


Figure 3. Reverse Recovery Time vs. **Current Rate of Change**

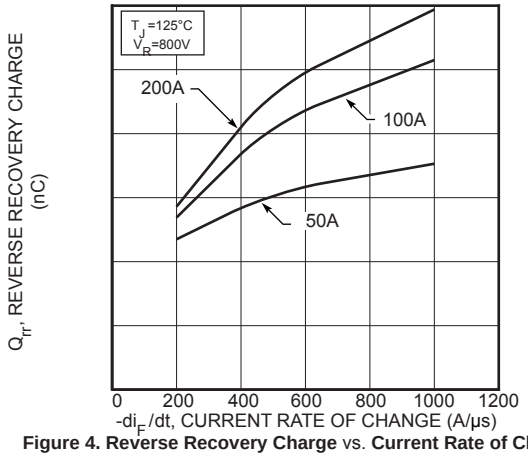


Figure 4. Reverse Recovery Charge vs. **Current Rate of Change**

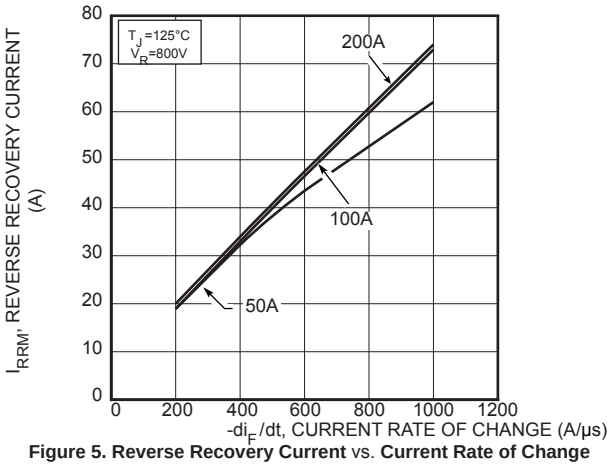


Figure 5. Reverse Recovery Current vs. **Current Rate of Change**

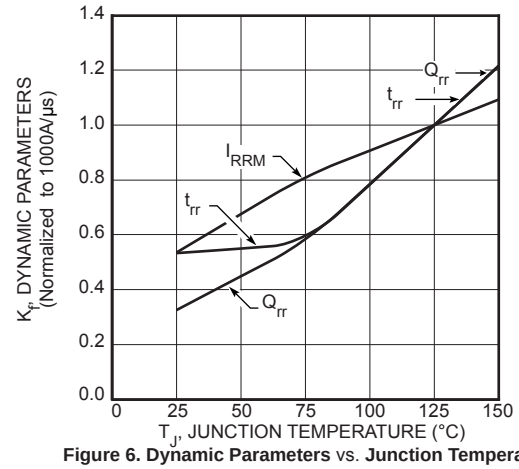


Figure 6. Dynamic Parameters vs. **Junction Temperature**

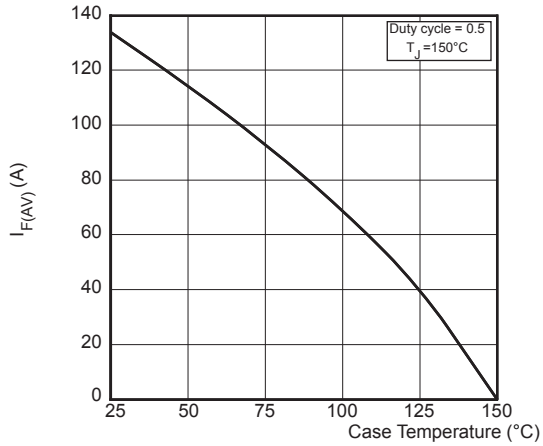


Figure 7. Maximum Average Forward Current vs. **CaseTemperature**

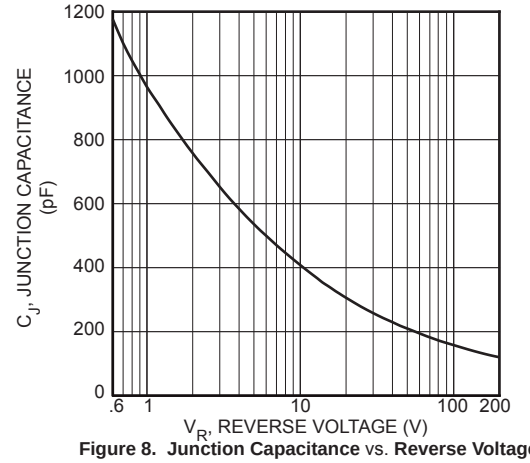


Figure 8. Junction Capacitance vs. **Reverse Voltage**

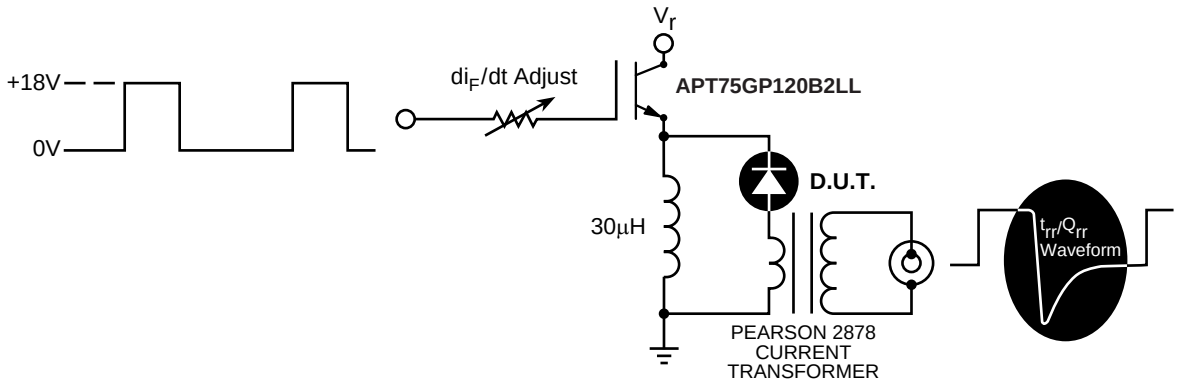


Figure 9. Diode Test Circuit

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}.

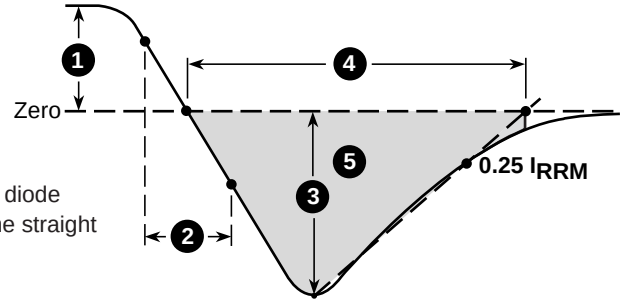
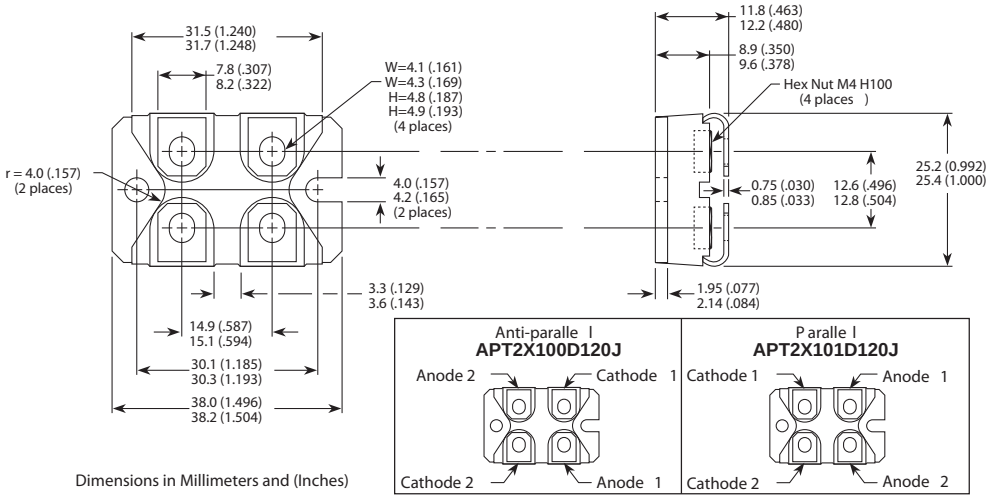


Figure 10, Diode Reverse Recovery Waveform and Definitions

SOT-227 Package Outline



Dimensions in Millimeters and (Inches)