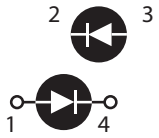
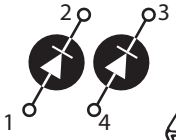


Anti-Parallel
APT2x100DQ100J



Parallel
APT2x101DQ100J

"UL Recognized"
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Microsemi
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APT2x101DQ100J 1000V 100A
APT2x100DQ100J 1000V 100A

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**
- **Avalanche Energy Rated**

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_100DQ100J	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 = 64°C, Duty Cycle = 0.5)	100	Amps
$I_{F(RMS)}$	RMS Forward Current (Square wave, 50% duty)	133	
I_{FSM}	Non-Repetitive Forward Surge Current (T_J = 45°C, 8.3ms)	1000	
E_{AVL}	Avalanche Energy (1A, 40mH)	20	mJ
T_J,T_{STG}	Operating and StorageTemperature Range	-55 to 175	°C

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions		MIN	TYP	MAX	UNIT
V_F	Forward Voltage	I_F = 100A		2.1	2.7	Volts
		I_F = 150A		2.34		
		I_F = 100A, T_J = 125°C		1.64		
I_{RM}	Maximum Reverse Leakage Current	V_R = 1000V			100	µA
		V_R = 1000V, 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	-	45		ns
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -200A/µs V_R = 667V, T_C = 25°C	-	290		ns
Q_{rr}	Reverse Recovery Charge		-	685		nC
I_{RRM}	Maximum Reverse Recovery Current		-	6	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -200A/µs V_R = 667V, T_C = 125°C	-	340		ns
Q_{rr}	Reverse Recovery Charge		-	3645		nC
I_{RRM}	Maximum Reverse Recovery Current		-	18	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -1000A/µs V_R = 667V, T_C = 125°C	-	160		ns
Q_{rr}	Reverse Recovery Charge		-	7085		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
$V_{Isolation}$	RMS Voltage (50-60hHz Sinusoidal Wavefomr Ffrom Terminals to Mounting Base for 1 Min.)	2500			Volts
W_T	Package Weight		1.03		oz
			29.2		g
Torque	Maximum Mounting Torque			10	lb•in
				1.1	N•m

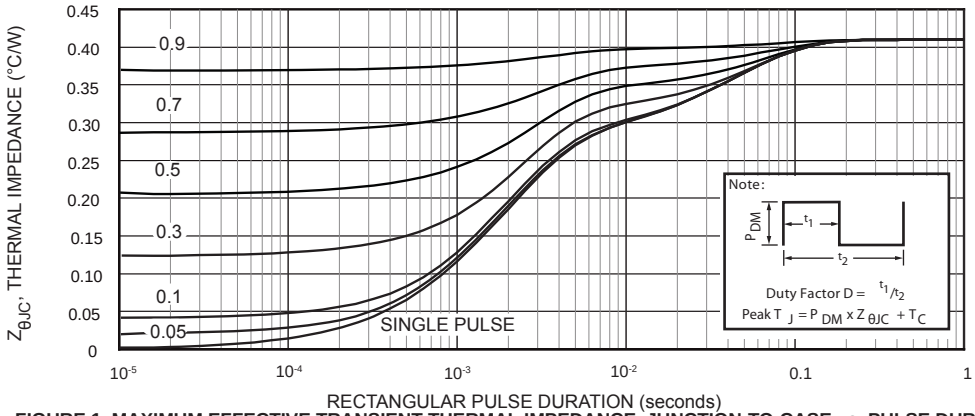


FIGURE 1. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

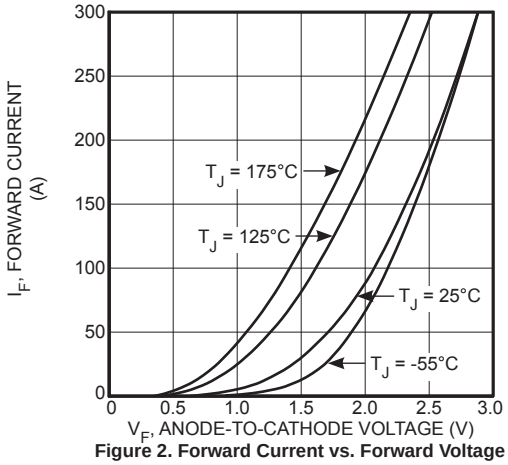


Figure 2. Forward Current vs. Forward Voltage

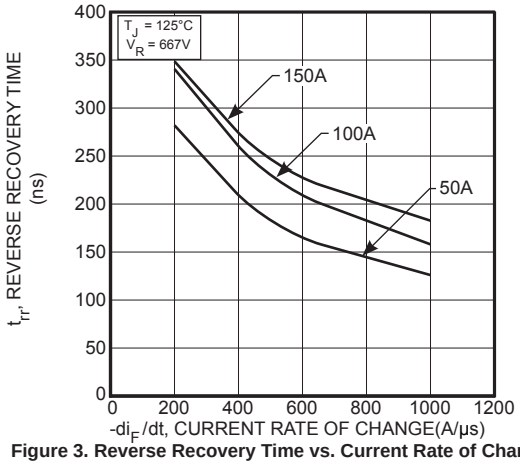


Figure 3. Reverse Recovery Time vs. Current Rate of Change

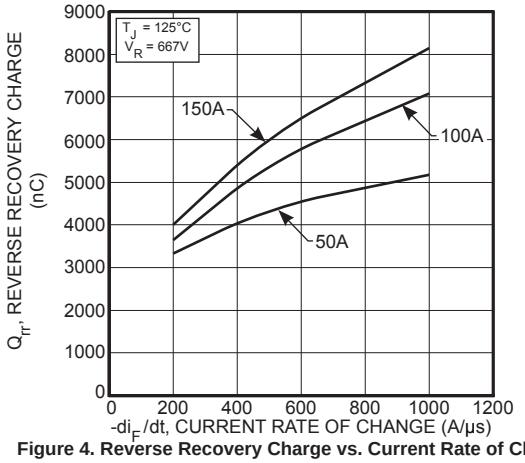


Figure 4. Reverse Recovery Charge vs. Current Rate of Change

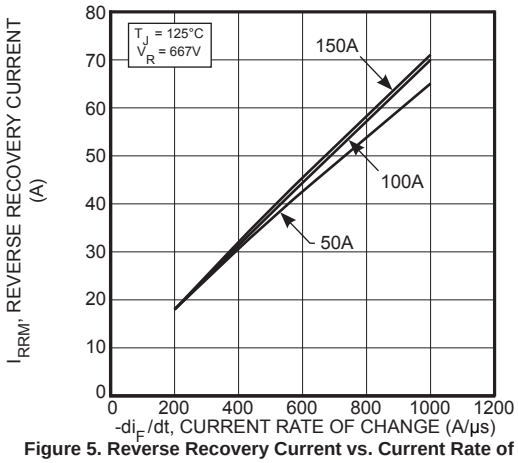


Figure 5. Reverse Recovery Current vs. Current Rate of Change

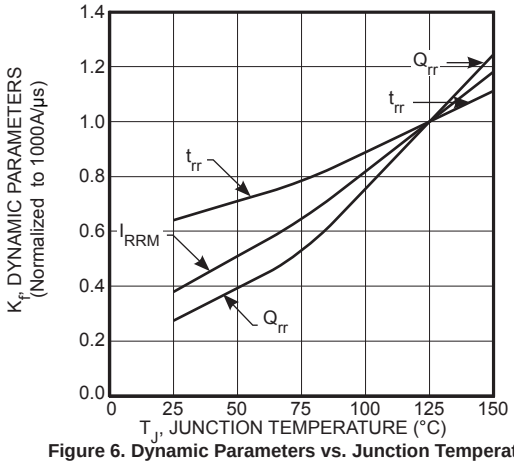


Figure 6. Dynamic Parameters vs. Junction Temperature

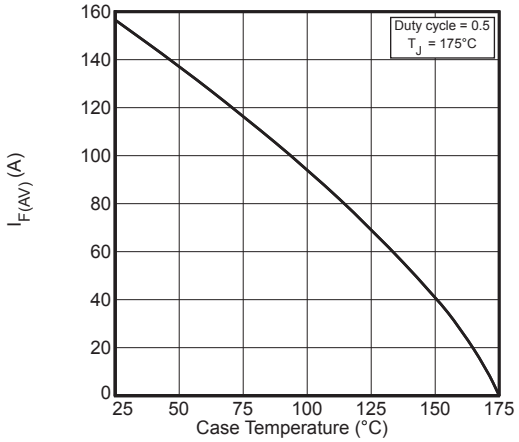


Figure 7. Maximum Average Forward Current vs. CaseTemperature

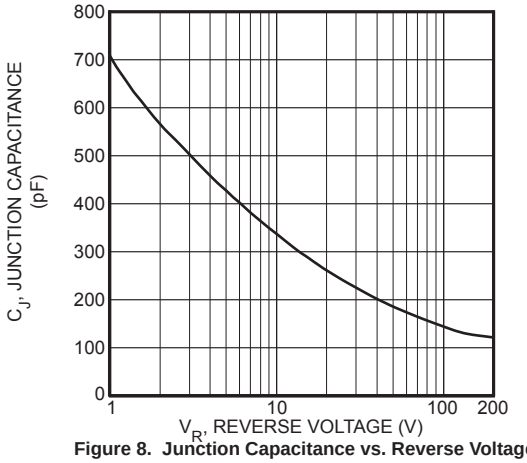


Figure 8. Junction Capacitance vs. Reverse Voltage

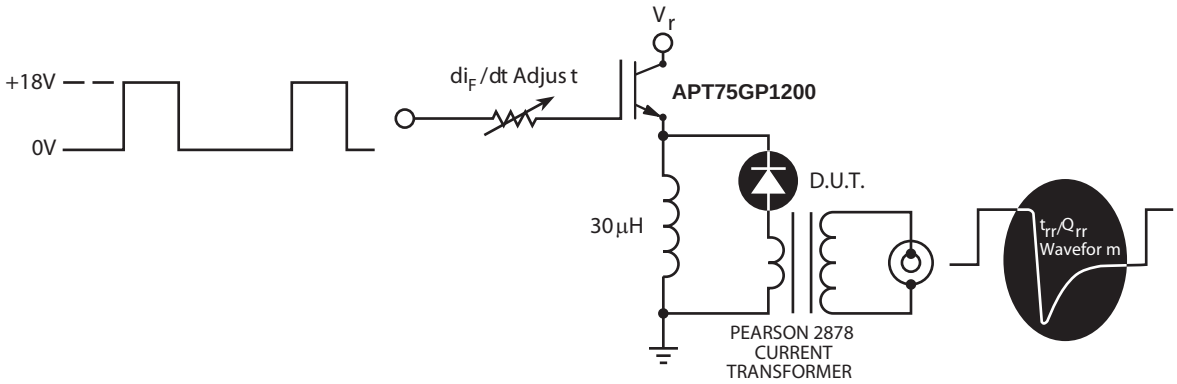


Figure 9. Diode Test Circui t

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} - Revers e R ecovery Time, measured from zero crossing wher e diode current goes from positive to negative, to the point at which the straight line through I_{RRM} and 0.25 I_{RRM} passes through zero .
5. Q_{rr} - Area Under the Curve Defined by I_{RRM} and t_{rr}.

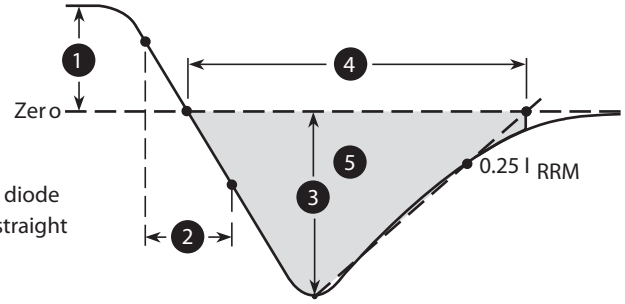
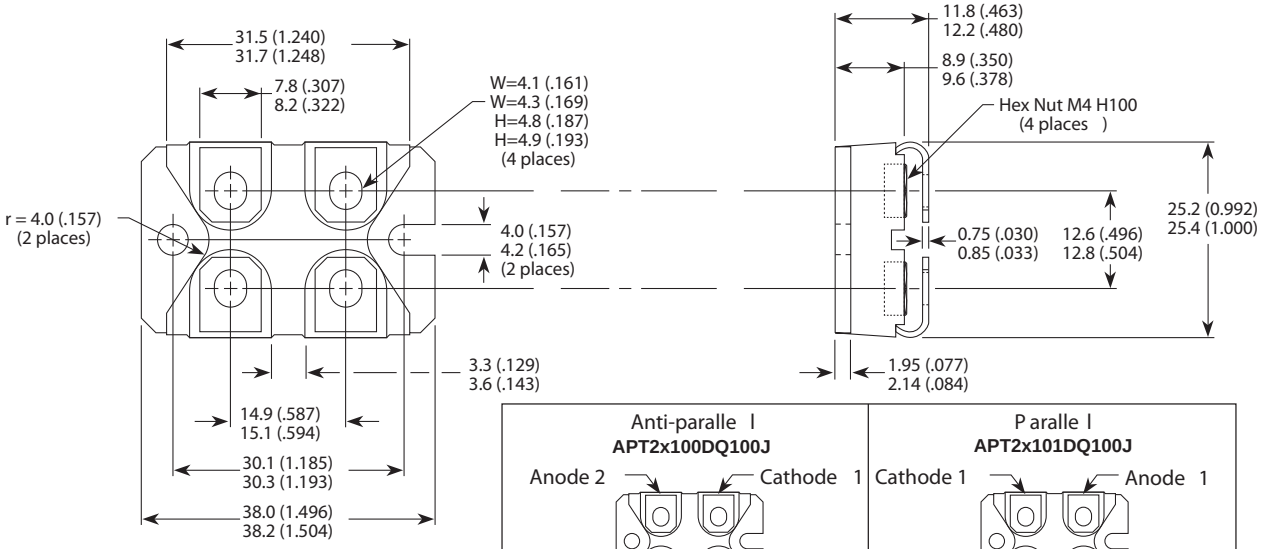


Figure 10, Diode Reverse Recovery Waveform and Definition s

SOT-227 (ISOTOP®) Package Outline



Dimensions in Millimeters and (Inches)

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