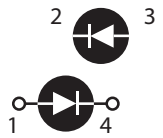
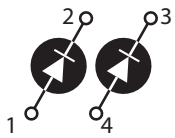


Anti-Paralle l

APT2X100D30J



P aralle l

APT2X101D30J

Microsemi
POWER PRODUCTS GROUP

APT2X101D30J 300V 100A
APT2X100D30J 300V 100A

DUAL DIE ISOTOP® PACKAGE

ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

PRODUCT APPLICATIONS	PRODUCT FEATURES	PRODUCT BENEFITS
• Anti-Parallel Diode -Switchmode Power Supply -Inverters • Free Wheeling Diode -Motor Controllers -Converters • Snubber Diode • Uninterruptible Power Supply (UPS) • Induction Heating • 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	APT2X100_101D30J	UNIT
V_R	Maximum D.C. Reverse Voltage	300	Volts
V_{RRM}	Maximum Peak Repetitive Reverse Voltage		
V_{RWM}	Maximum Working Peak Reverse Voltage		
I_F(AV)	Maximum Average Forward Current (T_C = 115°C, Duty Cycle = 0.5)	100	Amps
I_F(RMS)	RMS Forward Current (Square wave, 50% duty)	183	
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
T_L	Lead Temperature for 10 Sec.	300	

STATIC ELECTRICAL CHARACTERISTICS

Symbol			MIN	TYP	MAX	UNIT
V_F	Forward Voltage	I_F = 100A		1.2	1.4	Volts
		I_F =200A		1.5		
		I_F = 100A, T_J = 125°C		1.0		
I_{RM}	Maximum Reverse Leakage Current	V_R = V_R Rated			500	µA
		V_R = V_R Rated, T_J = 125°C			1000	
C_T	Junction Capacitance, V_R = 200V			270		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	-	36		ns
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -200A/µs, V_R = 200V, T_C = 25°C	-	47		ns
Q_{rr}	Reverse Recovery Charge		-	120		nC
I_{RRM}	Maximum Reverse Recovery Current		-	5	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -200A/µs, V_R = 200V, T_C = 125°C	-	110		ns
Q_{rr}	Reverse Recovery Charge		-	650		nC
I_{RRM}	Maximum Reverse Recovery Current		-	10	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 100A, di_F/dt = -1000A/µs, V_R = 200V, T_C = 125°C	-	70		ns
Q_{rr}	Reverse Recovery Charge		-	1490		nC
I_{RRM}	Maximum Reverse Recovery Current		-	37		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			.42	°C/W
$V_{isolation}$	RMS Voltage			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.

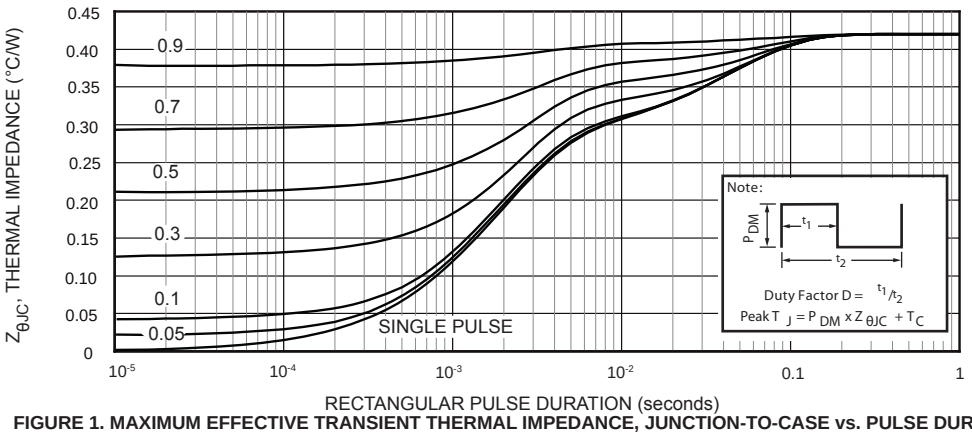


FIGURE 1. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

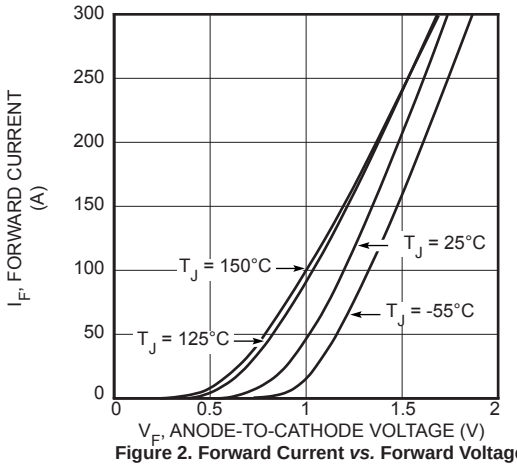


Figure 2. Forward Current *vs.* Forward Voltage

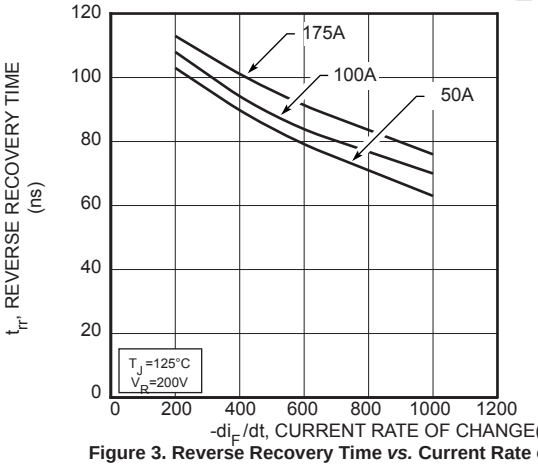


Figure 3. Reverse Recovery Time *vs.* Current Rate of Change

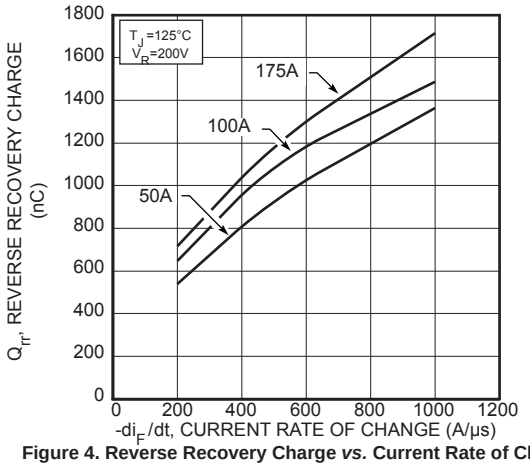


Figure 4. Reverse Recovery Charge *vs.* Current Rate of Change

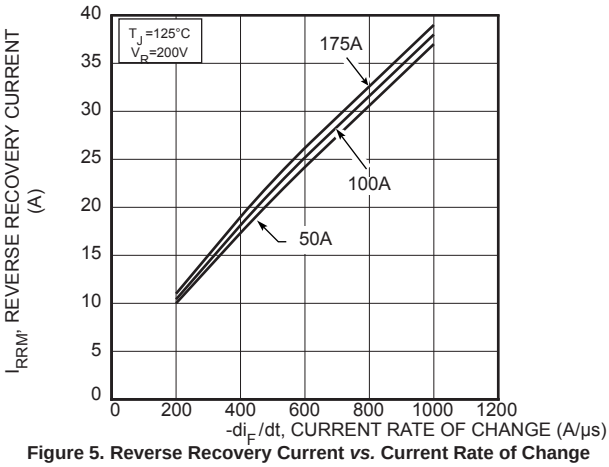


Figure 5. Reverse Recovery Current *vs.* Current Rate of Change

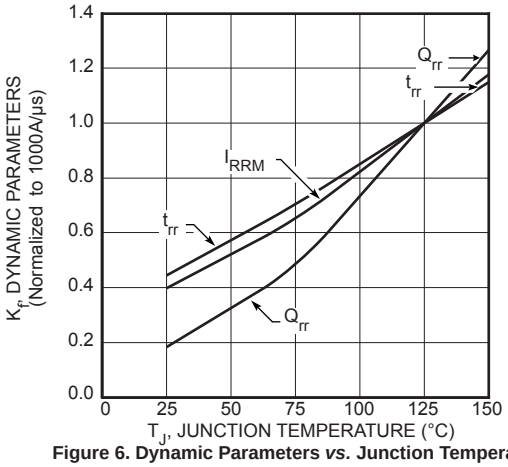


Figure 6. Dynamic Parameters *vs.* Junction Temperature

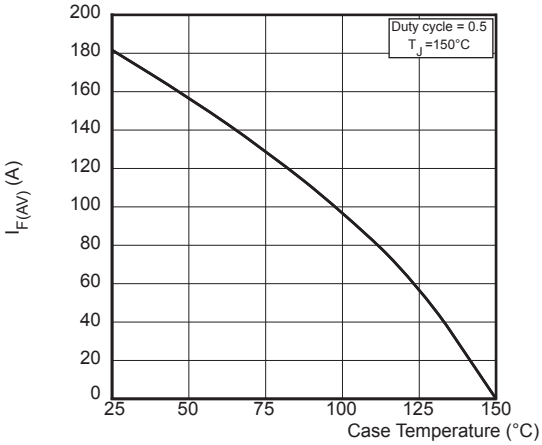


Figure 7. Maximum Average Forward Current *vs.* Case Temperature

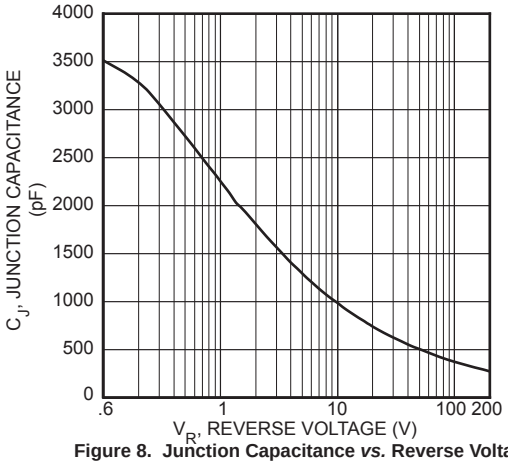


Figure 8. Junction Capacitance *vs.* Reverse Voltage

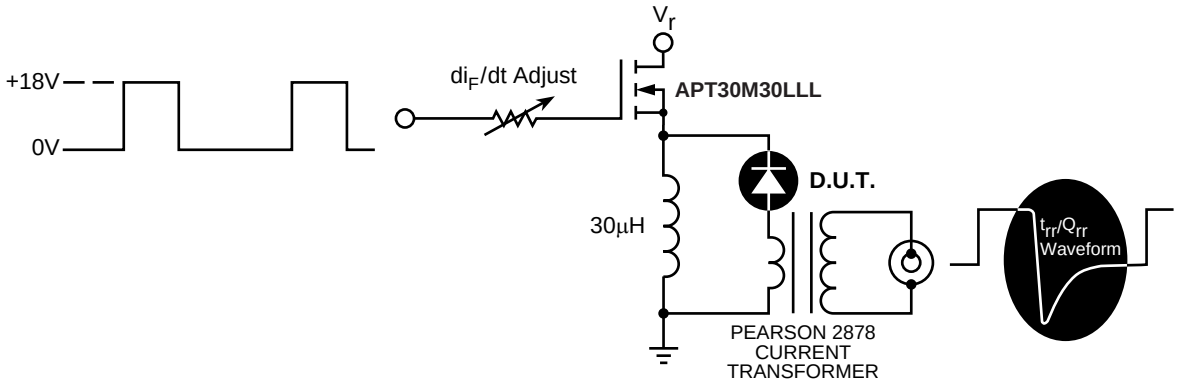


Figure 9. Diode Test Circuit

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}.

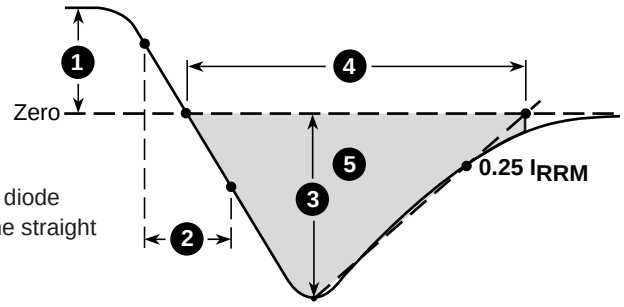
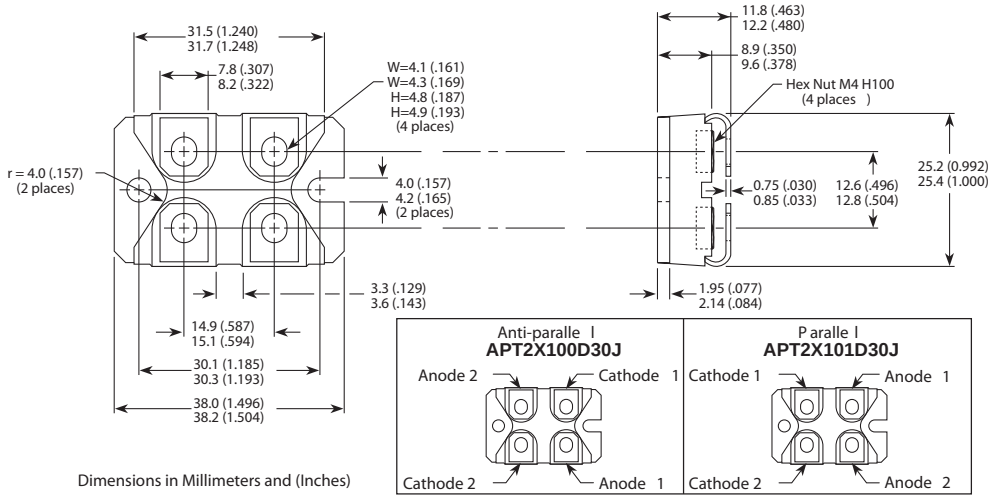


Figure 10, Diode Reverse Recovery Waveform and Definitions

SOT-227 Package Outline