

**ADVANCED
POWER
TECHNOLOGY®**
APT2X30D30J 300V 30A
APT2X31D30J 300V 30A

DUAL DIE ISOTOP® PACKAGE

ULTRAFast SOFT RECOVERY DUAL RECTIFIER DIODES

PRODUCT APPLICATIONS	PRODUCT FEATURES	PRODUCT BENEFITS
<ul style="list-style-type: none"> • Anti-Parallel Diode <ul style="list-style-type: none"> -Switchmode Power Supply -Inverters • Free Wheeling Diode <ul style="list-style-type: none"> -Motor Controllers -Converters • Snubber Diode • Uninterruptible Power Supply (UPS) • Induction Heating • High Speed Rectifiers 	<ul style="list-style-type: none"> • Ultrafast Recovery Times • Soft Recovery Characteristics • Popular SOT-227 Package • Low Forward Voltage • High Blocking Voltage • Low Leakage Current 	<ul style="list-style-type: none"> • Low Losses • Low Noise Switching • Cooler Operation • Higher Reliability Systems • Increased System Power Density

MAXIMUM RATINGS

All Ratings are per diode: $T_C = 25^\circ\text{C}$ unless otherwise specified.

Symbol	Characteristic / Test Conditions	APT2X30/2X31D30J	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 ($T_C = 100^\circ\text{C}$, Duty Cycle = 0.5)	30	Amps
$I_F(RMS)$	RMS Forward Current	70	
I_{FSM}	Non-Repetitive Forward Surge Current ($T_J = 45^\circ\text{C}$, 8.3ms)	320	
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Lead Temperature: 0.063" from Case for 10 Sec.	300	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
V_F	Maximum Forward Voltage	$I_F = 30\text{A}$		1.4	Volts
		$I_F = 60\text{A}$		1.4	
		$I_F = 30\text{A}, T_J = 150^\circ\text{C}$		1.2	
I_{RM}	Maximum Reverse Leakage Current	$V_R = V_R$ Rated		250	μA
		$V_R = V_R$ Rated, $T_J = 125^\circ\text{C}$		500	
C_T	Junction Capacitance, $V_R = 200\text{V}$		71		pF
L_S	Series Inductance (Lead to Lead 5mm from Base)		10		nH

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DYNAMIC CHARACTERISTICS

APT2X30/2X31D30J

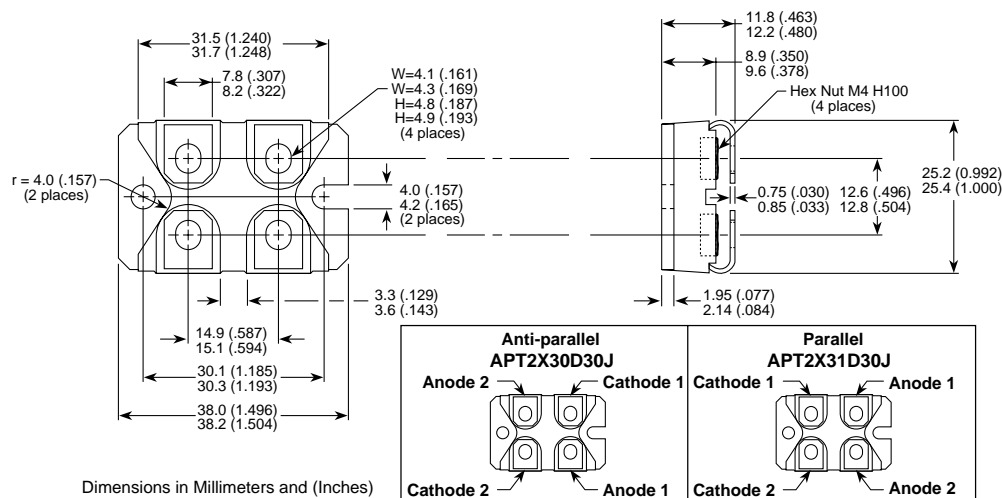
Symbol	Characteristic	MIN	TYP	MAX	UNIT
t_{rr1}	Reverse Recovery Time, $I_F = 1.0A$, $di_F/dt = -15A/\mu s$, $V_R = 30V$, $T_J = 25^\circ C$		35	TBD	ns
t_{rr2}	Reverse Recovery Time	$T_J = 25^\circ C$	40		
t_{rr3}	$I_F = 30A$, $di_F/dt = -100A/\mu s$, $V_R = 180V$	$T_J = 100^\circ C$	60		
t_{fr1}	Forward Recovery Time	$T_J = 25^\circ C$	162		
t_{fr2}	$I_F = 30A$, $di_F/dt = 100A/\mu s$, $V_R = 180V$	$T_J = 100^\circ C$	162		
I_{RRM1}	Reverse Recovery Current	$T_J = 25^\circ C$	5	9	Amps
I_{RRM2}	$I_F = 30A$, $di_F/dt = -100A/\mu s$, $V_R = 180V$	$T_J = 100^\circ C$	8	16	
Q_{rr1}	Recovery Charge	$T_J = 25^\circ C$	110		nC
Q_{rr2}	$I_F = 30A$, $di_F/dt = -100A/\mu s$, $V_R = 180V$	$T_J = 100^\circ C$	280		
V_{fr1}	Forward Recovery Voltage	$T_J = 25^\circ C$	2.9		Volts
V_{fr2}	$I_F = 30A$, $di_F/dt = 100A/\mu s$, $V_R = 180V$	$T_J = 100^\circ C$	2.9		
diM/dt	Rate of Fall of Recovery Current	$T_J = 25^\circ C$	317		A/ μs
		$T_J = 100^\circ C$	550		

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			1.1	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			20	
$V_{Isolation}$	RMS Voltage (50-60 Hz Sinusoidal Waveform from Terminals to Mounting Base for 1 Min.)	2500			Volts
W_T	Package Weight		1.03		oz
			29.2		gm
Torque	Maximum Torque (Mounting = 8-32 or 4mm Machine and Terminals = 4mm Machine)			13.6	lb•in
				1.5	N•m

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

SOT-227 Package Outline



Dimensions in Millimeters and (Inches)

053-4055 Rev - 6-2001

APT's devices are covered by one or more of the following U.S. patents:
ISOTOP® is a Registered Trademark of SGS Thomson.

4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336
5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058