

**APT2X30/31S20J 200V 30A**

## DUAL DIE ISOTOP® PACKAGE HIGH VOLTAGE SCHOTTKY DIODES

### PRODUCT APPLICATIONS

- Parallel Diode
  - Switchmode Power Supply
  - Inverters
- Free Wheeling Diode
  - Motor Controllers
  - Converters
- Snubber Diode
- Uninterruptible Power Supply (UPS)
- 48 Volt Output Rectifiers
- 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 are per diode:  $T_C = 25^\circ\text{C}$  unless otherwise specified.

Symbol	Characteristic / Test Conditions	APT/2X30/31S20J	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 ( $T_C = 110^\circ\text{C}$ , Duty Cycle = 0.5)	30	Amps
$I_F(RMS)$	RMS Forward Current	101	
$I_{FSM}$	Non-Repetitive Forward Surge Current ( $T_J = 45^\circ\text{C}$ , 8.3mS)	TBD	
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$T_L$	Lead Temperature: 0.063" from Case for 10 Sec.	300	
$E_{AVL}$	Avalanche Energy (2A, 15mH)	30	

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT	
$V_F$	Maximum Forward Voltage		$I_F = 30A$	0.80	0.85	Volts
			$I_F = 60A$	0.82		
			$I_F = 30A, T_J = 150^\circ\text{C}$		0.80	
$I_{RM}$	Maximum Reverse Leakage Current		$V_R = V_R$ Rated		0.50	mA
			$V_R = V_R$ Rated, $T_J = 125^\circ\text{C}$		15	
$C_T$	Junction Capacitance, $V_R = 100V$		143		pF	
$L_S$	Series Inductance (Lead to Lead 5mm from Base)		10		nH	

APT Website - <http://www.advancedpower.com>

**USA** 405 S.W. Columbia Street  
**EUROPE** Chemin de Magret

Bend, Oregon 97702-1035  
F-33700 Merignac - France

Phone: (541) 382-8028  
Phone: (33) 5 57 92 15 15

FAX: (541) 388-0364  
FAX: (33) 5 56 47 97 61

**DYNAMIC CHARACTERISTICS**

**APT/2X30/31S20J**

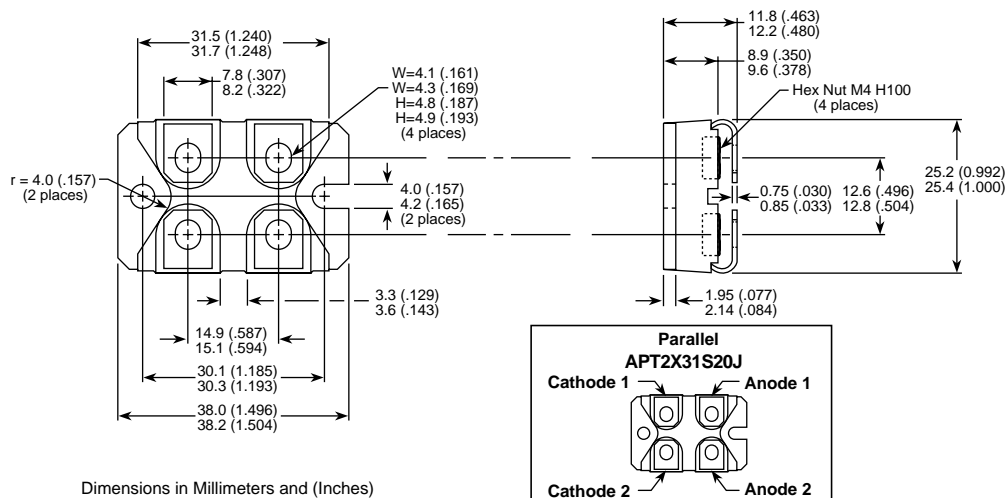
Symbol	Characteristic	MIN	TYP	MAX	UNIT
$t_{rr1}$	Reverse Recovery Time, $I_F = 1.0A$ , $di_F/dt = -15A/\mu s$ , $V_R = 30V$ , $T_J = 25^\circ C$		TBD	TBD	ns
$t_{rr2}$	Reverse Recovery Time	$T_J = 25^\circ C$	67		
$t_{rr3}$	$I_F = 30A$ , $di_F/dt = -100A/\mu s$ , $V_R = 100V$	$T_J = 100^\circ C$	95		
$t_{fr1}$	Forward Recovery Time	$T_J = 25^\circ C$	TBD		
$t_{fr2}$	$I_F = 30A$ , $di_F/dt = 100A/\mu s$ , $V_R = 100V$	$T_J = 100^\circ C$	TBD		
$I_{RRM1}$	Reverse Recovery Current	$T_J = 25^\circ C$	3.7		Amps
$I_{RRM2}$	$I_F = 30A$ , $di_F/dt = -100A/\mu s$ , $V_R = 100V$	$T_J = 100^\circ C$	5.5		
$Q_{rr1}$	Recovery Charge	$T_J = 25^\circ C$	142		nC
$Q_{rr2}$	$I_F = 30A$ , $di_F/dt = -100A/\mu s$ , $V_R = 100V$	$T_J = 100^\circ C$	300		
$V_{fr1}$	Forward Recovery Voltage	$T_J = 25^\circ C$	TBD		Volts
$V_{fr2}$	$I_F = 30A$ , $di_F/dt = 100A/\mu s$ , $V_R = 100V$	$T_J = 100^\circ C$	TBD		
$diM/dt$	Rate of Fall of Recovery Current $I_F = 30A$ , $di_F/dt = -100A/\mu s$ , $V_R = 100V$	$T_J = 25^\circ C$	TBD		A/ $\mu s$
		$T_J = 100^\circ C$	TBD		

**THERMAL AND MECHANICAL CHARACTERISTICS**

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			1.3	$^\circ C/W$
$R_{\theta JA}$	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)

053-6033 Rev A 6-2002

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