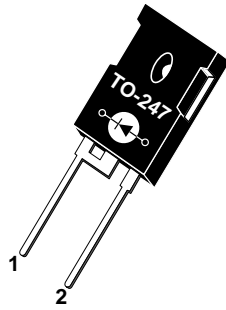


1 - Cathode  
2 - Anode  
Back of Case - Cathode



**ADVANCED  
POWER  
TECHNOLOGY®**  
**APT15DS30B 300V 15A**

## HIGH FREQUENCY SOFT RECOVERY RECTIFIER DIODE

PRODUCT APPLICATIONS	PRODUCT FEATURES	PRODUCT BENEFITS
<ul style="list-style-type: none"> <li>• Anti-Parallel Diode               <ul style="list-style-type: none"> <li>-Switchmode Power Supply</li> <li>-Inverters</li> </ul> </li> <li>• Free Wheeling Diode               <ul style="list-style-type: none"> <li>-Motor Controllers</li> <li>-Converters</li> </ul> </li> <li>• Snubber Diode</li> <li>• Uninterruptible Power Supply (UPS)</li> <li>• Induction Heating</li> <li>• High Speed Rectifiers</li> </ul>	<ul style="list-style-type: none"> <li>• Ultrafast Recovery Times</li> <li>• Soft Recovery Characteristics</li> <li>• Popular TO-247 Package</li> <li>• <math>t_{rr} &lt; 15\text{ns}</math> @ 15 Amps</li> <li>• High Blocking Voltage</li> <li>• Low Leakage Current</li> </ul>	<ul style="list-style-type: none"> <li>• Low Losses</li> <li>• Low Noise Switching</li> <li>• Cooler Operation</li> <li>• Higher Reliability Systems</li> <li>• Increased System Power Density</li> </ul>

### MAXIMUM RATINGS

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

Symbol	Characteristic / Test Conditions	APT15DS30B	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 ( $T_C = 90^\circ\text{C}$ , Duty Cycle = 0.5)	15	Amps
$I_F(RMS)$	RMS Forward Current	25	
$I_{FSM}$	Non-Repetitive Forward Surge Current ( $T_J = 45^\circ\text{C}$ , 8.3ms)	110	
$T_J, T_{STG}$	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	$I_F = 15\text{A}$		2.0	Volts
		$I_F = 30\text{A}$		2.2	
		$I_F = 15\text{A}, T_J = 150^\circ\text{C}$		1.6	
$I_{RM}$	Maximum Reverse Leakage Current	$V_R = V_R$ Rated		250	$\mu\text{A}$
		$V_R = V_R$ Rated, $T_J = 125^\circ\text{C}$		500	
$C_T$	Junction Capacitance, $V_R = 200\text{V}$		25		pF
$L_S$	Series Inductance (Lead to Lead 5mm from Base)		10		nH

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EUROPE Chemin de Magret F-33700 Merignac - France Phone: (33) 5 57 92 15 15 FAX: (33) 5 56 47 97 61

### DYNAMIC CHARACTERISTICS

APT15DS30B

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$t_{rr1}$	Reverse Recovery Time, $I_F = 1.0A$ , $di_F/dt = -15A/\mu s$ , $V_R = 30V$ , $T_J = 25^\circ C$		25	35	ns
$t_{rr2}$	Reverse Recovery Time		12.5		
$t_{rr3}$	$I_F = 15A$ , $di_F/dt = -500A/\mu s$ , $V_R = 180V$		25		
$t_{fr1}$	Forward Recovery Time		70		
$t_{fr2}$	$I_F = 15A$ , $di_F/dt = 500A/\mu s$ , $V_R = 180V$		70		
$I_{RRM1}$	Reverse Recovery Current		4.3	9	Amps
$I_{RRM2}$	$I_F = 15A$ , $di_F/dt = -500A/\mu s$ , $V_R = 180V$		8.5	16	
$Q_{rr1}$	Recovery Charge		28		nC
$Q_{rr2}$	$I_F = 15A$ , $di_F/dt = -500A/\mu s$ , $V_R = 180V$		105		
$V_{fr1}$	Forward Recovery Voltage		25.5		Volts
$V_{fr2}$	$I_F = 15A$ , $di_F/dt = 500A/\mu s$ , $V_R = 180V$		25.5		
$diM/dt$	Rate of Fall of Recovery Current		900		A/ $\mu s$
	$I_F = 15A$ , $di_F/dt = -500A/\mu s$ , $V_R = 180V$		3000		

### THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			2.0	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			40	
$W_T$	Package Weight		0.22		oz
			6.1		gm
Torque	Maximum Mounting Torque (Screw Type = 6-32 or 3.5mm Machine)			10	lb•in
				1.1	N•m

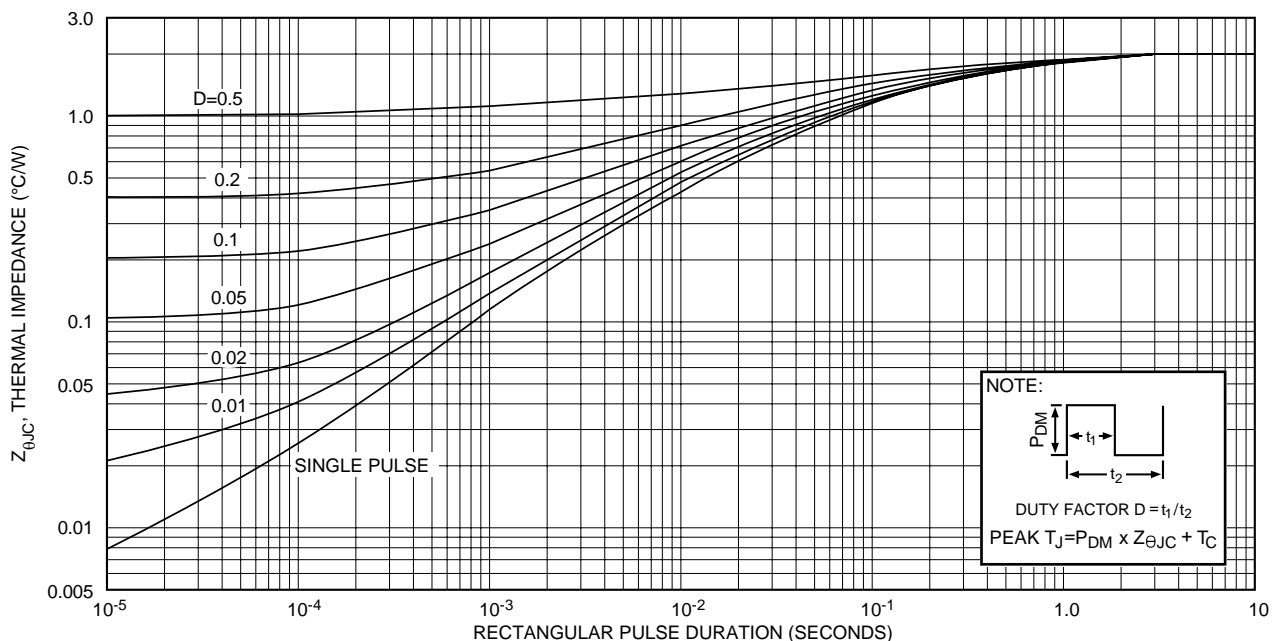
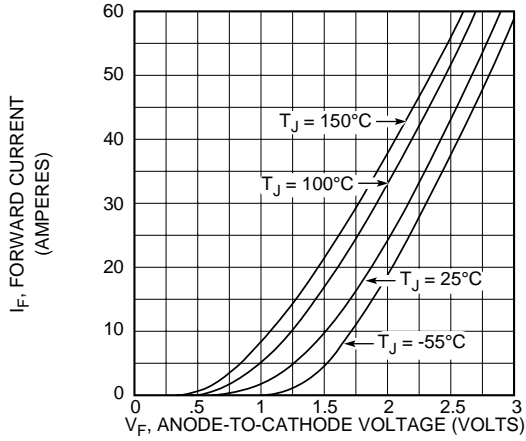
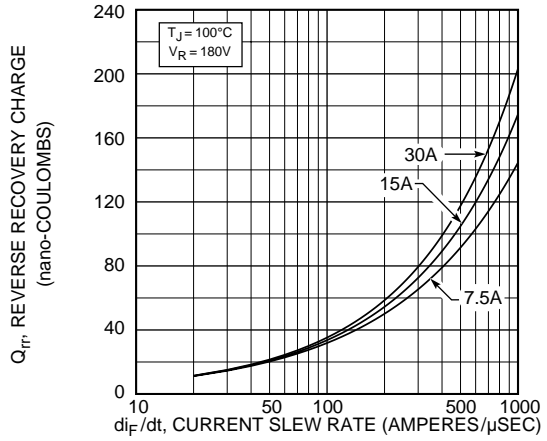


Figure 1, Maximum Effective Transient Thermal Impedance, Junction-To-Case vs Pulse Duration

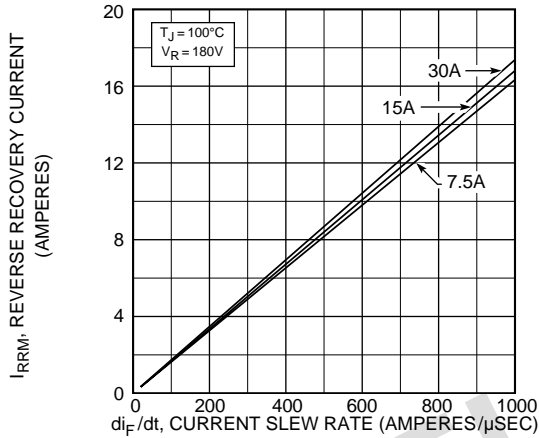
**APT15DS30B**



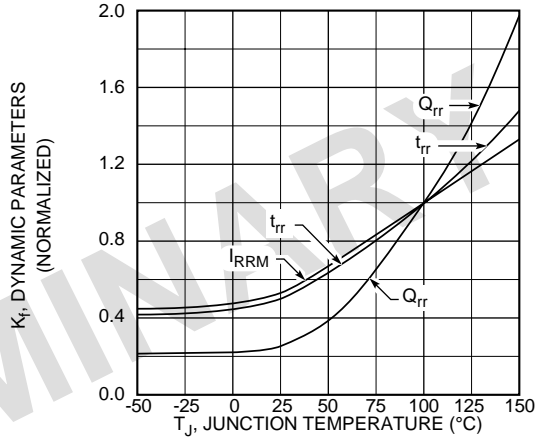
**Figure 2, Forward Voltage Drop vs Forward Current**



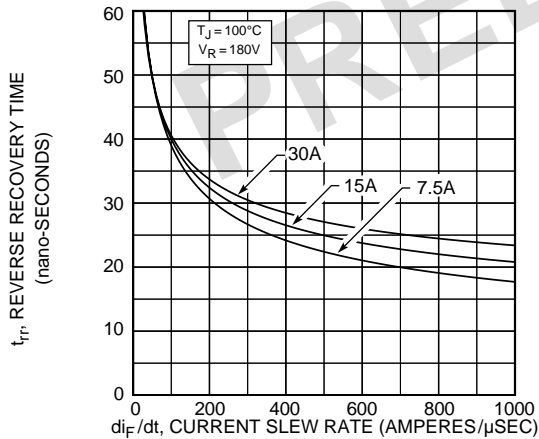
**Figure 3, Reverse Recovery Charge vs Current Slew Rate**



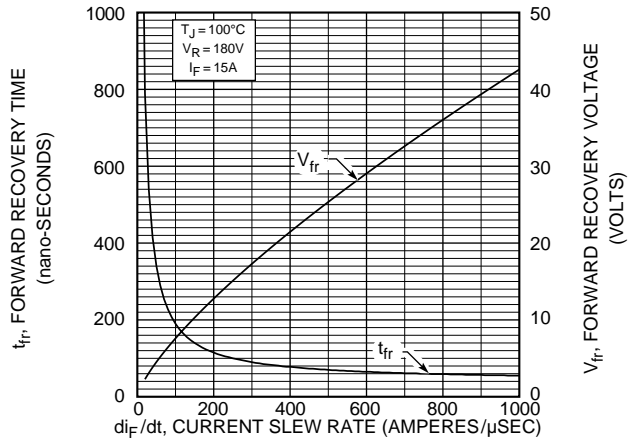
**Figure 4, Reverse Recovery Current vs Current Slew Rate**



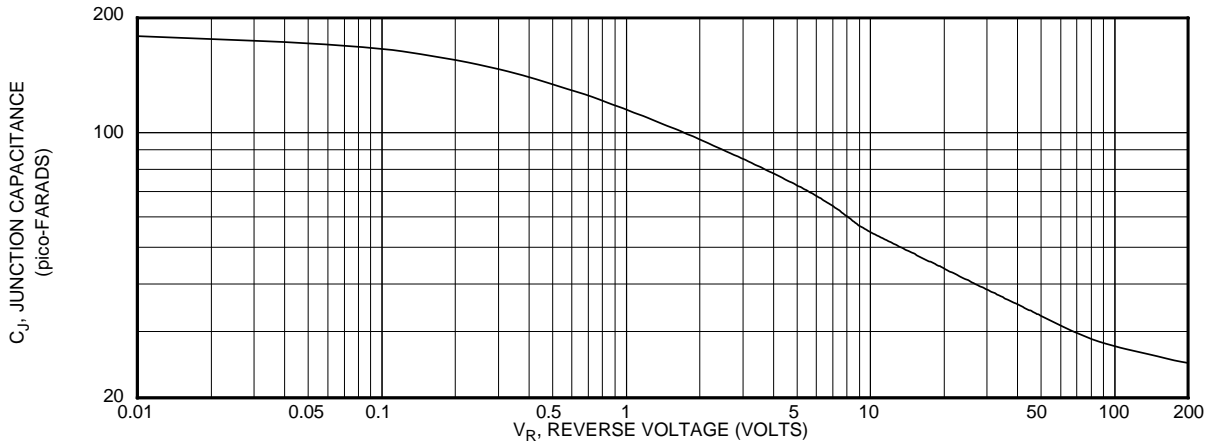
**Figure 5, Dynamic Parameters vs Junction Temperature**



**Figure 6, Reverse Recovery Time vs Current Slew Rate**



**Figure 7, Forward Recovery Voltage/Time vs Current Slew Rate**



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

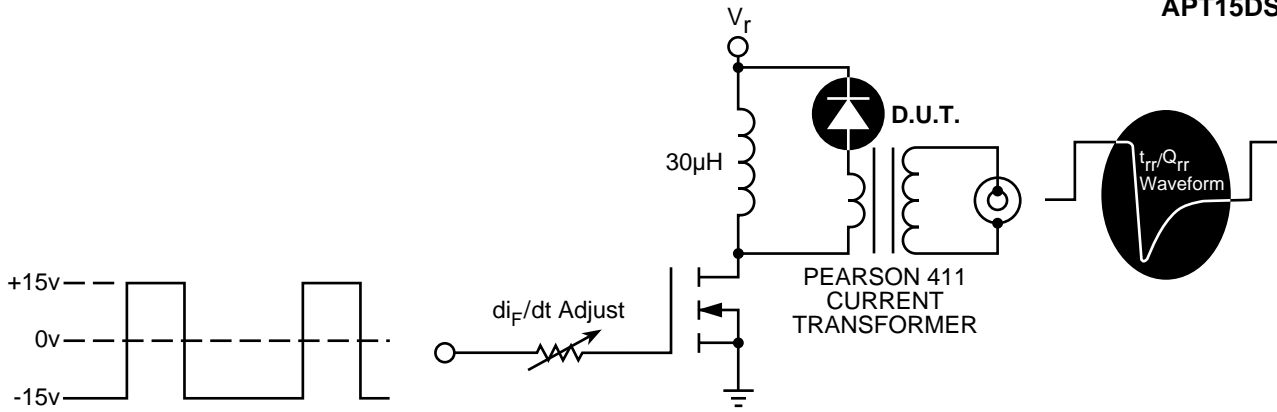


Figure 9, Diode Reverse Recovery Test Circuit and Waveforms

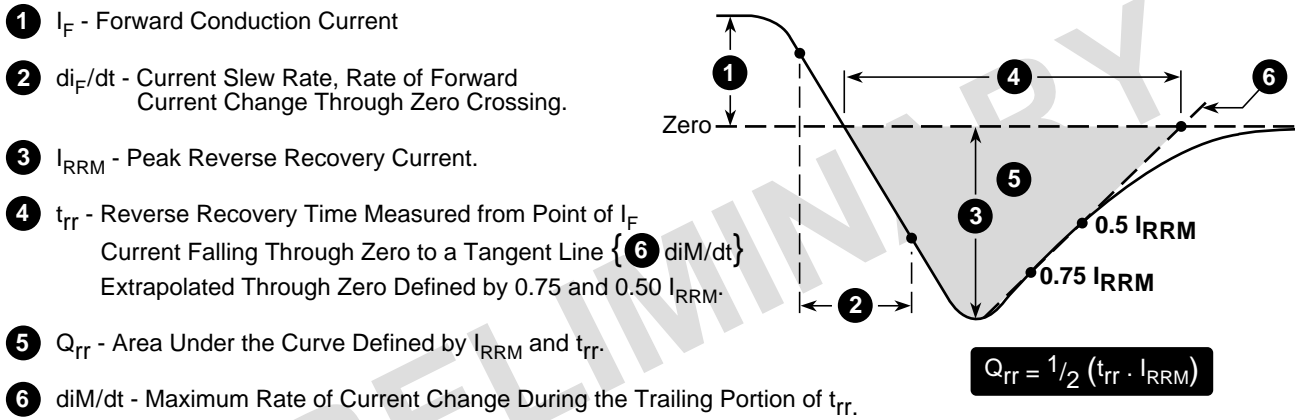
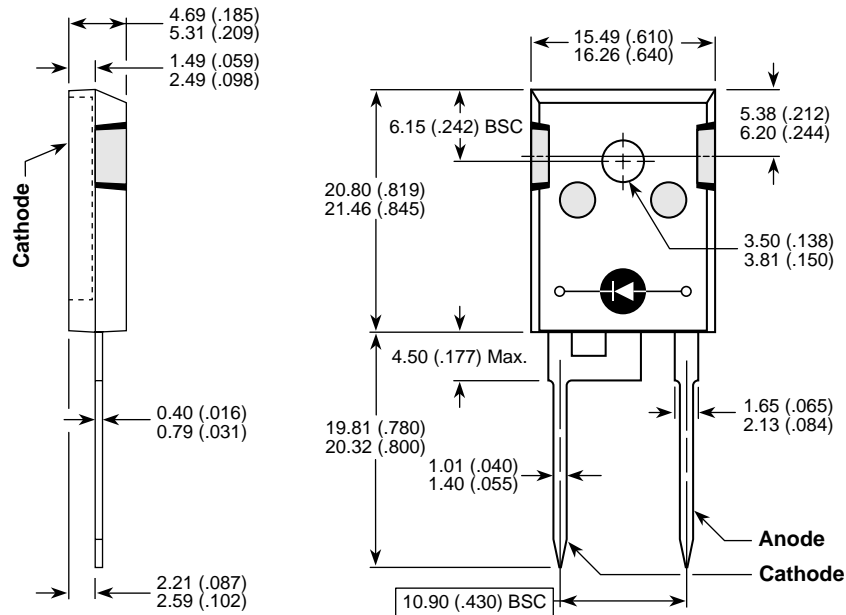


Figure 10, Diode Reverse Recovery Waveform and Definitions

**TO-247 Package Outline**



Dimensions in Millimeters and (Inches)

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

APT's devices are covered by one or more of the following U.S.patents: 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

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