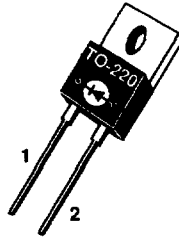


1 - Cathode
2 - Anode
Back of Case - Cathode



APT15D100K 1000V 15A
APT15D90K 900V 15A
APT15D80K 800V 15A

ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

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 TO-220 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: $T_C = 25^\circ\text{C}$ unless otherwise specified.

Symbol	Characteristic / Test Conditions	APT15D100K-90K-80K	UNIT
V_R	Maximum D.C. Reverse Voltage	1000-900-800	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)	80	
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		$I_F = 15\text{A}$	1.9	2.3	Volts
			$I_F = 30\text{A}$	2.4		
			$I_F = 15\text{A}, T_J = 150^\circ\text{C}$		1.9	
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, $V_R = 200\text{V}$		12		pF	
L_S	Series Inductance (Lead to Lead 5mm from Base)		10		nH	

405 S.W. COLUMBIA STREET
BEND, OREGON 97702-1035
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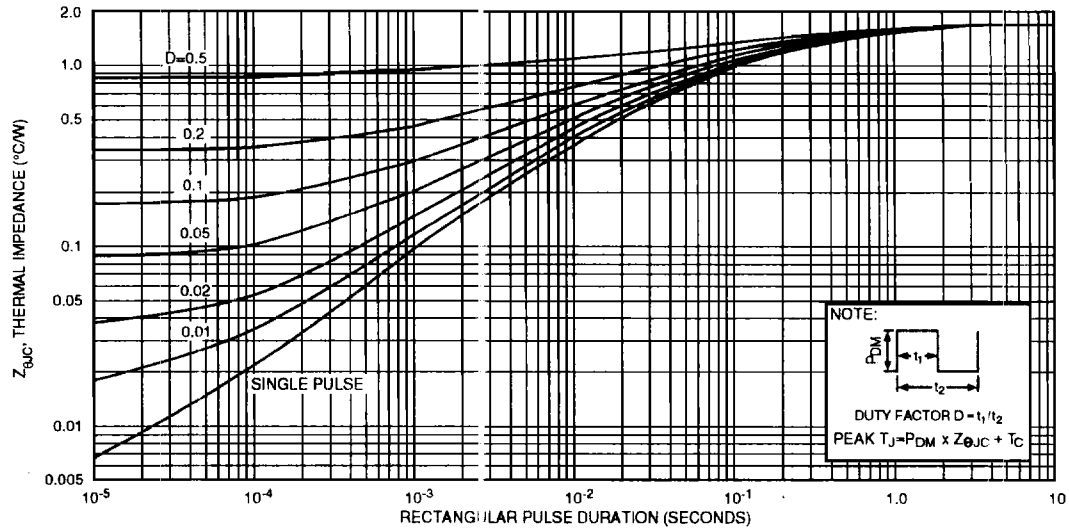
DYNAMIC CHARACTERISTICS

APT15D100K-90K-80K

Symbol	Characteristic	MIN	TYP	MAX	UNIT
t_{rr1}	Reverse Recovery Time, $I_F = 1.0A$, $di_F/dt = -15A/\mu S$, $V_R = 30V$, $T_J = 25^\circ C$		60	75	nS
t_{rr2}	Reverse Recovery Time		60	75	
t_{rr3}	$I_F = 15A$, $di_F/dt = -100A/\mu S$, $V_R = 540V$		120	220	
t_{fr1}	Forward Recovery Time		170		
t_{fr2}	$I_F = 15A$, $di_F/dt = 100A/\mu S$, $V_R = 540V$		170		
I_{RRM1}	Reverse Recovery Current		3.8	7	Amps
I_{RRM2}	$I_F = 15A$, $di_F/dt = -100A/\mu S$, $V_R = 540V$		4.5	9	
Q_{rr1}	Recovery Charge		114	263	nC
Q_{rr2}	$I_F = 15A$, $di_F/dt = -100A/\mu S$, $V_R = 540V$		270	990	
V_{fr1}	Forward Recovery Voltage		4		Volts
V_{fr2}	$I_F = 15A$, $di_F/dt = 100A/\mu S$, $V_R = 540V$		4		
diM/dt	Rate of Fall of Recovery Current		100		A/ μS
	$I_F = 15A$, $di_F/dt = -100A/\mu S$, $V_R = 540V$ (See Figure 10)		50		

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			1.7	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			80	
W_T	Package Weight		0.07		oz
			1.9		gm
Torque	Maximum Mounting Torque (Screw Type = 6-32 or 3.5mm Machine)			6.4	lb-in
				0.7	N-m



053-0010 Rev A

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

APT15D100K-90K-80K

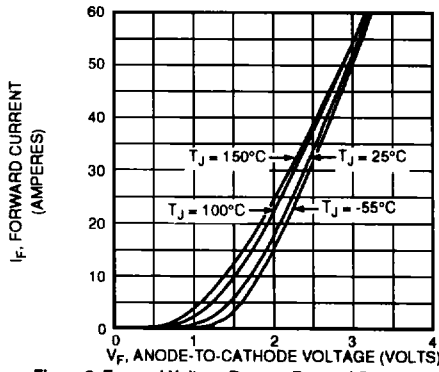


Figure 2, Forward Voltage Drop vs Forward Current

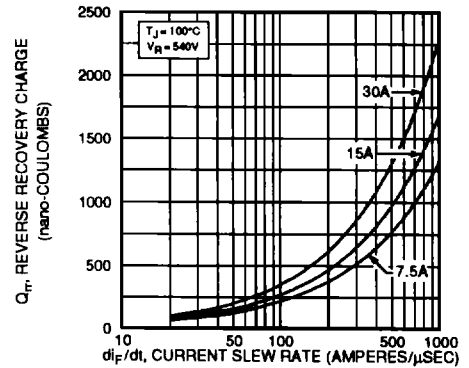


Figure 3, Reverse Recovery Charge vs Current Slew Rate

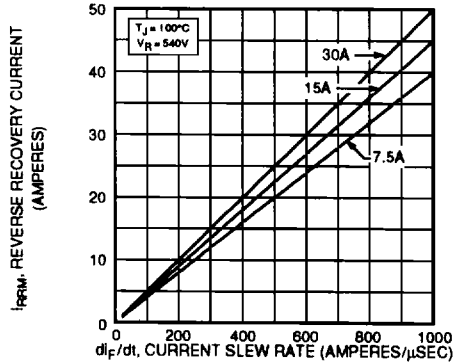


Figure 4, Reverse Recovery Current vs Current Slew Rate

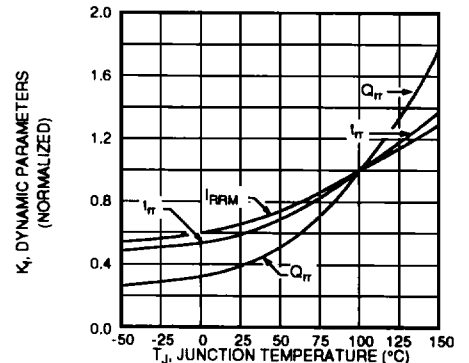


Figure 5, Dynamic Parameters vs Junction Temperature

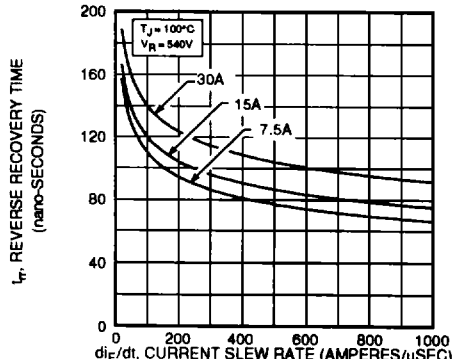


Figure 6, Reverse Recovery Time vs Current Slew Rate

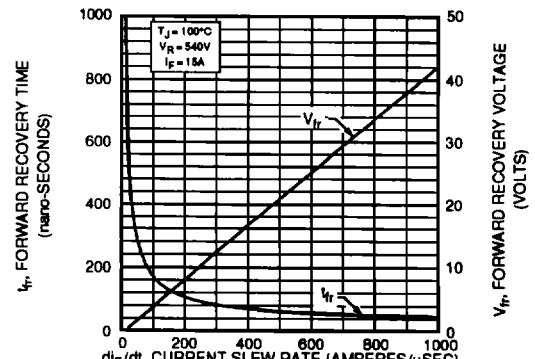


Figure 7, Forward Recovery Voltage/Time vs Current Slew Rate

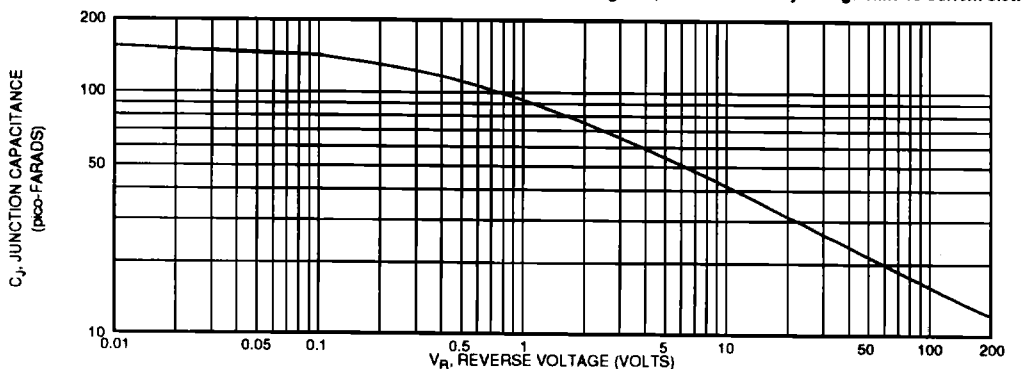


Figure 8, Junction Capacitance vs Reverse Voltage

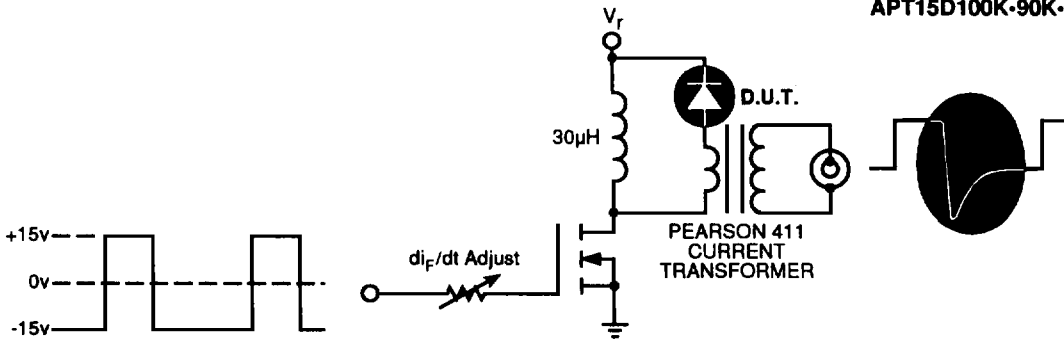


Figure 9, Diode Reverse Recovery Test Circuit and Waveforms

- ① I_F - Forward Conduction Current
- ② di_F/dt - Current Slew Rate, Rate of Forward Current Change Through Zero Crossing.
- ③ I_{RRM} - Peak Reverse Recovery Current.
- ④ t_{rr} - Reverse Recovery Time Measured from Point of I_F Current Falling Through Zero to a Tangent Line {⑥ diM/dt } Extrapolated Through Zero Defined by 0.75 and 0.50 I_{RRM} .
- ⑤ Q_{rr} - Area Under the Curve Defined by I_{RRM} and t_{rr} .
- ⑥ diM/dt - Maximum Rate of Current Change During the Trailing Portion of t_{rr} .

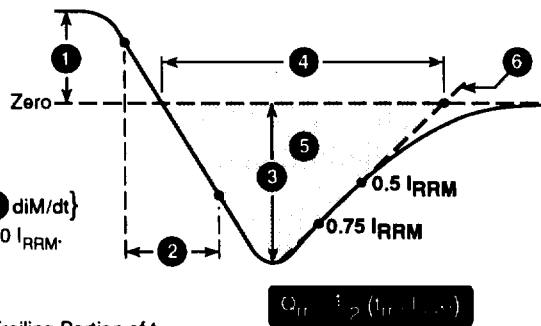
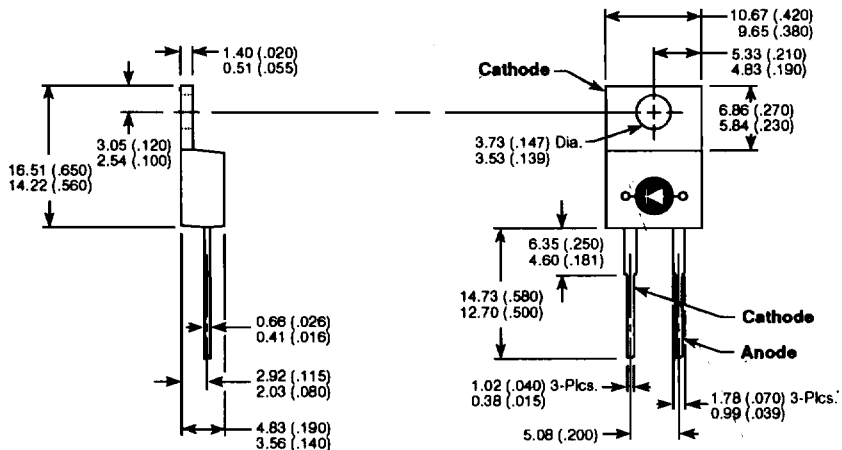


Figure 10, Diode Reverse Recovery Waveform and Definitions

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

TO-220AC Package Outline



Dimensions in Millimeters and (Inches)