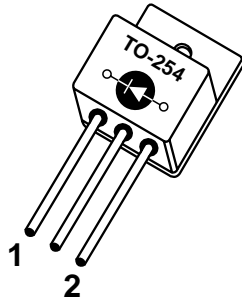


1 - Cathode  
2 - Anode  
Case Isolated



**ADVANCED  
POWER  
TECHNOLOGY®**  
**APT15D40C 400V 15A**

## ULTRAFAST 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>• Hermetic TO-254 Package</li> <li>• Low Forward Voltage</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	APT15D40C	UNIT
$V_R$	Maximum D.C. Reverse Voltage	400	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			1.7	Volts
				$I_F = 15\text{A}$	
				$I_F = 30\text{A}$	
$I_{RM}$	Maximum Reverse Leakage Current			150	$\mu\text{A}$
				$V_R = V_R$ Rated	
				$V_R = V_R$ Rated, $T_J = 125^\circ\text{C}$	
$C_T$	Junction Capacitance, $V_R = 200\text{V}$		TBD		pF
$L_S$	Series Inductance (Lead to Lead 5mm from Base)		10		nH

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## DYNAMIC CHARACTERISTICS

APT15D40C

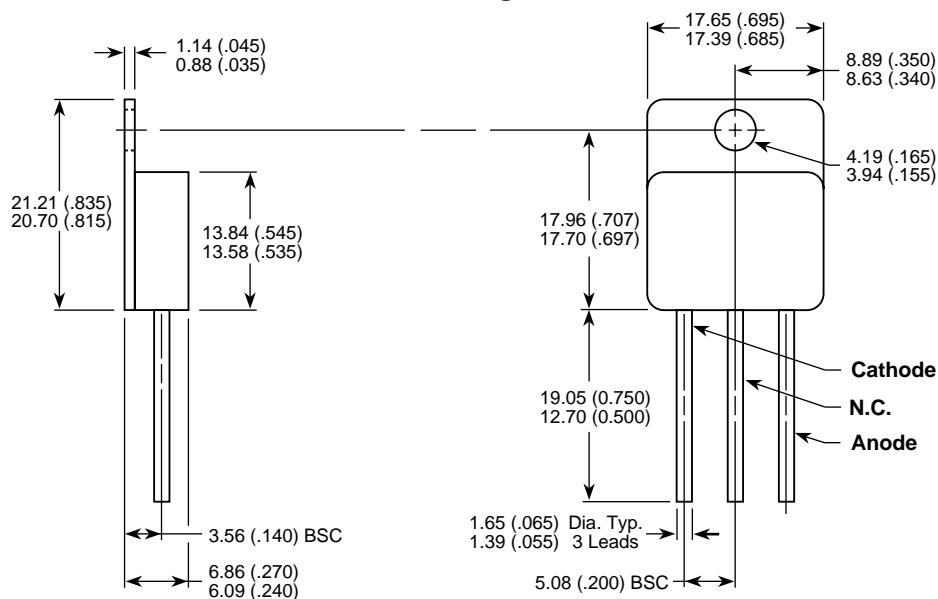
Symbol	Characteristic	MIN	TYP	MAX	UNIT
$t_{rr1}$	Reverse Recovery Time, $I_F = 1.0A$ , $di_F/dt = -15A/\mu s$ , $V_R = 30V$ , $T_J = 25^\circ C$		40	50	ns
$t_{rr2}$	Reverse Recovery Time	$T_J = 25^\circ C$	40		
$t_{rr3}$	$I_F = 15A$ , $di_F/dt = -100A/\mu s$ , $V_R = 240V$	$T_J = 100^\circ C$	70		
$t_{fr1}$	Forward Recovery Time	$T_J = 25^\circ C$	170		
$t_{fr2}$	$I_F = 15A$ , $di_F/dt = -100A/\mu s$ , $V_R = 240V$	$T_J = 100^\circ C$	170		
$I_{RRM1}$	Reverse Recovery Current	$T_J = 25^\circ C$	2.8	5	Amps
$I_{RRM2}$	$I_F = 15A$ , $di_F/dt = -100A/\mu s$ , $V_R = 240V$	$T_J = 100^\circ C$	5	10	
$Q_{rr1}$	Recovery Charge	$T_J = 25^\circ C$	56		nC
$Q_{rr2}$	$I_F = 15A$ , $di_F/dt = -100A/\mu s$ , $V_R = 240V$	$T_J = 100^\circ C$	175		
$V_{fr1}$	Forward Recovery Voltage	$T_J = 25^\circ C$	1.6		Volts
$V_{fr2}$	$I_F = 15A$ , $di_F/dt = -100A/\mu s$ , $V_R = 240V$	$T_J = 100^\circ C$	1.6		
$diM/dt$	Rate of Fall of Recovery Current	$T_J = 25^\circ C$	150		A/ $\mu s$
	$I_F = 15A$ , $di_F/dt = -100A/\mu s$ , $V_R = 240V$	$T_J = 100^\circ C$	100		

## THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			2.3	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			80	
$W_T$	Package Weight		0.16		oz
			4.4		gm

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

### TO-254 Package Outline



Dimensions in Millimeters and (Inches)

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