

## ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

### PRODUCT APPLICATIONS

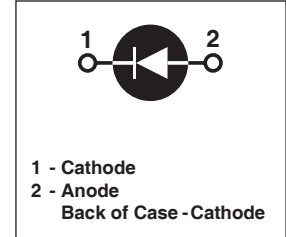
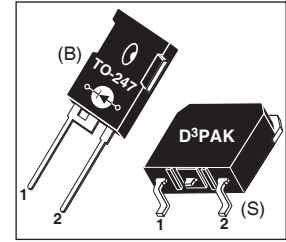
- Anti-Parallel Diode
  - Switchmode Power Supply
  - Inverters
- Free Wheeling Diode
  - Motor Controllers
  - Converters
  - Inverters
- Snubber Diode
- PFC

### PRODUCT FEATURES

- Ultrafast Recovery Times
- Soft Recovery Characteristics
- Popular TO-247 Package or Surface Mount D<sup>3</sup>PAK Package
- Low Forward Voltage
- Low Leakage Current
- Avalanche Energy Rated

### PRODUCT BENEFITS

- 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	APT30DQ100B_S(G)	UNIT
$V_R$	Maximum D.C. Reverse Voltage	1000	Volts
$V_{RRM}$	Maximum Peak Repetitive Reverse Voltage		
$V_{RWM}$	Maximum Working Peak Reverse Voltage		
$I_{F(AV)}$	Maximum Average Forward Current ( $T_C = 120^\circ\text{C}$ , Duty Cycle = 0.5)	30	Amps
$I_{F(RMS)}$	RMS Forward Current (Square wave, 50% duty)	40	
$I_{FSM}$	Non-Repetitive Forward Surge Current ( $T_J = 45^\circ\text{C}$ , 8.3ms)	150	
$E_{AVL}$	Avalanche Energy (1A, 40mH)	20	mJ
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to 175	$^\circ\text{C}$
$T_L$	Lead Temperature for 10 Sec.	300	

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$V_F$	Forward Voltage	$I_F = 30\text{A}$	2.5	3.0	Volts
		$I_F = 60\text{A}$	3.06		
		$I_F = 30\text{A}, T_J = 125^\circ\text{C}$	1.92		
$I_{RM}$	Maximum Reverse Leakage Current	$V_R = 1000\text{V}$		100	$\mu\text{A}$
		$V_R = 1000\text{V}, T_J = 125^\circ\text{C}$		500	
$C_T$	Junction Capacitance, $V_R = 200\text{V}$		25		pF

# DYNAMIC CHARACTERISTICS

APT30DQ100B\_S(G)

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
$t_{rr}$	Reverse Recovery Time	$I_F = 1A, di_F/dt = -100A/\mu s, V_R = 30V, T_J = 25^\circ C$	-	22		ns
$t_{rr}$	Reverse Recovery Time		-	240		
$Q_{rr}$	Reverse Recovery Charge		-	260		nC
$I_{RRM}$	Maximum Reverse Recovery Current	$I_F = 30A, di_F/dt = -200A/\mu s, V_R = 66700V, T_C = 25^\circ C$	-	3	-	Amps
$t_{rr}$	Reverse Recovery Time		-	300		ns
$Q_{rr}$	Reverse Recovery Charge	$I_F = 30A, di_F/dt = -200A/\mu s, V_R = 667V, T_C = 125^\circ C$	-	1250		nC
$I_{RRM}$	Maximum Reverse Recovery Current		-	7	-	Amps
$t_{rr}$	Reverse Recovery Time		-	140		ns
$Q_{rr}$	Reverse Recovery Charge	$I_F = 30A, di_F/dt = -1000A/\mu s, V_R = 667V, T_C = 125^\circ C$	-	2200		nC
$I_{RRM}$	Maximum Reverse Recovery Current		-	25		Amps

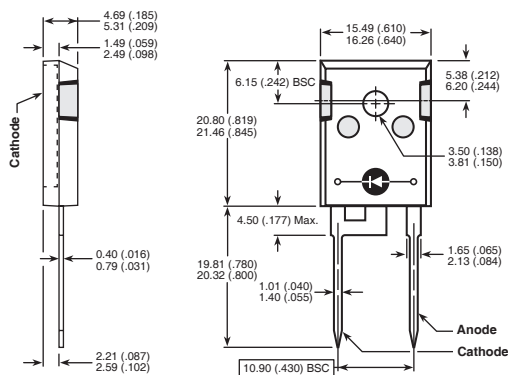
# THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			.88	$^\circ C/W$
$W_T$	Package Weight		0.22		oz
			5.9		g
Torque	Maximum Mounting Torque			10	lb•in
				1.1	N•m

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

## TO-247 Package Outline

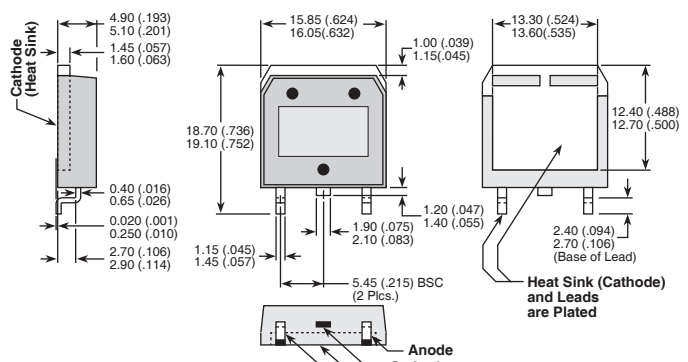
e1 SAC: Tin, Silver, Copper



Dimensions in Millimeters and (Inches)

## D<sup>3</sup>PAK Package Outline

e3 100% Sn



Dimensions in Millimeters (Inches)

053-4239 Rev A 12-2005

APT's products are covered by one or more of U.S. patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 and foreign patents. US and Foreign patents pending. All Rights Reserved.