

ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

PRODUCT APPLICATIONS

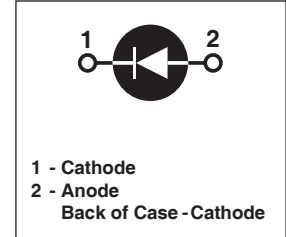
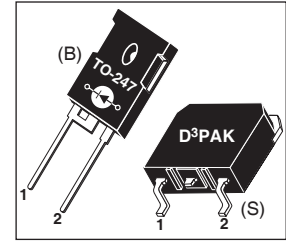
- Anti-Parallel Diode
 - Switchmode Power Supply
 - Inverters
- Free Wheeling Diode
 - Motor Controllers
 - Converters
 - Inverters
- Snubber Diode
- PFC

PRODUCT FEATURES

- Ultrafast Recovery Times
- Soft Recovery Characteristics
- Popular TO-247 Package or Surface Mount D³PAK 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	μA
		$V_R = 1000\text{V}, T_J = 125^\circ\text{C}$		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	$I_F = 30A, di_F/dt = -200A/\mu s, V_R = 66700V, T_C = 25^\circ C$	-	240		
Q_{rr}	Reverse Recovery Charge		-	260		nC
I_{RRM}	Maximum Reverse Recovery Current		-	3	-	Amps
t_{rr}	Reverse Recovery Time	$I_F = 30A, di_F/dt = -200A/\mu s, V_R = 667V, T_C = 125^\circ C$	-	300		ns
Q_{rr}	Reverse Recovery Charge		-	1250		nC
I_{RRM}	Maximum Reverse Recovery Current		-	7	-	Amps
t_{rr}	Reverse Recovery Time	$I_F = 30A, di_F/dt = -1000A/\mu s, V_R = 667V, T_C = 125^\circ C$	-	140		ns
Q_{rr}	Reverse Recovery Charge		-	2200		nC
I_{RRM}	Maximum Reverse Recovery Current		-	25		Amps

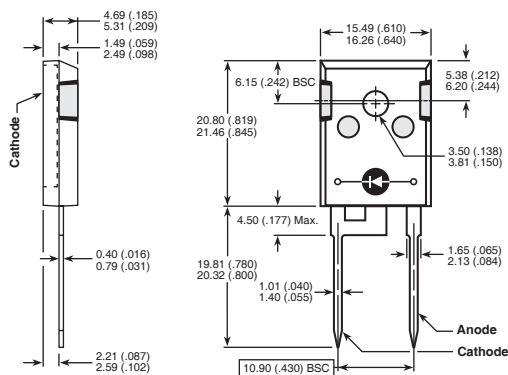
THERMAL AND MECHANICAL CHARACTERISTICS

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

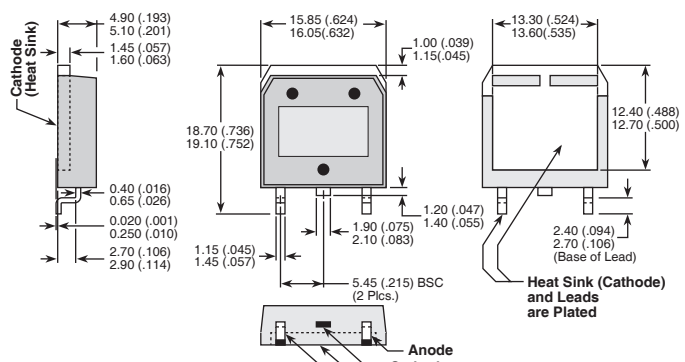
e1 SAC: Tin, Silver, Copper



Dimensions in Millimeters and (Inches)

D³PAK 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.