

ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

PRODUCT APPLICATIONS

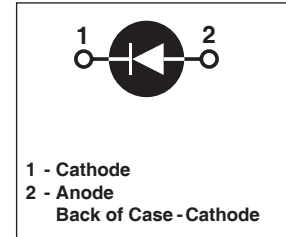
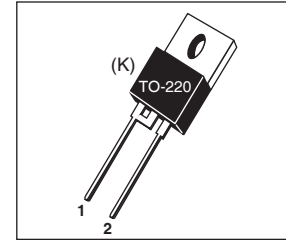
- Anti-Parallel Diode
 - Switchmode Power Supply
 - Inverters
- Free Wheeling Diode
 - Motor Controllers
 - Converters
 - Inverters
- Snubber Diode
- PFC

PRODUCT FEATURES

- Ultrafast Recovery Times
- Soft Recovery Characteristics
- Popular TO-220 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 | APT30DQ100K(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

APT30DQ100K(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 |

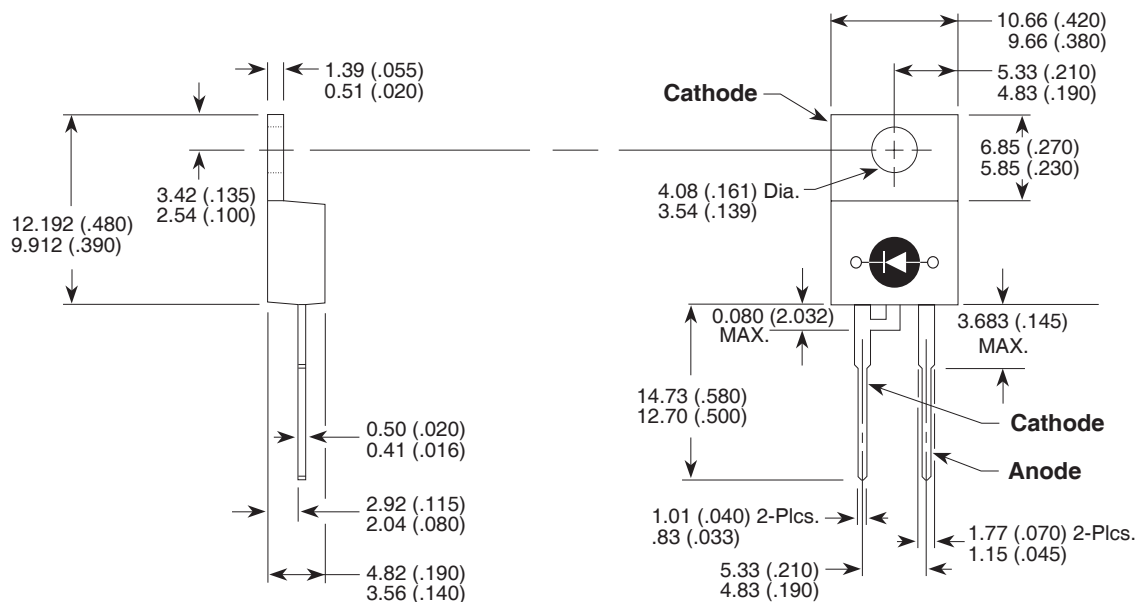
THERMAL AND MECHANICAL CHARACTERISTICS

| Symbol | Characteristic / Test Conditions | MIN | TYP | MAX | UNIT |
|-----------------|-------------------------------------|-----|------|-----|--------------|
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance | | | .88 | $^\circ C/W$ |
| W_T | Package Weight | | 0.07 | | oz |
| | | | 9.9 | | 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-220 (K) Package Outline

Ⓜ 100% Sn



Dimensions in Millimeters and (Inches)

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

5,962,395 6,503,796 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.