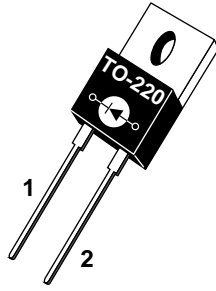


1 - Cathode
2 - Anode
Back of Case - Cathode



**ADVANCED
POWER
TECHNOLOGY®**
APT15D40K 400V 15A

ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

PRODUCT APPLICATIONS

- Anti-Parallel Diode
 - Switchmode Power Supply
 - Inverters
- Free Wheeling Diode
 - Motor Controllers
 - Converters
- Snubber Diode
- Uninterruptible Power Supply (UPS)
- Induction Heating
- High Speed Rectifiers

PRODUCT FEATURES

- Ultrafast Recovery Times
- Soft Recovery Characteristics
- Popular TO-220 Package
- Low Forward Voltage
- High Blocking Voltage
- Low Leakage Current

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 | APT15D40K | 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 ($T_C = 100^\circ\text{C}$, 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 | | | 1.5 | Volts |
| | | | | $I_F = 15\text{A}$ | |
| | | | | $I_F = 30\text{A}$ | |
| I_{RM} | Maximum Reverse Leakage Current | | | 150 | μA |
| | | | | $V_R = V_R$ Rated | |
| C_T | Junction Capacitance, $V_R = 200\text{V}$ | | N/A | | pF |
| | | | | | |
| L_S | Series Inductance (Lead to Lead 5mm from Base) | | N/A | | nH |

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DYNAMIC CHARACTERISTICS

APT15D40K

| 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/ μs |
| | $I_F = 15A$, $di_F/dt = -100A/\mu s$, $V_R = 240V$ (See Figure 10) | $T_J = 100^\circ C$ | 100 | | |

THERMAL AND MECHANICAL CHARACTERISTICS

| Symbol | Characteristic / Test Conditions | MIN | TYP | MAX | UNIT |
|-----------------|--|-----|------|-----|--------------|
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance | | | 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 |

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

TO-220AB Package Outline

