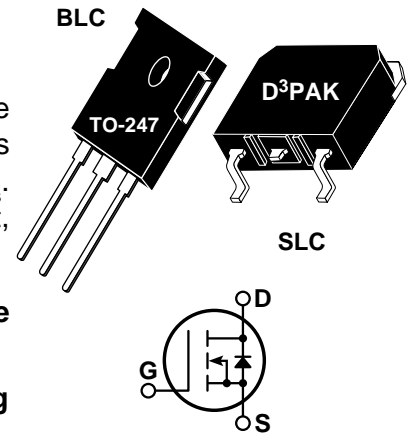


POWER MOS VI™

Power MOS VI™ is a new generation of low gate charge, high voltage N-Channel enhancement mode power MOSFETs. Lower gate charge is achieved by optimizing the manufacturing process to minimize C_{iss} and C_{rss} . Lower gate charge coupled with Power MOS VI™ optimized gate layout, delivers exceptionally fast switching speeds.

- Identical Specifications: TO-247 or Surface Mount D³PAK Package
- Lower Gate Charge & Capacitance
- 100% Avalanche Tested
- Easier To Drive
- Faster switching


MAXIMUM RATINGS

 All Ratings: $T_C = 25^\circ\text{C}$ unless otherwise specified.

| Symbol | Parameter | APT1001R | UNIT |
|----------------|--|------------|-------|
| V_{DSS} | Drain-Source Voltage | 1000 | Volts |
| I_D | Continuous Drain Current @ $T_C = 25^\circ\text{C}$ | 11 | Amps |
| I_{DM} | Pulsed Drain Current ^① | 44 | |
| V_{GS} | Gate-Source Voltage Continuous | ±30 | Volts |
| V_{GSM} | Gate-Source Voltage Transient | ±40 | |
| P_D | Total Power Dissipation @ $T_C = 25^\circ\text{C}$ | 280 | Watts |
| | Linear Derating Factor | 2.24 | W/°C |
| T_J, T_{STG} | Operating and Storage Junction Temperature Range | -55 to 150 | °C |
| T_L | Lead Temperature: 0.063" from Case for 10 Sec. | 300 | |
| I_{AR} | Avalanche Current ^① (Repetitive and Non-Repetitive) | 26 | Amps |
| E_{AR} | Repetitive Avalanche Energy ^① | 30 | mJ |
| E_{AS} | Single Pulse Avalanche Energy ^④ | 1210 | |

STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Characteristic / Test Conditions | MIN | TYP | MAX | UNIT |
|--------------|--|------|-----|------|-------|
| BV_{DSS} | Drain-Source Breakdown Voltage ($V_{GS} = 0V, I_D = 250\mu\text{A}$) | 1000 | | | Volts |
| $I_{D(on)}$ | On State Drain Current ^② ($V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max, $V_{GS} = 10V$) | 11 | | | Amps |
| $R_{DS(on)}$ | Drain-Source On-State Resistance ^② ($V_{GS} = 10V, 0.5 I_{D[Cont.]}$) | | | 1.00 | Ohms |
| I_{DSS} | Zero Gate Voltage Drain Current ($V_{DS} = V_{DSS}, V_{GS} = 0V$) | | | 25 | μA |
| | Zero Gate Voltage Drain Current ($V_{DS} = 0.8 V_{DSS}, V_{GS} = 0V, T_C = 125^\circ\text{C}$) | | | 250 | |
| I_{GSS} | Gate-Source Leakage Current ($V_{GS} = \pm 30V, V_{DS} = 0V$) | | | ±100 | nA |
| $V_{GS(th)}$ | Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 1mA$) | 3 | | 5 | Volts |

 **CAUTION:** These Devices are Sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

APT Website - <http://www.advancedpower.com>

DYNAMIC CHARACTERISTICS

APT1001R BLC - SLC

| Symbol | Characteristic | Test Conditions | MIN | TYP | MAX | UNIT |
|--------------|--------------------------------|--|-----|------|-----|------|
| C_{iss} | Input Capacitance | $V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1\text{ MHz}$ | | 2310 | | pF |
| C_{oss} | Output Capacitance | | | 280 | | |
| C_{rss} | Reverse Transfer Capacitance | | | 90 | | |
| Q_g | Total Gate Charge ^③ | $V_{GS} = 10V$ $V_{DD} = 0.5 V_{DSS}$ $I_D = I_{D[Cont.]} @ 25^\circ C$ | | 75 | | nC |
| Q_{gs} | Gate-Source Charge | | | 17 | | |
| Q_{gd} | Gate-Drain ("Miller") Charge | | | 40 | | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{GS} = 15V$ $V_{DD} = 0.5 V_{DSS}$ $I_D = I_{D[Cont.]} @ 25^\circ C$ $R_G = 1.6\Omega$ | | 14 | | ns |
| t_r | Rise Time | | | 11 | | |
| $t_{d(off)}$ | Turn-off Delay Time | | | 40 | | |
| t_f | Fall Time | | | 13 | | |

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

| Symbol | Characteristic / Test Conditions | MIN | TYP | MAX | UNIT |
|----------|---|-----|-----|-----|---------|
| I_S | Continuous Source Current (Body Diode) | | | 11 | Amps |
| I_{SM} | Pulsed Source Current ^① (Body Diode) | | | 44 | |
| V_{SD} | Diode Forward Voltage ^② ($V_{GS} = 0V, I_S = -I_{D[Cont.]}$) | | | 1.3 | Volts |
| t_{rr} | Reverse Recovery Time ($I_S = -I_{D[Cont.]}, di_S/dt = 100A/\mu s$) | | 700 | | ns |
| Q_{rr} | Reverse Recovery Charge ($I_S = -I_{D[Cont.]}, di_S/dt = 100A/\mu s$) | | 9.0 | | μC |

THERMAL CHARACTERISTICS

| Symbol | Characteristic | MIN | TYP | MAX | UNIT |
|-----------------|---------------------|-----|-----|------|--------------|
| $R_{\theta JC}$ | Junction to Case | | | 0.45 | $^\circ C/W$ |
| $R_{\theta JA}$ | Junction to Ambient | | | 40 | |

① Repetitive Rating: Pulse width limited by maximum junction temperature.

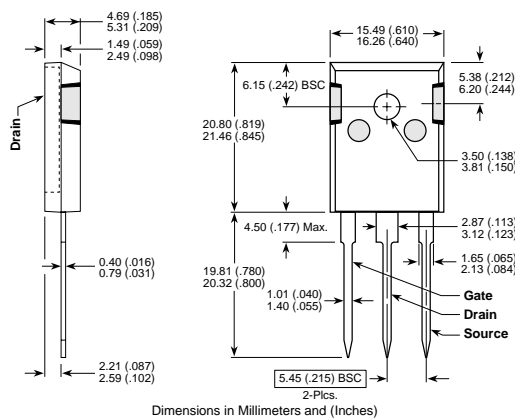
③ See MIL-STD-750 Method 3471

② Pulse Test: Pulse width < 380 μs , Duty Cycle < 2%

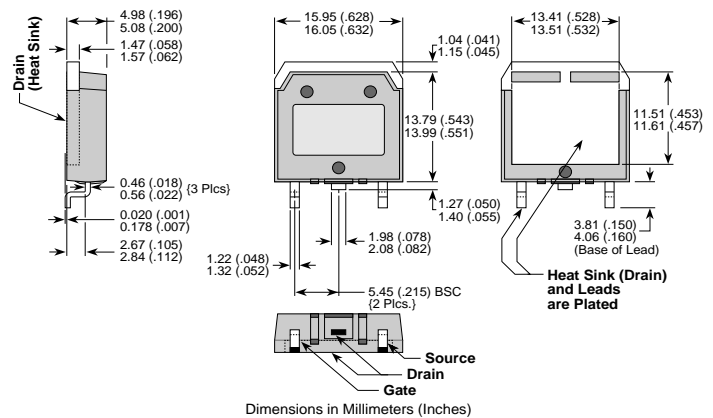
④ Starting $T_j = +25^\circ C$, $L = 20.0mH$, $R_G = 25\Omega$, Peak $I_L = 11A$

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

TO-247 Package Outline



D³PAK Package Outline



050-5927 Rev- 11-99

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