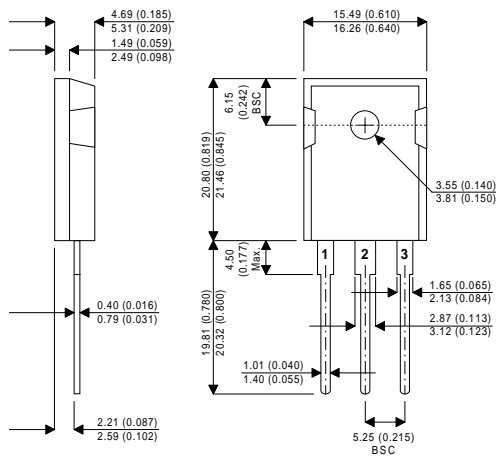


4TH GENERATION MOSFET

T0247-AD Package Outline.
Dimensions in mm (inches)



Pin 1 – Gate

Pin 2 – Drain

Pin 3 – Source

**N-CHANNEL
ENHANCEMENT MODE
HIGH VOLTAGE
POWER MOSFETS**

V_{DSS} 500V
 $I_{D(cont)}$ 28.0A
 $R_{DS(on)}$ 0.20 Ω

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

| | | | |
|----------------|--|------------|----------------|
| V_{DSS} | Drain – Source Voltage | 500 | V |
| I_D | Continuous Drain Current | 28 | A |
| I_{DM} | Pulsed Drain Current ¹ | 112 | A |
| V_{GS} | Gate – Source Voltage | ± 30 | V |
| P_D | Total Power Dissipation @ $T_{case} = 25^{\circ}C$ | 360 | W |
| | Derate Linearly | 2.9 | W/ $^{\circ}C$ |
| T_J, T_{STG} | Operating and Storage Junction Temperature Range | -55 to 150 | $^{\circ}C$ |
| T_L | Lead Temperature : 0.063" from Case for 10 Sec. | 300 | |

STATIC ELECTRICAL RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

| | Characteristic | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|--|------|------|-----------|----------|
| BV_{DSS} | Drain – Source Breakdown Voltage | $V_{GS} = 0V, I_D = 250\mu A$ | 500 | | | V |
| I_{DSS} | Zero Gate Voltage Drain Current ($V_{GS} = 0V$) | $V_{DS} = V_{DSS}$ | | | 250 | μA |
| | | $V_{DS} = 0.8V_{DSS}, T_C = 125^{\circ}C$ | | | 1000 | |
| I_{GSS} | Gate – Source Leakage Current | $V_{GS} = \pm 30V, V_{DS} = 0V$ | | | ± 100 | nA |
| $V_{GS(TH)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}, I_D = 1.0mA$ | 2 | | 4 | V |
| $I_{D(ON)}$ | On State Drain Current ² | $V_{DS} > I_{D(ON)} \times R_{DS(ON)} \text{ Max}$ $V_{GS} = 10V$ | 28 | | | A |
| $R_{DS(ON)}$ | Drain – Source On State Resistance ² | $V_{GS} = 10V, I_D = 0.5 I_D [Cont.]$ | | | 0.20 | Ω |

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.

2) Pulse Test: Pulse Width < 380 μS , Duty Cycle < 2%

DYNAMIC CHARACTERISTICS

| | Characteristic | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--------------------------------|----------------------------------|------|------|------|------|
| C_{iss} | Input Capacitance | $V_{GS} = 0V$ | | 2890 | 3500 | pF |
| C_{oss} | Output Capacitance | $V_{DS} = 25V$ | | 590 | 830 | |
| C_{rss} | Reverse Transfer Capacitance | $f = 1MHz$ | | 230 | 350 | |
| Q_g | Total Gate Charge ³ | $V_{GS} = 10V$ | | 140 | 210 | nC |
| Q_{gs} | Gate – Source Charge | $V_{DD} = 0.5 V_{DSS}$ | | 18 | 27 | |
| Q_{gd} | Gate – Drain (“Miller”) Charge | $I_D = I_D [Cont.] @ 25^\circ C$ | | 75 | 110 | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{GS} = 15V$ | | 19 | 38 | ns |
| t_r | Rise Time | $V_{DD} = 0.5 V_{DSS}$ | | 43 | 86 | |
| $t_{d(off)}$ | Turn-off Delay Time | $I_D = I_D [Cont.] @ 25^\circ C$ | | 85 | 125 | |
| t_f | Fall Time | $R_G = 1.8\Omega$ | | 56 | 112 | |

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

| | Characteristic | Test Conditions | Min. | Typ. | Max. | Unit |
|----------|------------------------------------|--|------|------|------|---------|
| I_S | Continuous Source Current | (Body Diode) | | | 28 | A |
| I_{SM} | Pulsed Source Current ¹ | (Body Diode) | | | 112 | |
| V_{SD} | Diode Forward Voltage ² | $V_{GS} = 0V, I_S = -I_D [Cont.]$ | | | 1.3 | V |
| t_{rr} | Reverse Recovery Time | $I_S = -I_D [Cont.], di_S / dt = 100A/\mu s$ | 215 | 430 | 860 | ns |
| Q_{rr} | Reverse Recovery Charge | $I_S = -I_D [Cont.], di_S / dt = 100A/\mu s$ | 3 | 7 | 14 | μC |

SAFE OPERATING AREA CHARACTERISTICS

| | Characteristic | Test Conditions | Min. | Typ. | Max. | Unit |
|----------|---------------------------|--|------|------|------|------|
| SOA1 | Safe Operating Area | $V_{DS} = 0.4V_{DSS}, t = 1 Sec.$ $I_{DS} = P_D / 0.4V_{DSS}$ | 360 | | | W |
| SOA2 | Safe Operating Area | $V_{DS} = P_D / I_D [Cont.]$ $I_{DS} = I_D [Cont.], t = 1 Sec.$ | 360 | | | W |
| I_{LM} | Inductive Current Clamped | | 112 | | | A |

THERMAL CHARACTERISTICS

| | Characteristic | Min. | Typ. | Max. | Unit |
|-----------------|---------------------|------|------|------|--------------|
| $R_{\theta JC}$ | Junction to Case | | | 0.34 | $^\circ C/W$ |
| $R_{\theta JA}$ | Junction to Ambient | | | 40 | |

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.

2) Pulse Test: Pulse Width < 380 μs , Duty Cycle < 2%

3) See MIL-STD-750 Method 3471



CAUTION — Electrostatic Sensitive Devices. Anti-Static Procedures Must Be Followed.