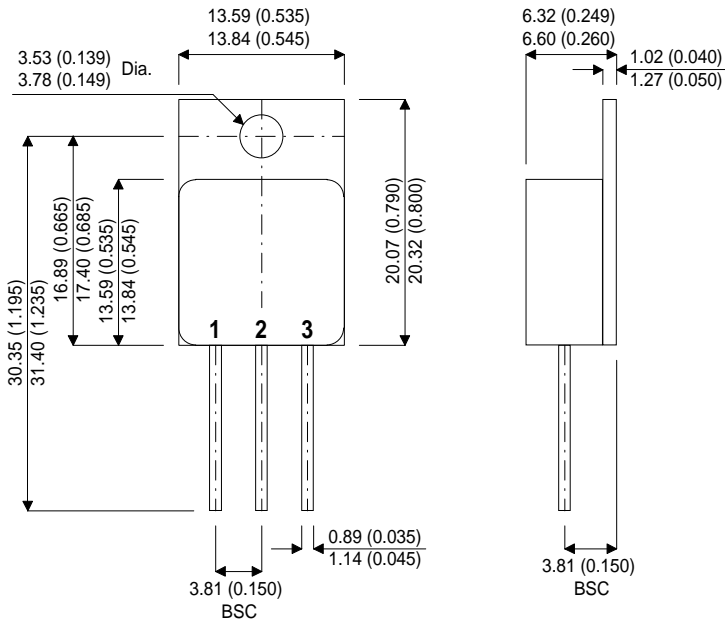


MECHANICAL DATA

Dimensions in mm (inches)



**N-CHANNEL
POWER MOSFET**

V_{DSS} **200V**
 $I_{D(cont)}$ **27.4A**
 $R_{DS(on)}$ **0.100Ω**

FEATURES

- N-CHANNEL MOSFET
- HIGH VOLTAGE
- INTEGRAL PROTECTION DIODE
- HERMETIC ISOLATED TO-254 PACKAGE
- CERAMIC SURFACE MOUNT PACKAGE OPTION

TO-254AA – Isolated Metal Package

Pin 1 – Drain Pin 2 – Source Pin 3 – Gate

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ C$ unless otherwise stated)

| | | | |
|-----------------|--|-------------------------------------|-----------------|
| V_{GS} | Gate – Source Voltage | | $\pm 20V$ |
| I_D | Continuous Drain Current | @ $V_{GS} = 10V, T_C = 25^\circ C$ | 27.4A |
| | | @ $V_{GS} = 10V, T_C = 100^\circ C$ | 17A |
| I_{DM} | Pulsed Drain Current | | 110A |
| P_D | Max. Power Dissipation | @ $T_C = 25^\circ C$ | 150W |
| | Linear Derating Factor | | 1.2W / °C |
| I_L | Avalanche Current, Clamped ¹ | | 27.4A |
| dv / dt | Peak Diode Recovery ² | | 5.5V / ns |
| $R_{\theta JC}$ | Thermal Resistance Junction – Case | | 0.83°C / W |
| $R_{\theta JA}$ | Thermal Resistance Junction – Ambient | | 48°C / W |
| $R_{\theta CS}$ | Thermal Resistance Case – Sink | | 0.21°C / W typ. |
| T_J, T_{STG} | Operating Junction and Storage Temperature Range | | -55 to 150°C |
| T_L | Lead Temperature (1.6mm from case for 10s) | | 300°C |

1) $V_{DD} = 50V$, Starting $T_J = 25^\circ C$, $L \geq 1mH$, $R_G = 25\Omega$, Peak $I_L = 27.4A$
 2) $I_{SD} \leq 27.4A$, $di/dt \leq 190A / \mu S$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^\circ C$, Suggested $R_G = 2.35\Omega$

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise stated)

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit | |
|---|--|--|---------------------------|--------------------------|---------------------------|-----------------------------|
| STATIC ELECTRICAL RATINGS | | | | | | |
| BV_{DSS} | Drain – Source Breakdown Voltage | $V_{GS} = 0$ | $I_D = 1\text{mA}$ | 200 | V | |
| $\frac{\Delta BV_{DSS}}{\Delta T_J}$ | Temperature Coefficient of Breakdown Voltage | Reference to 25°C $I_D = 1\text{mA}$ | | 0.28 | $\text{V}/^\circ\text{C}$ | |
| $R_{DS(on)}$ | Static Drain – Source On–State Resistance ² | $V_{GS} = 10\text{V}$ | $I_D = 17\text{A}$ | | 0.100 | Ω |
| | | $V_{GS} = 10\text{V}$ | $I_D = 27.4\text{A}$ | | 0.105 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}$ | $I_D = 250\mu\text{A}$ | 2 | 4 | V |
| g_{fs} | Forward Transconductance ² | $V_{DS} \geq 15\text{V}$ | $I_{DS} = 27.4\text{A}$ | 9 | | $\text{S}(\overline{\tau})$ |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{GS} = 0$ | $V_{DS} = 0.8BV_{DSS}$ | | 25 | μA |
| | | | $T_J = 125^\circ\text{C}$ | | 250 | |
| I_{GSS} | Forward Gate – Source Leakage | $V_{GS} = 20\text{V}$ | | | 100 | nA |
| I_{GSS} | Reverse Gate – Source Leakage | $V_{GS} = -20\text{V}$ | | | -100 | |
| DYNAMIC CHARACTERISTICS | | | | | | |
| C_{iss} | Input Capacitance | $V_{GS} = 0$ $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$ | | 3500 | | pF |
| C_{oss} | Output Capacitance | | | 700 | | |
| C_{rss} | Reverse Transfer Capacitance | | | 110 | | |
| C_{DC} | Drain – Case Capacitance | | | 12 | | |
| Q_g | Total Gate Charge | $V_{GS} = 10\text{V}$ | | 55 | 115 | nC |
| Q_{gs} | Gate – Source Charge | $I_D = 27.4\text{A}$ | | 8 | 22 | |
| Q_{gd} | Gate – Drain (“Miller”) Charge | $V_{DS} = 0.5BV_{DSS}$ | | 30 | 60 | |
| $t_{d(on)}$ | Turn– On Delay Time | $V_{DD} = 100\text{V}$ $I_D = 27.4\text{A}$ $R_G = 2.35\Omega$ | | | 35 | ns |
| t_r | Rise Time | | | | 190 | |
| $t_{d(off)}$ | Turn–Off Delay Time | | | | 170 | |
| t_f | Fall Time | | | | 130 | |
| SOURCE – DRAIN DIODE CHARACTERISTICS | | | | | | |
| I_S | Continuous Source Current | | | | 27.4 | A |
| I_{SM} | Pulse Source Current ¹ | | | | 110 | |
| V_{SD} | Diode Forward Voltage ² | $I_S = 27.4\text{A}$ | $T_J = 25^\circ\text{C}$ | | 1.9 | V |
| t_{rr} | Reverse Recovery Time ² | $I_F = 27.4\text{A}$ | $T_J = 25^\circ\text{C}$ | | 950 | ns |
| Q_{rr} | Reverse Recovery Charge ² | $d_i / d_t \leq 100\text{A}/\mu\text{s}$ | | $V_{DD} \leq 50\text{V}$ | 9.0 | μC |
| t_{on} | Forward Turn–On Time | Negligible | | | | |
| PACKAGE CHARACTERISTICS | | | | | | |
| L_D | Internal Drain Inductance | Measured from 6mm down drain lead to centre of die | | | 8.7 | nH |
| L_S | Internal Source Inductance | Measured from 6mm down source lead to source bond pad | | | 8.7 | |

Notes

- 1) Repetitive Rating – Pulse width limited by Maximum Junction Temperature
- 2) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$.