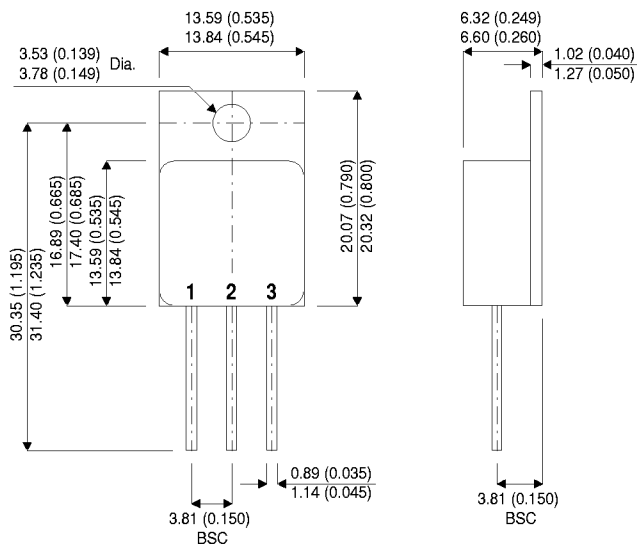


MECHANICAL DATA

Dimensions in mm (inches)



TO-254AA – Metal Package

Pin 1 – Drain

Pin 2 – Source

Pin 3 – Gate

**N-CHANNEL
POWER MOSFET**

V_{DSS} 60V
 $I_{D(cont)}$ 35A *
 $R_{DS(on)}$ 0.027Ω

FEATURES

- HERMETICALLY SEALED ISOLATED PACKAGE
- AVALANCHE ENERGY RATING
- SIMPLE DRIVE REQUIREMENTS
- ALSO AVAILABLE IN TO-220 METAL AND SURFACE MOUNT PACKAGES
- EASE OF PARALLELING

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

| | | |
|-----------------|--|--------------|
| V_{GS} | Gate – Source Voltage | ±20V |
| I_D | Continuous Drain Current ($V_{GS} = 10V, T_{case} = 25^{\circ}C$) | 35A* |
| I_D | Continuous Drain Current ($V_{GS} = 10V, T_{case} = 100^{\circ}C$) | 35A |
| I_{DM} | Pulsed Drain Current ¹ | 220A |
| P_D | Power Dissipation @ $T_{case} = 25^{\circ}C$ | 150W |
| | Linear Derating Factor | 1.2W/°C |
| E_{AS} | Single Pulse Avalanche Energy ² | 480mJ |
| dv/dt | Peak Diode Recovery ³ | 4.5V/ns |
| T_J, T_{stg} | Operating and Storage Temperature Range | -55 to 150°C |
| T_L | Lead Temperature measured $1/16''$ (1.6mm) from case for 10 sec. | 300°C |
| $R_{\theta JC}$ | Thermal Resistance Junction to Case | 0.83°C/W |
| $R_{\theta CS}$ | Thermal Resistance Case to Sink (Typical) | 0.21°C/W |
| $R_{\theta JA}$ | Thermal Resistance Junction to Ambient | 48°C/W |

Notes

- 1) Repetitive Rating – Pulse width limited by Maximum Junction Temperature
 - 2) @ $V_{DD} = 25V, L \geq 450\mu H, R_G = 25\Omega, Peak I_L = 35A, Starting T_J = 25^{\circ}C$
 - 3) @ $I_{SD} \leq 35A, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DSS}, T_J \leq 125^{\circ}C, SUGGESTED R_G = 2.35\Omega$
- * I_D Current limited by pin diameter.

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

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit | |
|---|--|---|---|------------|-------------------------------|---------------|
| STATIC ELECTRICAL RATINGS | | | | | | |
| BV_{DSS} | Drain – Source Breakdown Voltage | $V_{GS} = 0$ | $I_D = 1\text{mA}$ | 60 | V | |
| ΔBV_{DSS} | Temperature Coefficient of Breakdown Voltage | Reference to 25°C $I_D = 1\text{mA}$ | | 0.68 | $\text{V}/^{\circ}\text{C}$ | |
| $R_{DS(on)}$ | Static Drain – Source On–State Resistance ² | $V_{GS} = 10\text{V}$ | $I_D = 35\text{A}$ | | 0.027 Ω | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}$ | $I_D = 250\mu\text{A}$ | 2 | 4 V | |
| g_{fs} | Forward Transconductance ² | $V_{DS} \geq 15\text{V}$ | $I_{DS} = 35\text{A}$ | 20 | $\text{S}(\overline{\omega})$ | |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{GS} = 0$ | $V_{DS} = 0.8BV_{DSS}$ $T_J = 125^{\circ}\text{C}$ | | 25 μA 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 nA | |
| DYNAMIC CHARACTERISTICS | | | | | | |
| C_{iss} | Input Capacitance | $V_{GS} = 0$ | | 4600 | pF | |
| C_{oss} | Output Capacitance | $V_{DS} = 25\text{V}$ | | 2000 | | |
| C_{rss} | Reverse Transfer Capacitance | $f = 1\text{MHz}$ | | 340 | | |
| C_{DC} | Drain – Case Capacitance | | | 12 | | |
| Q_g | Total Gate Charge | $V_{GS} = 10\text{V}$ | | 80 | 180 | nC |
| Q_{gs} | Gate – Source Charge | $I_D = 35\text{A}$ | | 20 | 45 | |
| Q_{gd} | Gate – Drain (“Miller”) Charge | $V_{DS} = 0.5BV_{DSS}$ | | 34 | 105 | |
| $t_{d(on)}$ | Turn– On Delay Time | $V_{DD} = 30\text{V}$ | | | 33 | ns |
| t_r | Rise Time | $I_D = 35\text{A}$ | | | 180 | |
| $t_{d(off)}$ | Turn–Off Delay Time | $R_G = 2.35\Omega$ | | | 100 | |
| t_f | Fall Time | | | | 100 | |
| SOURCE – DRAIN DIODE CHARACTERISTICS | | | | | | |
| I_S | Continuous Source Current | | | | 35* | A |
| I_{SM} | Pulse Source Current ¹ | | | | 220 | |
| V_{SD} | Diode Forward Voltage ² | $I_S = 35\text{A}$ | $T_J = 25^{\circ}\text{C}$ | | 2.5 | V |
| t_{rr} | Reverse Recovery Time ² | $I_F = 35\text{A}$ | $T_J = 25^{\circ}\text{C}$ | | 280 | ns |
| Q_{rr} | Reverse Recovery Charge ² | $d_i / d_t \leq 100\text{A}/\mu\text{s}$ | $V_{DD} \leq 50\text{V}$ | | 2.2 | 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 $\leq 300\mu\text{s}$, $\delta \leq 2\%$
* I_S Current limited by pin diameter.