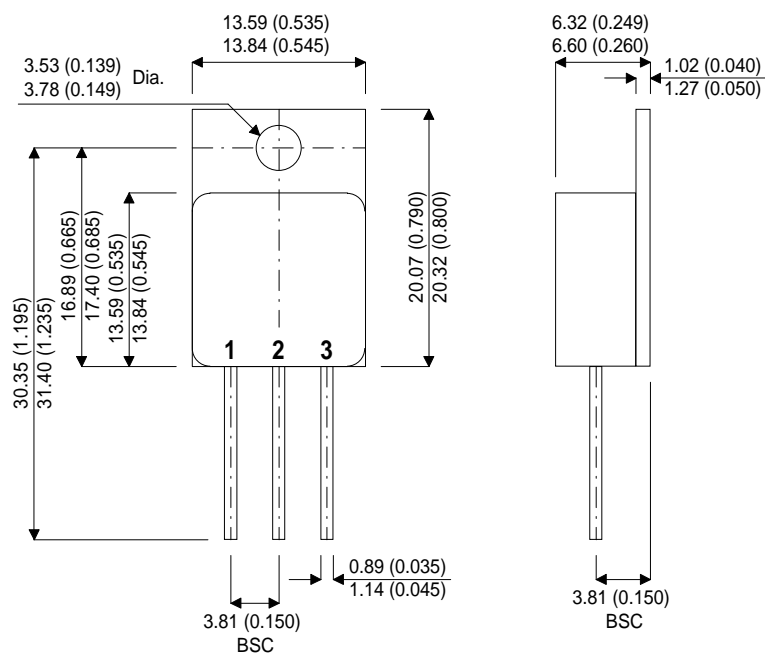


MECHANICAL DATA

Dimensions in mm (inches)



TO-254AA – Package

Pin 1 – Drain

Pin 2 – Source

Pin 3 – Gate

**N-CHANNEL
POWER MOSFET**

V_{DSS} **100V**
 $I_{D(cont)}$ **34A**
 $R_{DS(on)}$ **0.070Ω**

FEATURES

- REPETITIVE AVALANCHE RATING
- ISOLATED AND HERMETICALLY SEALED
- ALTERNATIVE TO TO-3 PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- EASE OF PARALLELING

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

| | | |
|------------------|-------------------------------------------------------------------------|------------------------|
| V_{GS} | Gate – Source Voltage | $\pm 20V$ |
| I_D | Continuous Drain Current ($V_{GS} = 10V$, $T_{case} = 25^{\circ}C$) | 34A |
| I_D | Continuous Drain Current ($V_{GS} = 10V$, $T_{case} = 100^{\circ}C$) | 21A |
| I_{DM} | Pulsed Drain Current ¹ | 136A |
| P_D | Power Dissipation @ $T_{case} = 25^{\circ}C$ | 150W |
| | Linear Derating Factor | 1.2W/ $^{\circ}C$ |
| E_{AS} | Single Pulse Avalanche Energy ² | 150mJ |
| dv/dt | Peak Diode Recovery ³ | 5.5V/ns |
| T_J, T_{stg} | Operating and Storage Temperature Range | -55 to 150 $^{\circ}C$ |
| $R_{\theta JC}$ | Thermal Resistance Junction to Case | 0.83 $^{\circ}C/W$ |
| $R_{\theta JCS}$ | Thermal Resistance Case to Sink (Typical) | 0.21 $^{\circ}C/W$ |
| $R_{\theta JCA}$ | Thermal Resistance Junction-to-Ambient | 48 $^{\circ}C/W$ |

Notes

- 1) Pulse Test: Pulse Width $\leq 300\mu s$, $\delta \leq 2\%$
- 2) @ $V_{DD} = 25V$, $L \geq 200\mu H$, $R_G = 25\Omega$, Peak $I_L = 34A$, Starting $T_J = 25^{\circ}C$
- 3) @ $I_{SD} \leq 34A$, $di/dt \leq 70A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}C$, SUGGESTED $R_G = 2.35\Omega$

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 | $V_{GS} = 0$ | $I_D = 1\text{mA}$ | 100 | V | |
| $\frac{\Delta BV_{DSS}}{\Delta T_J}$ | Temperature Coefficient of Breakdown Voltage | Reference to 25°C $I_D = 1\text{mA}$ | | 0.13 | $\text{V}/^{\circ}\text{C}$ | |
| $R_{DS(on)}$ | Static Drain – Source On–State Resistance | $V_{GS} = 10\text{V}$ | $I_D = 21\text{A}$ | | 0.070 | |
| | | $V_{GS} = 10\text{V}$ | $I_D = 34\text{A}$ | | 0.081 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}$ | $I_D = 250\mu\text{A}$ | 2 | 4 | V |
| g_{fs} | Forward Transconductance | $V_{DS} \geq 15\text{V}$ | $I_{DS} = 21\text{A}$ | 9 | | $\text{S}(\bar{v})$ |
| 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 | $V_{GS} = 0$ | | | 3700 | pF |
| C_{oss} | Output Capacitance | $V_{DS} = 25\text{V}$ | | | 1100 | |
| C_{rss} | Reverse Transfer Capacitance | $f = 1\text{MHz}$ | | | 200 | |
| Q_g | Total Gate Charge | $V_{GS} = 10\text{V}$ | $I_D = 34\text{A}$ | 50 | 125 | nC |
| Q_{gs} | Gate – Source Charge | $I_D = 34\text{A}$ | | 8 | 22 | nC |
| Q_{gd} | Gate – Drain (“Miller”) Charge | $V_{DS} = 0.5BV_{DS}$ | | 15 | 65 | |
| $t_{d(on)}$ | Turn–On Delay Time | $V_{DD} = 50\text{V}$ $I_D = 34\text{A}$ $R_G = 2.35\Omega$ | | | 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 | | | | 34 | A |
| I_{SM} | Pulse Source Current ² | | | | 136 | |
| V_{SD} | Diode Forward Voltage | $I_S = 34\text{A}$ | $T_J = 25^{\circ}\text{C}$ | | 1.8 | V |
| t_{rr} | Reverse Recovery Time | $I_F = 34\text{A}$ | $T_J = 25^{\circ}\text{C}$ | | 500 | ns |
| Q_{rr} | Reverse Recovery Charge | $d_i / d_t \leq 100\text{A}/\mu\text{s}$ | | $V_{DD} \leq 50\text{V}$ | 2.9 | μC |
| t_{on} | Forward Turn–On Time | Negligible | | | | |
| PACKAGE CHARACTERISTICS | | | | | | |
| L_D | Internal Drain Inductance (from centre of drain pad to die) | | | 8.7 | | nH |
| L_S | Internal Source Inductance (from centre of source pad to end of source bond wire) | | | 8.7 | | |

Notes

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