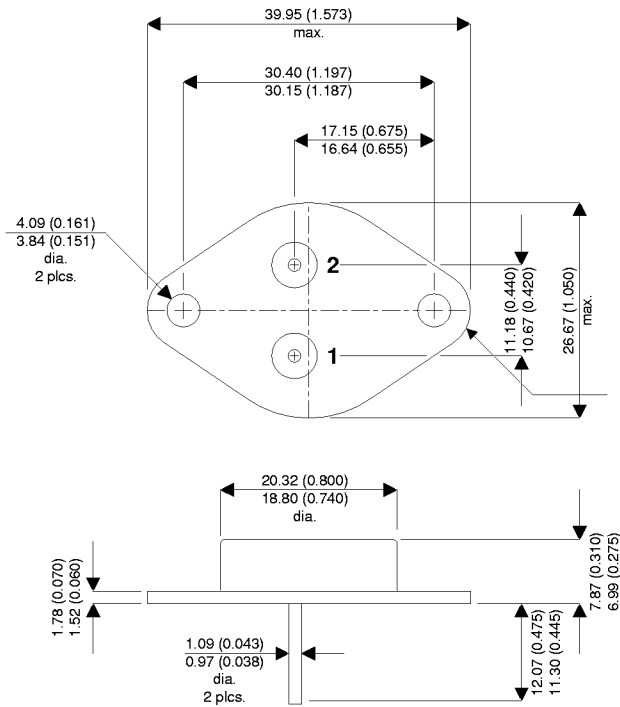


MECHANICAL DATA

Dimensions in mm (inches)



TO-3 Metal Package

Pin 1 – Gate Pin 2 – Source Case – Drain

**N-CHANNEL
POWER MOSFET**

V_{DSS} 100V
 $I_{D(cont)}$ 14A
 $R_{DS(on)}$ 0.18Ω

FEATURES

- HERMETICALLY SEALED TO-3 METAL PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- SCREENING OPTIONS AVAILABLE

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

| | | |
|----------------|--|---------------|
| V_{GS} | Gate – Source Voltage | ±20V |
| I_D | Continuous Drain Current ($V_{GS} = 0, T_{case} = 25^{\circ}C$) | 14A |
| I_D | Continuous Drain Current ($V_{GS} = 0, T_{case} = 100^{\circ}C$) | 9A |
| I_{DM} | Pulsed Drain Current ¹ | 56A |
| P_D | Power Dissipation @ $T_{case} = 25^{\circ}C$ | 75W |
| | Linear Derating Factor | 0.6W/°C |
| E_{AS} | Single Pulse Avalanche Energy ² | 75mJ |
| I_{AR} | Avalanche Current ² | 14A |
| E_{AR} | Repetitive Avalanche Energy ² | 7.5mJ |
| dv/dt | Peak Diode Recovery ³ | 5.5V/ns |
| T_J, T_{stg} | Operating and Storage Temperature Range | -55 to +150°C |
| T_L | Lead Temperature 1.6mm (0.63") from case for 10 sec. | 300°C |

Notes

- 1) Pulse Test: Pulse Width ≤ 300μs, δ ≤ 2%
- 2) @ $V_{DD} = 50V, L \geq 570\mu H, R_G = 25\Omega, Peak I_L = 14A, Starting T_J = 25^{\circ}C$
- 3) @ $I_{SD} \leq 14A, di/dt \leq 140A/\mu s, V_{DD} \leq BV_{DSS}, T_J \leq 150^{\circ}C, Suggested R_G = 7.5\Omega$

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

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|------|------------|------|-----------------------------|
| STATIC ELECTRICAL RATINGS | | | | | |
| BV_{DSS} Drain – Source Breakdown Voltage | $V_{\text{GS}} = 0$ $I_{\text{D}} = 1\text{mA}$ | 100 | | | V |
| $\frac{\Delta BV_{\text{DSS}}}{\Delta T_{\text{J}}}$ Temperature Coefficient of Breakdown Voltage | Reference to 25°C $I_{\text{D}} = 1\text{mA}$ | | 0.13 | | $\text{V}/^{\circ}\text{C}$ |
| $R_{\text{DS(on)}}$ Static Drain – Source On-State Resistance ¹ | $V_{\text{GS}} = 10\text{V}$ $I_{\text{D}} = 9\text{A}$ | | | 0.18 | Ω |
| | $V_{\text{GS}} = 10\text{V}$ $I_{\text{D}} = 14\text{A}$ | | | 0.21 | |
| $V_{\text{GS(th)}}$ Gate Threshold Voltage | $V_{\text{DS}} = V_{\text{GS}}$ $I_{\text{D}} = 250\text{mA}$ | 2 | | 4 | V |
| g_{fs} Forward Transconductance ¹ | $V_{\text{DS}} \geq 15\text{V}$ $I_{\text{DS}} = 9\text{A}$ | 4.6 | | | S (\cup) |
| I_{DSS} Zero Gate Voltage Drain Current | $V_{\text{GS}} = 0$ $V_{\text{DS}} = 0.8BV_{\text{DSS}}$ $T_{\text{J}} = 125^{\circ}\text{C}$ | | | 25 | μA |
| | | | | 250 | |
| I_{GSS} Forward Gate – Source Leakage | $V_{\text{GS}} = 20\text{V}$ | | | 100 | nA |
| I_{GSS} Reverse Gate – Source Leakage | $V_{\text{GS}} = -20\text{V}$ | | | -100 | nA |
| DYNAMIC CHARACTERISTICS | | | | | |
| C_{iss} Input Capacitance | $V_{\text{GS}} = 0$ $V_{\text{DS}} = 25\text{V}$ $f = 1\text{MHz}$ | | 650 | | pF |
| C_{oss} Output Capacitance | | | 250 | | |
| C_{riss} Reverse Transfer Capacitance | | | 44 | | |
| Q_{g} Total Gate Charge | $V_{\text{GS}} = 10\text{V}$ $I_{\text{D}} = 14\text{A}$ $V_{\text{DS}} = 0.5BV_{\text{DSS}}$ | 12 | | 35 | nC |
| Q_{gs} Gate – Source Charge | | 2.5 | | 10 | |
| Q_{gd} Gate – Drain (“Miller”) Charge | | 5.0 | | 15 | |
| $t_{\text{d(on)}}$ Turn-On Delay Time | $V_{\text{DD}} = 50\text{V}$ $I_{\text{D}} = 14\text{A}$ $R_{\text{G}} = 7.5\Omega$ | | | 35 | ns |
| t_{r} Rise Time | | | | 80 | |
| $t_{\text{d(off)}}$ Turn-Off Delay Time | | | | 60 | |
| t_{f} Fall Time | | | | 45 | |
| SOURCE – DRAIN DIODE CHARACTERISTICS | | | | | |
| I_{S} Continuous Source Current | | | | 14 | A |
| I_{SM} Pulse Source Current ² | | | | 56 | |
| V_{SD} Diode Forward Voltage ¹ | $I_{\text{S}} = 14\text{A}$ $T_{\text{J}} = 25^{\circ}\text{C}$ $V_{\text{GS}} = 0$ | | | 1.5 | V |
| t_{rr} Reverse Recovery Time | $I_{\text{F}} = 14\text{A}$ $T_{\text{J}} = 25^{\circ}\text{C}$ | | | 300 | ns |
| Q_{rr} Reverse Recovery Charge ¹ | $d_{\text{i}} / d_{\text{t}} \leq 100\text{A}/\mu\text{s}$ $V_{\text{DD}} \leq 50\text{V}$ | | | 3.0 | 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) | | | 5.0 | | nH |
| L_{S} Internal Source Inductance (from 6mm down source lead to source bond pad) | | | 13 | | |
| THERMAL CHARACTERISTICS | | | | | |
| $R_{\theta\text{JC}}$ Thermal Resistance Junction – Case | | | | 1.67 | $^{\circ}\text{C}/\text{W}$ |
| $R_{\theta\text{CS}}$ Thermal Resistance Case – Sink | | | 0.12 | | |
| $R_{\theta\text{JA}}$ Thermal Resistance Junction – Ambient | | | | 30 | |

Notes

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