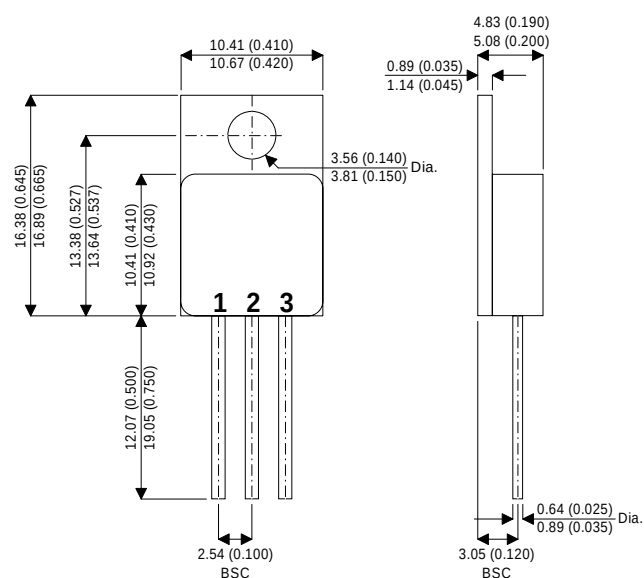


## MECHANICAL DATA

Dimensions in mm(inches)



TO-257AB Metal Package

Pin 1 – Gate

Pin 2 – Drain

Pin 3 – Source

## N-CHANNEL ENHANCEMENT MODE TRANSISTOR

|               |       |
|---------------|-------|
| $V_{(BR)DSS}$ | 200V  |
| $I_{D(A)}$    | 14A   |
| $R_{DS(on)}$  | 0.16Ω |

## FEATURES

- TO257AB HERMETIC PACKAGE FOR HIGH RELIABILITY APPLICATIONS
- SCREENING OPTIONS AVAILABLE
- SIMPLE DRIVE REQUIREMENTS

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

|                |                                                    |              |
|----------------|----------------------------------------------------|--------------|
| $V_{DS}$       | Drain – Source Voltage                             | 200V         |
| $V_{GS}$       | Gate – Source Voltage                              | ±20V         |
| $I_D$          | Continuous Drain Current $T_C = 25^{\circ}C$       | 14A          |
|                | $T_C = 100^{\circ}C$                               | 8.5A         |
| $I_{DM}$       | Pulsed Drain Current <sup>1</sup>                  | 56A          |
| $P_D$          | Power Dissipation $T_C = 25^{\circ}C$              | 60W          |
|                | $T_C = 100^{\circ}C$                               | 23W          |
| $T_J, T_{stg}$ | Operating and Storage Temperature Range            | –55 to 150°C |
| $T_L$          | Lead Temperature ( $1/16$ " from case for 10 sec.) | 300°C        |

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

| Parameter                            |                                                        | Test Conditions                                                                                 |                        | Min. | Typ. | Max. | Unit |
|--------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------|------|------|------|------|
| STATIC ELECTRICAL RATINGS            |                                                        |                                                                                                 |                        |      |      |      |      |
| BV <sub>(BR)DSS</sub>                | Drain–Source Breakdown Voltage                         | V <sub>GS</sub> = 0                                                                             | I <sub>D</sub> = 250μA | 200  |      |      | V    |
| V <sub>GS(th)</sub>                  | Gate Threshold Voltage                                 | V <sub>DS</sub> = V <sub>GS</sub>                                                               | I <sub>D</sub> = 250μA | 2    |      | 4    | V    |
| I <sub>GSS</sub>                     | Gate – Body Leakage                                    | V <sub>DS</sub> = 0                                                                             | V <sub>GS</sub> = ±20V |      |      | ±100 | nA   |
| I <sub>DSS</sub>                     | Zero Gate Voltage Drain Current                        | V <sub>DS</sub> = 160V                                                                          |                        |      |      | 25   | μA   |
|                                      |                                                        | V <sub>GS</sub> = 0                                                                             | T <sub>J</sub> = 125°C |      |      | 250  |      |
| I <sub>D(on)</sub>                   | On–State Drain Current <sup>1</sup>                    | V <sub>DS</sub> = 10V                                                                           | V <sub>GS</sub> = 10V  | 14   |      |      | A    |
| R <sub>DS(on)</sub>                  | Static Drain – Source On–State Resistance <sup>1</sup> | V <sub>GS</sub> = 10V                                                                           |                        |      | 0.14 | 0.16 | Ω    |
|                                      |                                                        | I <sub>D</sub> = 8.5A                                                                           | T <sub>J</sub> = 125°C |      | 0.25 | 0.30 |      |
| g <sub>fs</sub>                      | Forward Transconductance <sup>1</sup>                  | V <sub>DS</sub> = 15V                                                                           | I <sub>DS</sub> = 8.5A | 5.0  |      |      | S    |
| DYNAMIC CHARACTERISTICS              |                                                        |                                                                                                 |                        |      |      |      |      |
| C <sub>iss</sub>                     | Input Capacitance                                      | V <sub>GS</sub> = 0                                                                             |                        |      | 1550 |      | pF   |
| C <sub>oss</sub>                     | Output Capacitance                                     | V <sub>DS</sub> = 25V                                                                           |                        |      | 500  |      |      |
| C <sub>rss</sub>                     | Reverse Transfer Capacitance                           | f = 1MHz                                                                                        |                        |      | 220  |      |      |
| Q <sub>g</sub>                       | Total Gate Charge <sup>2</sup>                         | V <sub>DS</sub> = 0.5 x V <sub>(BR)DSS</sub><br>V <sub>GS</sub> = 10V      I <sub>D</sub> = 14A |                        | 30   | 44   | 77   | nC   |
| Q <sub>gs</sub>                      | Gate Source Charge <sup>2</sup>                        |                                                                                                 |                        | 4.6  | 10   | 15   |      |
| Q <sub>gd</sub>                      | Gate Drain Charge <sup>2</sup>                         |                                                                                                 |                        | 13   | 26   | 35   |      |
| t <sub>d(on)</sub>                   | Turn–On Delay Time <sup>2</sup>                        | V <sub>DD</sub> = 100V      I <sub>D</sub> = 14A                                                |                        |      | 10   | 30   | ns   |
| t <sub>r</sub>                       | Rise Time <sup>2</sup>                                 | V <sub>GEN</sub> =10V                                                                           |                        |      | 60   | 100  |      |
| t <sub>d(off)</sub>                  | Turn–Off Delay Time <sup>2</sup>                       | R <sub>L</sub> = 7.1Ω                                                                           |                        |      | 30   | 80   |      |
| t <sub>f</sub>                       | Fall Time <sup>2</sup>                                 | R <sub>G</sub> = 4.7Ω                                                                           |                        |      | 40   | 95   |      |
| SOURCE – DRAIN DIODE CHARACTERISTICS |                                                        |                                                                                                 |                        |      |      |      |      |
| I <sub>S</sub>                       | Continuous Current                                     |                                                                                                 |                        |      |      | 114  | A    |
| I <sub>SM</sub>                      | Pulse Current <sup>3</sup>                             |                                                                                                 |                        |      |      | 56   |      |
| V <sub>SD</sub>                      | Forward Voltage                                        | I <sub>F</sub> = I <sub>S</sub>                                                                 | V <sub>GS</sub> = 0    |      |      | 2.0  | V    |
| t <sub>rr</sub>                      | Reverse Recovery Time                                  | I <sub>F</sub> = I <sub>S</sub>                                                                 |                        |      | 150  | 650  | ns   |
| Q <sub>rr</sub>                      | Reverse Recovery Charge                                | dI <sub>F</sub> /dt = 100A/μs                                                                   |                        |      | 0.5  |      | μC   |

<sup>1</sup>Pulse test : Pulse Width < 300 $\mu\text{s}$  ,Duty Cycle < 2%

<sup>2</sup>Independent of Operating Temperature

<sup>3</sup>Pulse width Limited by maximum Junction Temperature

**THERMAL RESISTANCE CHARACTERISTICS**

| Parameter                                      | Min. | Typ. | Max. | Unit |
|------------------------------------------------|------|------|------|------|
| $R_{thJC}$ Thermal resistance Junction-Case    |      |      | 2.1  |      |
| $R_{thJA}$ Thermal resistance Junction-ambient |      |      | 80   | K/W  |
| $R_{thCS}$ Thermal resistance Junction-ambient |      | 1.0  |      |      |