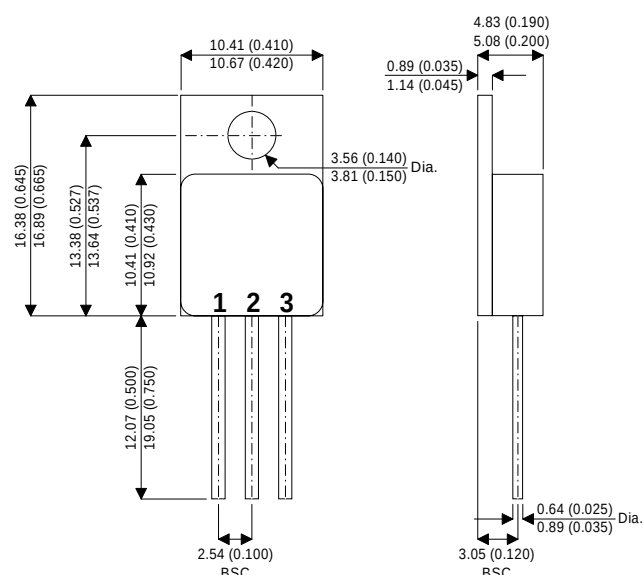


## MECHANICAL DATA

Dimensions in mm(inches)



### TO-257AB Metal Package

Pin 1 – Gate

Pin 2 – Drain

Pin 3 – Source

## N-CHANNEL ENHANCEMENT MODE TRANSISTOR

|               |                |
|---------------|----------------|
| $V_{(BR)DSS}$ | 100V           |
| $I_{D(A)}$    | 20A            |
| $R_{DS(on)}$  | 0.075 $\Omega$ |

## 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                             | 100V                    |
| $V_{GS}$       | Gate – Source Voltage                              | $\pm 20V$               |
| $I_D$          | Continuous Drain Current ( $T_J = 150^{\circ}C$ )  | 20A                     |
|                | $T_C = 25^{\circ}C$                                | 20A                     |
|                | $T_C = 100^{\circ}C$                               | 12A                     |
| $I_{DM}$       | Pulsed Drain Current                               | 80A                     |
| $P_D$          | Power Dissipation                                  | 60W                     |
|                | $T_C = 25^{\circ}C$                                | 60W                     |
|                | $T_C = 100^{\circ}C$                               | 20W                     |
| $T_J, T_{stg}$ | Operating Junction and Storage Temperature Range   | $-55$ to $150^{\circ}C$ |
| $T_L$          | Lead Temperature ( $1/16$ " from case for 10 sec.) | 300 $^{\circ}C$         |

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

| Parameter                            |                                       | Test Conditions                                             |                        | Min.                 | Typ. | Max.  | Unit |    |
|--------------------------------------|---------------------------------------|-------------------------------------------------------------|------------------------|----------------------|------|-------|------|----|
| STATIC ELECTRICAL RATINGS            |                                       |                                                             |                        |                      |      |       |      |    |
| V <sub>(BR)DSS</sub>                 | Drain–Source Breakdown Voltage        | V <sub>GS</sub> = 0                                         | I <sub>D</sub> = 250μA | 100                  |      |       | 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> = 80V                                       |                        |                      |      | 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  | 20                   |      |       | A    |    |
| r <sub>DS(on)</sub>                  | Drain – Source On–State               | V <sub>GS</sub> = 10V                                       |                        |                      | 0.06 | 0.075 | Ω    |    |
|                                      | Resistance <sup>1</sup>               | I <sub>D</sub> = 12A                                        | T <sub>J</sub> = 125°C |                      | 0.11 | 0.14  |      |    |
| g <sub>fs</sub>                      | Forward Transconductance <sup>1</sup> | V <sub>DS</sub> = 15V                                       | I <sub>DS</sub> = 12A  | 5.0                  | 8.0  |       | S    |    |
| DYNAMIC CHARACTERISTICS              |                                       |                                                             |                        |                      |      |       |      |    |
| C <sub>iss</sub>                     | Input Capacitance                     | V <sub>GS</sub> = 0                                         |                        |                      | 1400 |       | pF   |    |
| C <sub>oss</sub>                     | Output Capacitance                    | V <sub>DS</sub> = 25V                                       |                        |                      | 480  |       |      |    |
| C <sub>rss</sub>                     | Reverse Transfer Capacitance          | f = 1MHz                                                    |                        |                      | 110  |       |      |    |
| Q <sub>g</sub>                       | Total Gate Charge <sup>2</sup>        | V <sub>DS</sub> = 0.5 x V <sub>(BR)DSS</sub> <sup>50V</sup> |                        |                      | 35   | 50    | nC   |    |
| Q <sub>gs</sub>                      | Gate Source Charge <sup>2</sup>       | V <sub>GS</sub> = 10V                                       |                        |                      | 10   | 20    |      |    |
| Q <sub>gd</sub>                      | Gate Drain Charge <sup>2</sup>        | I <sub>D</sub> = 20A                                        |                        |                      | 18   | 25    |      |    |
| t <sub>d(on)</sub>                   | Turn–On Delay Time <sup>2</sup>       | V <sub>DD</sub> = 50V                                       |                        | I <sub>D</sub> = 20A |      | 13    | 30   | ns |
| t <sub>r</sub>                       | Rise Time <sup>2</sup>                | V <sub>GEN</sub> =10V                                       |                        |                      |      | 85    | 120  |    |
| t <sub>d(off)</sub>                  | Turn–Off Delay Time <sup>2</sup>      | R <sub>L</sub> = 2.5Ω                                       |                        |                      |      | 35    | 80   |    |
| t <sub>f</sub>                       | Fall Time <sup>2</sup>                | R <sub>G</sub> = 4.7Ω                                       |                        |                      |      | 75    | 95   |    |
| SOURCE – DRAIN DIODE CHARACTERISTICS |                                       |                                                             |                        |                      |      |       |      |    |
| I <sub>S</sub>                       | Continuous Current                    |                                                             |                        |                      |      | 20    | A    |    |
| I <sub>SM</sub>                      | Pulsed Current                        |                                                             |                        |                      |      | 80    |      |    |
| V <sub>SD</sub>                      | Diode Forward Voltage <sup>1</sup>    | I <sub>F</sub> = 20A                                        | V <sub>GS</sub> = 0    |                      |      | 2.5   | V    |    |
| t <sub>rr</sub>                      | Reverse Recovery Time                 | I <sub>F</sub> = 20A                                        |                        |                      | 150  | 400   | ns   |    |
| Q <sub>rr</sub>                      | Reverse Recovery Charge               | di/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

**THERMAL RESISTANCE CHARACTERISTICS**

| Parameter                                      | Min. | Typ. | Max. | Unit                      |
|------------------------------------------------|------|------|------|---------------------------|
| $R_{thJC}$ Thermal resistance Junction-Case    |      |      | 2.1  |                           |
| $R_{thJA}$ Thermal resistance Junction-ambient |      |      | 80   | $^\circ\text{C}/\text{W}$ |
| $R_{thCS}$ Thermal resistance Case to Sink     |      | 1.0  |      |                           |