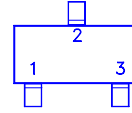
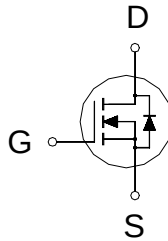


**PRODUCT SUMMARY**

|               |               |       |
|---------------|---------------|-------|
| $V_{(BR)DSS}$ | $R_{DS(ON)}$  | $I_D$ |
| 25V           | 180m $\Omega$ | 1.2A  |



1. GATE
2. DRAIN
3. SOURCE

**ABSOLUTE MAXIMUM RATINGS ( $T_C = 25\text{ }^\circ\text{C}$  Unless Otherwise Noted)**

| PARAMETERS/TEST CONDITIONS                                               |                                   | SYMBOL         | LIMITS     | UNITS            |
|--------------------------------------------------------------------------|-----------------------------------|----------------|------------|------------------|
| Gate-Source Voltage                                                      |                                   | $V_{GS}$       | $\pm 15$   | V                |
| Continuous Drain Current                                                 | $T_C = 25\text{ }^\circ\text{C}$  | $I_D$          | 1.2        | A                |
|                                                                          | $T_C = 100\text{ }^\circ\text{C}$ |                | 1.0        |                  |
| Pulsed Drain Current <sup>1</sup>                                        |                                   | $I_{DM}$       | 12         |                  |
| Power Dissipation                                                        | $T_C = 25\text{ }^\circ\text{C}$  | $P_D$          | 0.6        | W                |
|                                                                          | $T_C = 100\text{ }^\circ\text{C}$ |                | 0.5        |                  |
| Operating Junction & Storage Temperature Range                           |                                   | $T_J, T_{stg}$ | -55 to 150 | $^\circ\text{C}$ |
| Lead Temperature ( <sup>1</sup> / <sub>16</sub> " from case for 10 sec.) |                                   | $T_L$          | 275        |                  |

**THERMAL RESISTANCE RATINGS**

| THERMAL RESISTANCE  | SYMBOL          | TYPICAL | MAXIMUM | UNITS                       |
|---------------------|-----------------|---------|---------|-----------------------------|
| Junction-to-Case    | $R_{\theta JC}$ |         | 65      | $^\circ\text{C} / \text{W}$ |
| Junction-to-Ambient | $R_{\theta JA}$ |         | 230     |                             |

<sup>1</sup>Pulse width limited by maximum junction temperature.

**ELECTRICAL CHARACTERISTICS ( $T_C = 25\text{ }^\circ\text{C}$ , Unless Otherwise Noted)**

| PARAMETER                                     | SYMBOL        | TEST CONDITIONS                                         | LIMITS |     |           | UNIT    |
|-----------------------------------------------|---------------|---------------------------------------------------------|--------|-----|-----------|---------|
|                                               |               |                                                         | MIN    | TYP | MAX       |         |
| STATIC                                        |               |                                                         |        |     |           |         |
| Drain-Source Breakdown Voltage                | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\text{ }\mu A$                   | 25     |     |           | V       |
| Gate Threshold Voltage                        | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\text{ }\mu A$               | 0.7    | 1.0 | 2.5       |         |
| Gate-Body Leakage                             | $I_{GSS}$     | $V_{DS} = 0V, V_{GS} = \pm 15V$                         |        |     | $\pm 250$ | nA      |
| Zero Gate Voltage Drain Current               | $I_{DSS}$     | $V_{DS} = 20V, V_{GS} = 0V$                             |        |     | 25        | $\mu A$ |
|                                               |               | $V_{DS} = 20V, V_{GS} = 0V, T_J = 125\text{ }^{\circ}C$ |        |     | 250       |         |
| On-State Drain Current <sup>1</sup>           | $I_{D(ON)}$   | $V_{DS} = 10V, V_{GS} = 10V$                            | 1.2    |     |           | A       |
| Drain-Source On-State Resistance <sup>1</sup> | $R_{DS(ON)}$  | $V_{GS} = 7V, I_D = 1.2A$                               |        | 220 | 250       | mΩ      |
|                                               |               | $V_{GS} = 10V, I_D = 1.2A$                              |        | 180 | 220       |         |
| Forward Transconductance <sup>1</sup>         | $g_{fs}$      | $V_{DS} = 20V, I_D = 1.2A$                              |        | 16  |           | S       |

| DYNAMIC                                                                 |                     |                                                                                                                 |  |      |     |    |
|-------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------|--|------|-----|----|
| Input Capacitance                                                       | C <sub>iss</sub>    | V <sub>GS</sub> = 0V, V <sub>DS</sub> = 15V, f = 1MHz                                                           |  | 120  |     | pF |
| Output Capacitance                                                      | C <sub>oss</sub>    |                                                                                                                 |  | 100  |     |    |
| Reverse Transfer Capacitance                                            | C <sub>rss</sub>    |                                                                                                                 |  | 85   |     |    |
| Total Gate Charge <sup>2</sup>                                          | Q <sub>g</sub>      | V <sub>DS</sub> = 0.5V <sub>(BR)DSS</sub> , V <sub>GS</sub> = 10V,<br>I <sub>D</sub> = 1A                       |  | 11   |     | nC |
| Gate-Source Charge <sup>2</sup>                                         | Q <sub>gs</sub>     |                                                                                                                 |  | 3.0  |     |    |
| Gate-Drain Charge <sup>2</sup>                                          | Q <sub>gd</sub>     |                                                                                                                 |  | 5.8  |     |    |
| Turn-On Delay Time <sup>2</sup>                                         | t <sub>d(on)</sub>  | V <sub>DS</sub> = 15V, R <sub>L</sub> = 1Ω<br>I <sub>D</sub> ≅ 1A, V <sub>GS</sub> = 10V, R <sub>GS</sub> = 50Ω |  | 7    |     | nS |
| Rise Time <sup>2</sup>                                                  | t <sub>r</sub>      |                                                                                                                 |  | 20   |     |    |
| Turn-Off Delay Time <sup>2</sup>                                        | t <sub>d(off)</sub> |                                                                                                                 |  | 13   |     |    |
| Fall Time <sup>2</sup>                                                  | t <sub>f</sub>      |                                                                                                                 |  | 19   |     |    |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T <sub>c</sub> = 25 °C) |                     |                                                                                                                 |  |      |     |    |
| Continuous Current                                                      | I <sub>S</sub>      |                                                                                                                 |  | 1.2  |     | A  |
| Pulsed Current <sup>3</sup>                                             | I <sub>SM</sub>     |                                                                                                                 |  | 12   |     |    |
| Forward Voltage <sup>1</sup>                                            | V <sub>SD</sub>     | I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0V                                                          |  |      | 1.3 | V  |
| Reverse Recovery Time                                                   | t <sub>rr</sub>     | I <sub>F</sub> = I <sub>S</sub> , dI <sub>F</sub> /dt = 100A / μS                                               |  | 70   |     | nS |
| Reverse Recovery Charge                                                 | Q <sub>rr</sub>     |                                                                                                                 |  | 0.22 |     | μC |

<sup>1</sup>Pulse test : Pulse Width  $\leq 300 \mu sec$ , Duty Cycle  $\leq 2\%$ .

<sup>2</sup>Independent of operating temperature.

<sup>3</sup>Pulse width limited by maximum junction temperature.

**REMARK: THE PRODUCT MARKED WITH "102B"**

SOT-23 (M3) MECHANICAL DATA

| Dimension | mm   |      |      | Dimension | mm   |      |      |
|-----------|------|------|------|-----------|------|------|------|
|           | Min. | Typ. | Max. |           | Min. | Typ. | Max. |
| A         |      | 0.95 |      | H         | 0.10 | 0.15 | 0.25 |
| B         | 2.60 | 2.80 | 3.00 | I         | 0.37 |      |      |
| C         | 1.40 | 1.60 | 1.80 | J         |      |      |      |
| D         | 2.70 | 2.90 | 3.10 | K         |      |      |      |
| E         | 1.00 | 1.10 | 1.30 | L         |      |      |      |
| F         | 0.00 |      | 0.10 | M         |      |      |      |
| G         | 0.35 | 0.40 | 0.50 | N         |      |      |      |

