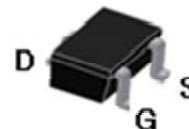
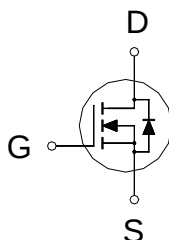


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

|                     |             |
|---------------------|-------------|
| $BV_{DSS}$          | 200V        |
| $R_{DS(on)} (MAX.)$ | $1\ \Omega$ |
| $I_D$               | 0.5A        |



R<sub>g</sub> 100% Tested

Pb-Free Lead Plating & Halogen Free



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

| PARAMETERS/TEST CONDITIONS                     |                             | SYMBOL           | LIMITS     | UNIT             |
|------------------------------------------------|-----------------------------|------------------|------------|------------------|
| Gate-Source Voltage                            |                             | $V_{GS}$         | $\pm 30$   | V                |
| Continuous Drain Current                       | $T_A = 25\ ^\circ\text{C}$  | $I_D$            | 0.5        | A                |
|                                                | $T_A = 100\ ^\circ\text{C}$ |                  | 0.3        |                  |
| Pulsed Drain Current <sup>1</sup>              |                             | $I_{DM}$         | 2          |                  |
| Power Dissipation                              | $T_A = 25\ ^\circ\text{C}$  | $P_D$            | 125        | W                |
|                                                | $T_A = 70\ ^\circ\text{C}$  |                  | 0.8        |                  |
| Operating Junction & Storage Temperature Range |                             | $T_{j}, T_{stg}$ | -55 to 150 | $^\circ\text{C}$ |

THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE   | SYMBOL          | TYPICAL | MAXIMUM | UNIT                        |
|----------------------|-----------------|---------|---------|-----------------------------|
| Junction-to- Ambient | $R_{\theta JA}$ |         | 100     | $^\circ\text{C} / \text{W}$ |

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

<sup>2</sup>Duty cycle  $\leq 1\%$



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

| PARAMETER                                                                      | SYMBOL        | TEST CONDITIONS                                              | LIMITS |     |           | UNIT     |
|--------------------------------------------------------------------------------|---------------|--------------------------------------------------------------|--------|-----|-----------|----------|
|                                                                                |               |                                                              | MIN    | TYP | MAX       |          |
| STATIC                                                                         |               |                                                              |        |     |           |          |
| Drain-Source Breakdown Voltage                                                 | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                                | 200    |     |           | V        |
| Gate Threshold Voltage                                                         | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                            | 3.0    | 4.0 | 5.0       |          |
| Gate-Body Leakage                                                              | $I_{GSS}$     | $V_{DS} = 0V, V_{GS} = \pm 30V$                              |        |     | $\pm 100$ | nA       |
| Zero Gate Voltage Drain Current                                                | $I_{DSS}$     | $V_{DS} = 160V, V_{GS} = 0V$                                 |        |     | 1         | $\mu A$  |
|                                                                                |               | $V_{DS} = 130V, V_{GS} = 0V, T_J = 125\text{ }^{\circ}C$     |        |     | 25        |          |
| On-State Drain Current <sup>1</sup>                                            | $I_{D(ON)}$   | $V_{DS} = 5V, V_{GS} = 10V$                                  | 0.5    |     |           | A        |
| Drain-Source On-State Resistance <sup>1</sup>                                  | $R_{DS(ON)}$  | $V_{GS} = 10V, I_D = 0.25A$                                  |        | 0.9 | 1         | $\Omega$ |
| Forward Transconductance <sup>1</sup>                                          | $g_{fs}$      | $V_{DS} = 5V, I_D = 0.25A$                                   |        | 2   |           | S        |
| DYNAMIC                                                                        |               |                                                              |        |     |           |          |
| Input Capacitance                                                              | $C_{iss}$     | $V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$                        |        | 180 |           | pF       |
| Output Capacitance                                                             | $C_{oss}$     |                                                              |        | 38  |           |          |
| Reverse Transfer Capacitance                                                   | $C_{rss}$     |                                                              |        | 13  |           |          |
| Gate Resistance                                                                | $R_g$         | $V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz$                       |        | 3.5 |           | $\Omega$ |
| Total Gate Charge <sup>1,2</sup>                                               | $Q_g$         | $V_{DS} = 100V, V_{GS} = 10V, I_D = 0.25A$                   |        | 3.1 |           | nC       |
| Gate-Source Charge <sup>1,2</sup>                                              | $Q_{gs}$      |                                                              |        | 1.0 |           |          |
| Gate-Drain Charge <sup>1,2</sup>                                               | $Q_{gd}$      |                                                              |        | 0.7 |           |          |
| Turn-On Delay Time <sup>1,2</sup>                                              | $t_{d(on)}$   | $V_{DS} = 100V, I_D = 0.25A, V_{GS} = 10V, R_{GS} = 6\Omega$ |        | 10  |           | nS       |
| Rise Time <sup>1,2</sup>                                                       | $t_r$         |                                                              |        | 20  |           |          |
| Turn-Off Delay Time <sup>1,2</sup>                                             | $t_{d(off)}$  |                                                              |        | 15  |           |          |
| Fall Time <sup>1,2</sup>                                                       | $t_f$         |                                                              |        | 25  |           |          |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ( $T_C = 25\text{ }^{\circ}C$ ) |               |                                                              |        |     |           |          |
| Continuous Current                                                             | $I_S$         |                                                              |        |     | 0.5       | A        |
| Pulsed Current <sup>3</sup>                                                    | $I_{SM}$      |                                                              |        |     | 2         |          |
| Forward Voltage <sup>1</sup>                                                   | $V_{SD}$      | $I_F = I_S, V_{GS} = 0V$                                     |        |     | 1.3       | V        |

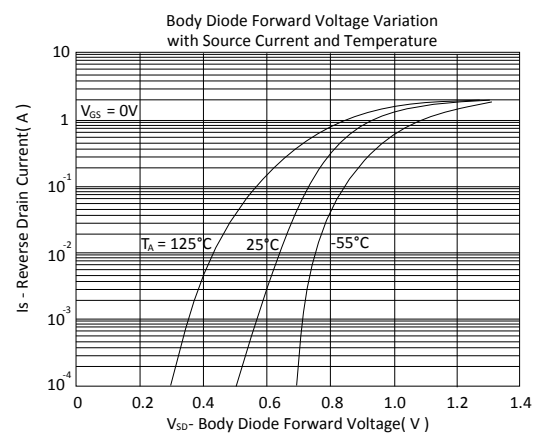
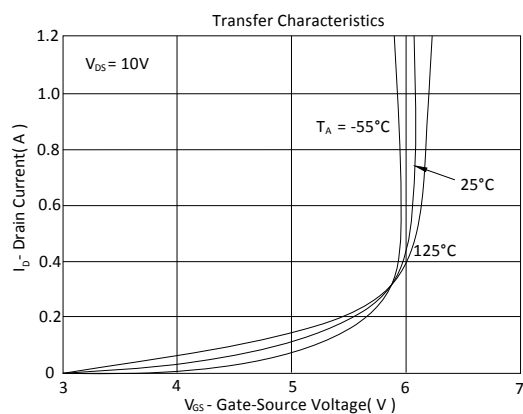
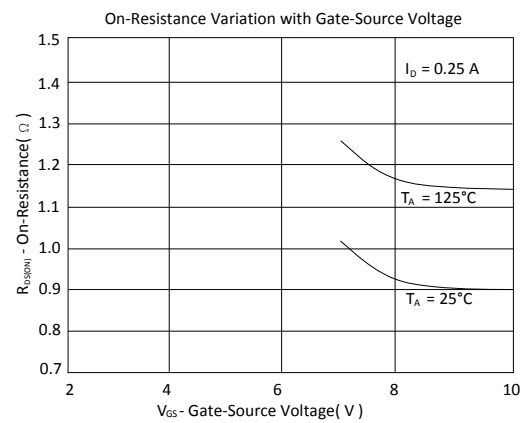
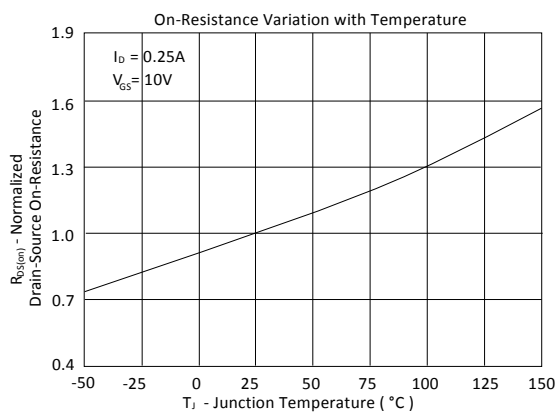
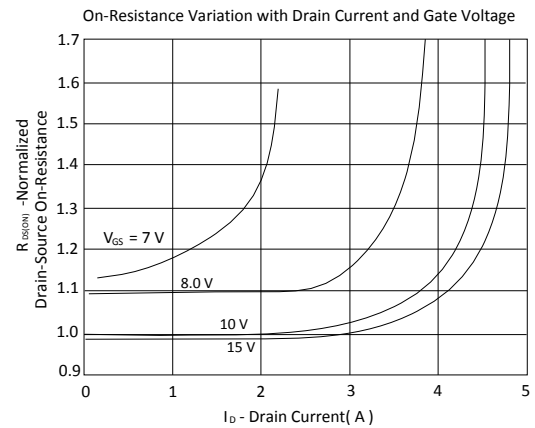
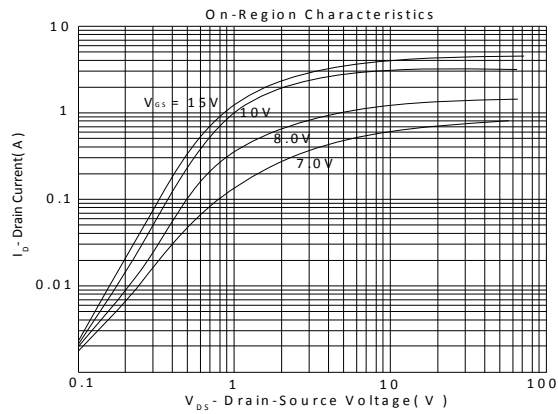
<sup>1</sup>Pulse test : Pulse Width  $\leq 300\mu\text{sec}$ , Duty Cycle  $\leq 2\%$ .

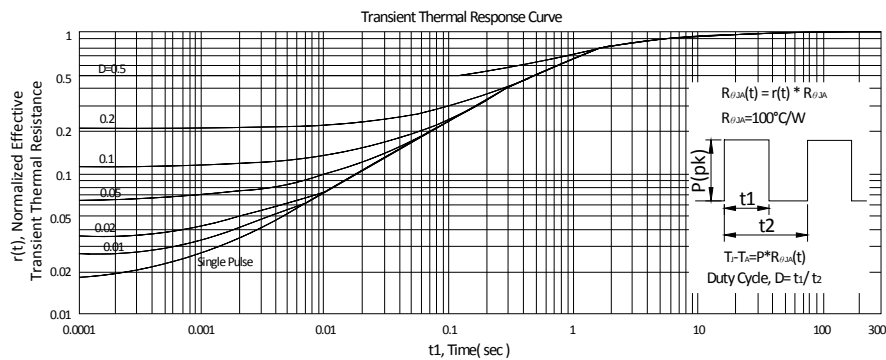
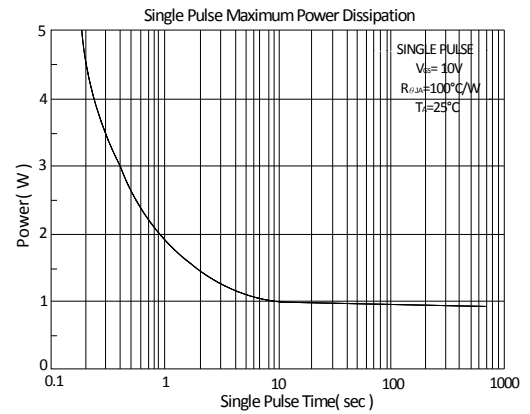
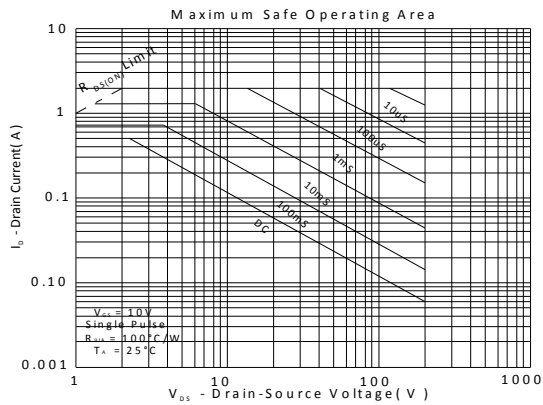
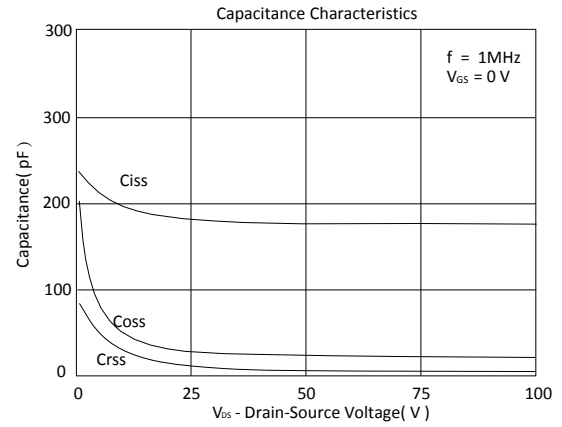
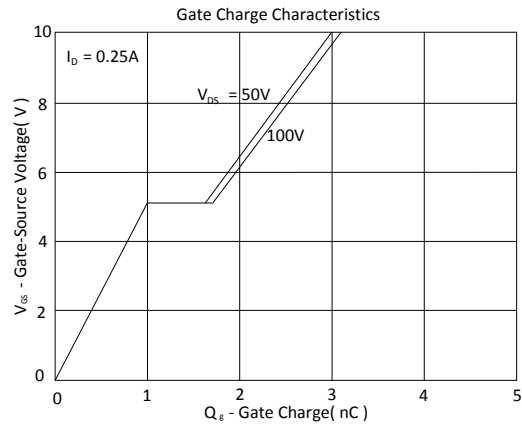
<sup>2</sup>Independent of operating temperature.

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



TYPICAL CHARACTERISTICS

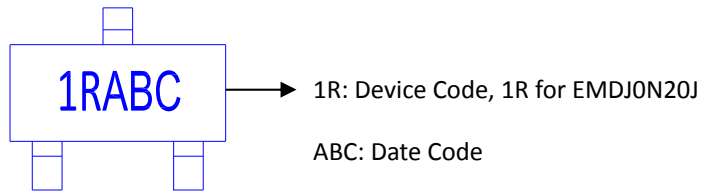




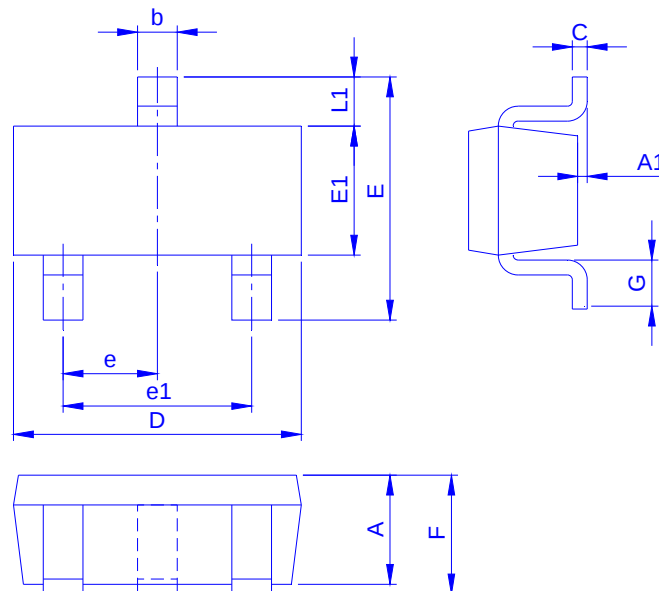


## Ordering & Marking Information:

Device Name: EMDJ0N20J for SOT-23



## Outline Drawing



## Dimension in mm

| Dimension | A    | A1  | A2 | b    | C   | D   | E   | E1  | e    | e1  | F   | G   | L1   |
|-----------|------|-----|----|------|-----|-----|-----|-----|------|-----|-----|-----|------|
| Min.      | 0.7  | 0   |    | 0.35 | 0.1 | 2.8 | 2.6 | 1.5 | 0.9  |     | 0.8 | 0.3 | 0.55 |
| Typ.      |      |     |    |      |     | 2.9 | 2.8 | 1.6 | 0.95 | 1.9 |     |     |      |
| Max.      | 1.12 | 0.1 |    | 0.5  | 0.2 | 3   | 3   | 1.7 | 1    |     | 1.2 | 0.6 | 0.65 |

## Footprint

