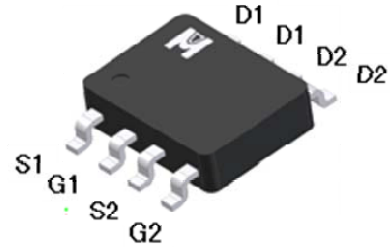
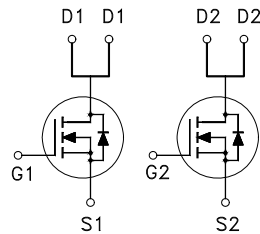


Dual N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

|                            |      |
|----------------------------|------|
| BV <sub>DSS</sub>          | 80V  |
| R <sub>DS(on)</sub> (MAX.) | 85mΩ |
| I <sub>D</sub>             | 4.5A |



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

Pb-Free Lead Plating & Halogen Free



ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25 °C Unless Otherwise Noted)

| PARAMETERS/TEST CONDITIONS                     |  | SYMBOL                            | LIMITS     | UNIT |
|--|--|-----------------------------------|------------|------|
| Gate-Source Voltage                            |  | V <sub>GS</sub>                   | ±20        | V    |
| Continuous Drain Current                       | T <sub>A</sub> = 25 °C                             | I <sub>D</sub>                    | 4.5        | A    |
|  | T <sub>A</sub> = 100 °C                            |                                   | 3.2        |      |
| Pulsed Drain Current <sup>1</sup>              |  | I <sub>DM</sub>                   | 18         |      |
| Avalanche Current                              |  | I <sub>AS</sub>                   | 6          |      |
| Avalanche Energy                               | L = 0.1mH, I <sub>D</sub> =6A, R <sub>G</sub> =25Ω | E <sub>AS</sub>                   | 1.8        | mJ   |
| Repetitive Avalanche Energy <sup>2</sup>       | L = 0.05mH   | E <sub>AR</sub>                   | 0.9        |      |
| Power Dissipation                              | T <sub>A</sub> = 25 °C                             | P <sub>D</sub>                    | 2          | W    |
|  | T <sub>A</sub> = 100 °C                            |                                   | 0.8        |      |
| Operating Junction & Storage Temperature Range |  | T <sub>j</sub> , T <sub>stg</sub> | -55 to 150 | °C   |

THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE               | SYMBOL           | TYPICAL | MAXIMUM | UNIT   |
|----------------------------------|------------------|---------|---------|--------|
| Junction-to-Case                 | R <sub>θJC</sub> |         | 25      | °C / W |
| Junction-to-Ambient <sup>3</sup> | R <sub>θJA</sub> |         | 62.5    |        |

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

<sup>2</sup>Duty cycle ≤ 1%

<sup>3</sup>62.5°C / W when mounted on a 1 in<sup>2</sup> pad of 2 oz copper.



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

| PARAMETER   | SYMBOL        | TEST CONDITIONS   | LIMITS |     |           | UNIT      |
|---|---------------|---|--------|-----|-----------|-----------|
|   |               |   | MIN    | TYP | MAX       |           |
| <b>STATIC</b>   |               |   |        |     |           |           |
| Drain-Source Breakdown Voltage  | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                                 | 80     |     |           | V         |
| Gate Threshold Voltage  | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                             | 1.0    | 1.7 | 3.0       |           |
| Gate-Body Leakage   | $I_{GSS}$     | $V_{DS} = 0V, V_{GS} = \pm 20V$                               |        |     | $\pm 100$ | nA        |
| Zero Gate Voltage Drain Current   | $I_{DSS}$     | $V_{DS} = 64V, V_{GS} = 0V$                                   |        |     | 1         | $\mu A$   |
|   |               | $V_{DS} = 60V, V_{GS} = 0V, T_J = 125\text{ }^\circ\text{C}$  |        |     | 25        |           |
| On-State Drain Current <sup>1</sup>   | $I_{D(ON)}$   | $V_{DS} = 5V, V_{GS} = 10V$                                   | 4.5    |     |           | A         |
| Drain-Source On-State Resistance <sup>1</sup>   | $R_{DS(ON)}$  | $V_{GS} = 10V, I_D = 4.5A$                                    |        | 73  | 85        | $m\Omega$ |
|   |               | $V_{GS} = 5V, I_D = 2.5A$                                     |        | 90  | 110       |           |
| Forward Transconductance <sup>1</sup>   | $g_{fs}$      | $V_{DS} = 5V, I_D = 4.5A$                                     |        | 10  |           | S         |
| <b>DYNAMIC</b>  |               |   |        |     |           |           |
| Input Capacitance   | $C_{iss}$     | $V_{GS} = 0V, V_{DS} = 30V, f = 1MHz$                         |        | 620 |           | $pF$      |
| Output Capacitance  | $C_{oss}$     |   |        | 44  |           |           |
| Reverse Transfer Capacitance  | $C_{rss}$     |   |        | 37  |           |           |
| Total Gate Charge <sup>1,2</sup>  | $Q_g$         | $V_{DS} = 40V, V_{GS} = 10V,$<br>$I_D = 4.5A$                 |        | 12  |           | nC        |
| Gate-Source Charge <sup>1,2</sup>   | $Q_{gs}$      |   |        | 1.2 |           |           |
| Gate-Drain Charge <sup>1,2</sup>  | $Q_{gd}$      |   |        | 3.3 |           |           |
| Turn-On Delay Time <sup>1,2</sup>   | $t_{d(on)}$   | $V_{DS} = 40V,$<br>$I_D = 1A, V_{GS} = 10V, R_{GS} = 6\Omega$ |        | 9   |           | nS        |
| Rise Time <sup>1,2</sup>  | $t_r$         |   |        | 6.5 |           |           |
| Turn-Off Delay Time <sup>1,2</sup>  | $t_{d(off)}$  |   |        | 12  |           |           |
| Fall Time <sup>1,2</sup>  | $t_f$         |   |        | 7.5 |           |           |
| <b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (<math>T_c = 25\text{ }^\circ\text{C}</math>)</b> |               |   |        |     |           |           |
| Continuous Current  | $I_S$         |   |        |     | 2.3       | A         |
| Pulsed Current <sup>3</sup>   | $I_{SM}$      |   |        |     | 9.2       |           |
| Forward Voltage <sup>1</sup>  | $V_{SD}$      | $I_F = I_S, V_{GS} = 0V$                                      |        |     | 1.3       | V         |

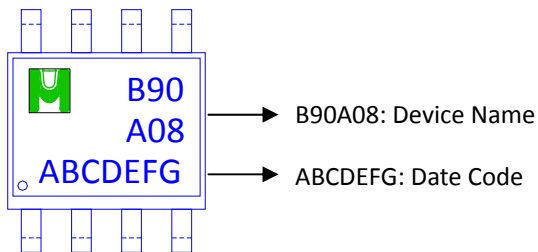
<sup>1</sup>Pulse test : Pulse Width  $\leq 300\ \mu\text{sec}$ , Duty Cycle  $\leq 2\%$ .

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

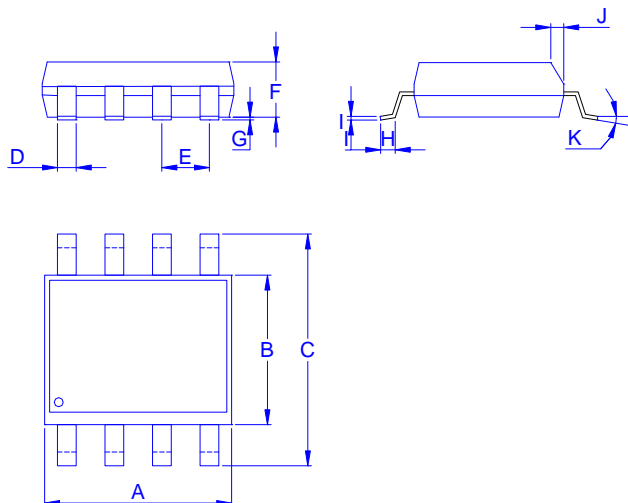
<sup>3</sup>Pulse width limited by maximum junction temperature.

Ordering & Marking Information:

Device Name: EMB90A08G for SOP-8



Outline Drawing



Dimension in mm

| Dimension | A    | B    | C    | D    | E    | F    | G    | H    | I    | J    | K  |
|-----------|------|------|------|------|------|------|------|------|------|------|----|
| Min.      | 4.70 | 3.70 | 5.80 | 0.33 |      | 1.20 | 0.08 | 0.40 | 0.19 | 0.25 | 0° |
| Typ.      |      |      |      |      | 1.27 |      |      |      |      |      |    |
| Max.      | 5.10 | 4.10 | 6.20 | 0.51 |      | 1.62 | 0.28 | 0.83 | 0.26 | 0.50 | 8° |



TYPICAL CHARACTERISTICS

