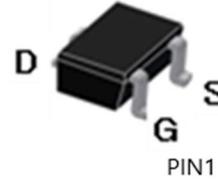
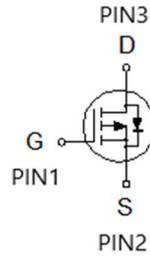


P-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

|                   |               |
|-------------------|---------------|
| $BV_{DSS}$        | -30V          |
| $R_{DSON (MAX.)}$ | 125m $\Omega$ |
| $I_D$             | -3.1A         |



P-Channel MOSFET

Pb-Free Lead Plating & Halogen Free



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

| PARAMETERS/TEST CONDITIONS                     |                                  | SYMBOL         | LIMITS     | UNIT             |
|--|----------------------------------|----------------|------------|------------------|
| Gate-Source Voltage                            |                                  | $V_{GS}$       | $\pm 20$   | V                |
| Continuous Drain Current                       | $T_A = 25\text{ }^\circ\text{C}$ | $I_D$          | -3.1       | A                |
|  | $T_A = 70\text{ }^\circ\text{C}$ |                | -2.1       |                  |
| Pulsed Drain Current <sup>1</sup>              |                                  | $I_{DM}$       | -12        |                  |
| Power Dissipation                              | $T_A = 25\text{ }^\circ\text{C}$ | $P_D$          | 1.04       | W                |
|  | $T_A = 70\text{ }^\circ\text{C}$ |                | 0.66       |                  |
| 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 <sup>3</sup> | $R_{\theta JA} (T \leq 10\text{sec})$ |         | 83      | $^\circ\text{C} / \text{W}$ |
|                                  | $R_{\theta JA} (\text{Steady State})$ |         | 120     |                             |

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

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

<sup>3</sup>The device mounted on a 1 in<sup>2</sup> pad of 2 oz copper.



ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25 °C, Unless Otherwise Noted)

| PARAMETER   | SYMBOL               | TEST CONDITIONS   | LIMITS |      |      | UNIT |
|---|----------------------|---|--------|------|------|------|
|   |                      |   | MIN    | TYP  | MAX  |      |
| <b>STATIC</b>   |                      |   |        |      |      |      |
| Drain-Source Breakdown Voltage  | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA   | -30    |      |      | V    |
| Gate Threshold Voltage  | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                   | -1.0   | -1.6 | -3.0 |      |
| Gate-Body Leakage   | I <sub>GSS</sub>     | V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V  |        |      | ±100 | nA   |
| Zero Gate Voltage Drain Current   | I <sub>DSS</sub>     | V <sub>DS</sub> = -24V, V <sub>GS</sub> = 0V  |        |      | -1   | μA   |
|   |                      | V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125 °C                         |        |      | -10  |      |
| On-State Drain Current <sup>1</sup>   | I <sub>D(ON)</sub>   | V <sub>DS</sub> = -5V, V <sub>GS</sub> = -10V   | -3.1   |      |      | A    |
| Drain-Source On-State Resistance <sup>1</sup>                                 | R <sub>DS(ON)</sub>  | V <sub>GS</sub> = -10V, I <sub>D</sub> = -3.1A  |        | 100  | 125  | mΩ   |
|   |                      | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2A   |        | 140  | 190  |      |
| Forward Transconductance <sup>1</sup>   | g <sub>fs</sub>      | V <sub>DS</sub> = -5V, I <sub>D</sub> = -3A   |        | 4.5  |      | S    |
| <b>DYNAMIC</b>  |                      |   |        |      |      |      |
| Input Capacitance   | C <sub>iss</sub>     | V <sub>GS</sub> = 0V, V <sub>DS</sub> = -15V, f = 1MHz  |        | 294  |      | pF   |
| Output Capacitance  | C <sub>oss</sub>     |   |        | 41   |      |      |
| Reverse Transfer Capacitance  | C <sub>rss</sub>     |   |        | 24   |      |      |
| Total Gate Charge <sup>1,2</sup>  | Q <sub>g</sub>       | V <sub>DS</sub> = -15V, V <sub>GS</sub> = -10V,<br>I <sub>D</sub> = -2.7A                     |        | 6.3  |      | nC   |
| Gate-Source Charge <sup>1,2</sup>   | Q <sub>gs</sub>      |   |        | 0.8  |      |      |
| Gate-Drain Charge <sup>1,2</sup>  | Q <sub>gd</sub>      |   |        | 1.4  |      |      |
| Turn-On Delay Time <sup>1,2</sup>   | t <sub>d(on)</sub>   | V <sub>DS</sub> = -15V,<br>I <sub>D</sub> = -1A, V <sub>GS</sub> = -10V, R <sub>GS</sub> = 6Ω |        | 10   |      | nS   |
| Rise Time <sup>1,2</sup>  | t <sub>r</sub>       |   |        | 20   |      |      |
| Turn-Off Delay Time <sup>1,2</sup>  | t <sub>d(off)</sub>  |   |        | 15   |      |      |
| Fall Time <sup>1,2</sup>  | t <sub>f</sub>       |   |        | 12   |      |      |
| <b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>C</sub> = 25 °C)</b> |                      |   |        |      |      |      |
| Continuous Current  | I <sub>S</sub>       |   |        |      | -2   | A    |
| Pulsed Current <sup>3</sup>   | I <sub>SM</sub>      |   |        |      | -8   |      |
| Forward Voltage <sup>1</sup>  | V <sub>SD</sub>      | I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0V  |        |      | 1.2  | V    |

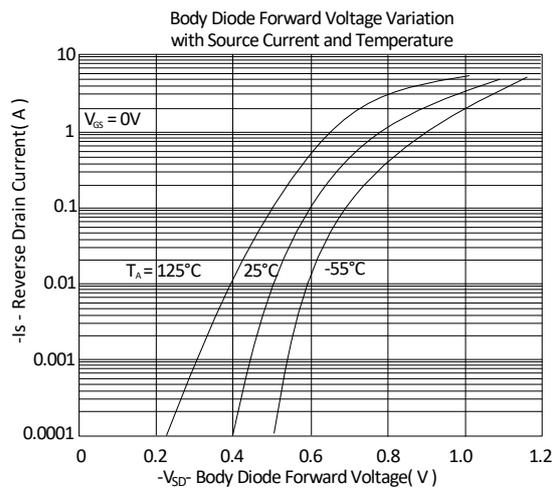
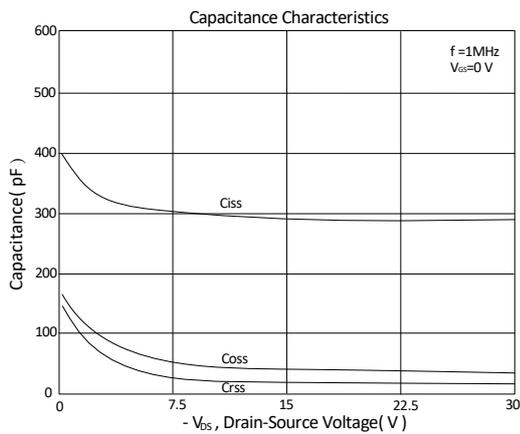
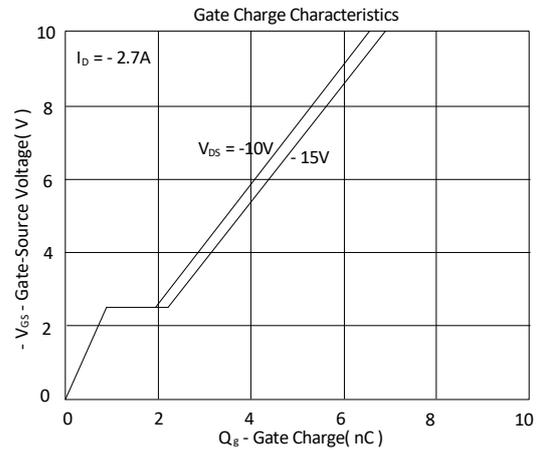
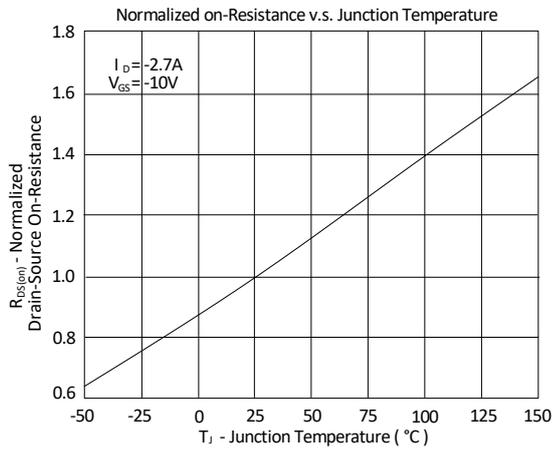
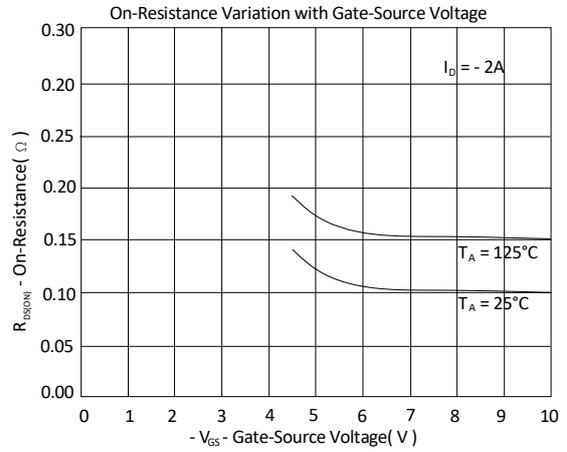
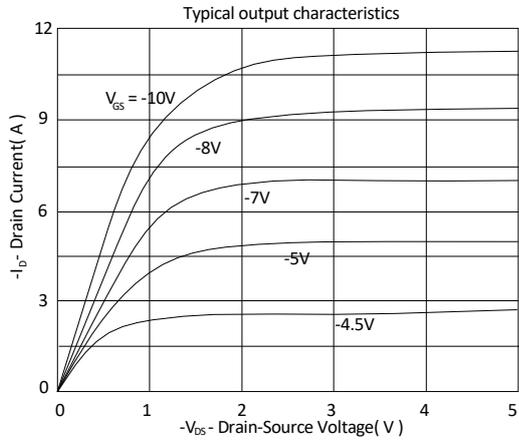
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

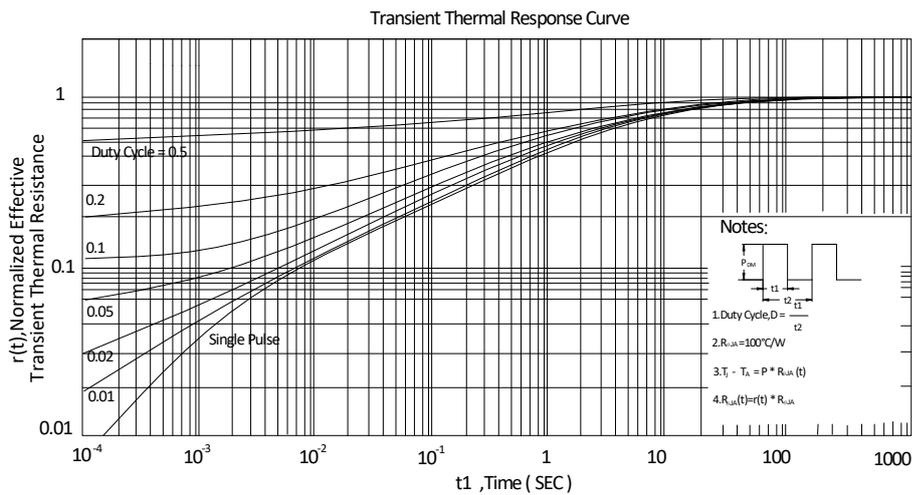
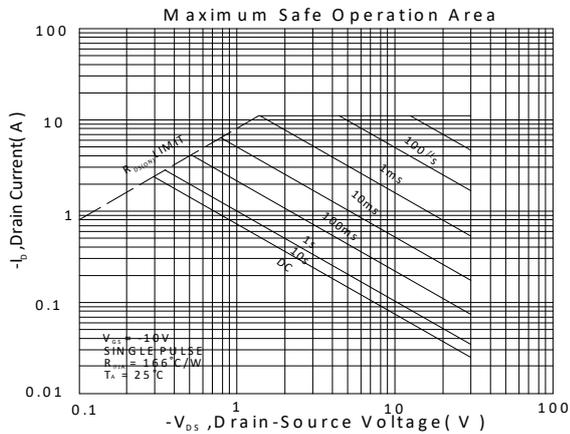
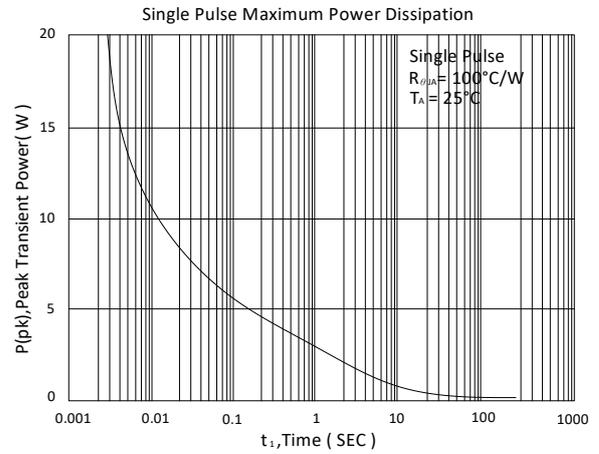
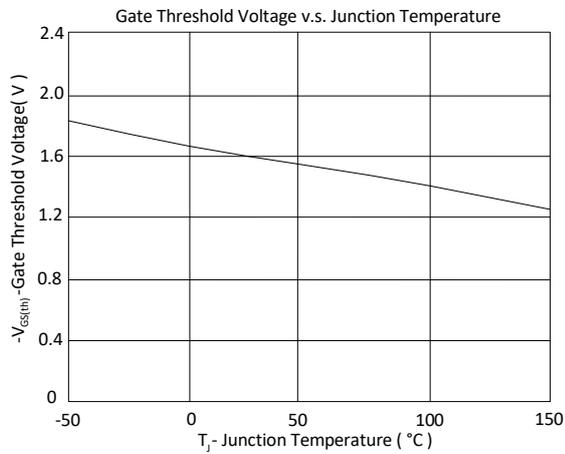
<sup>2</sup>Independent of operating temperature.

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

EMC will review datasheet by quarter, and update new version.

TYPICAL CHARACTERISTICS

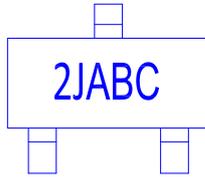






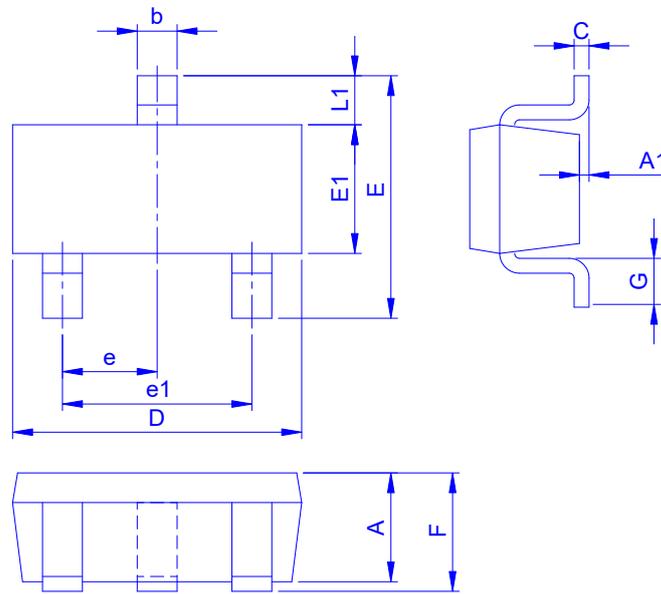
Ordering & Marking Information:

Device Name: EMBA3P03JS for SOT23-3



→ 2J: Device Code, 2J for EMBA3P03JS  
A : Year(A:2008 B:2009 C:2010....)  
BC : Weekly Serial

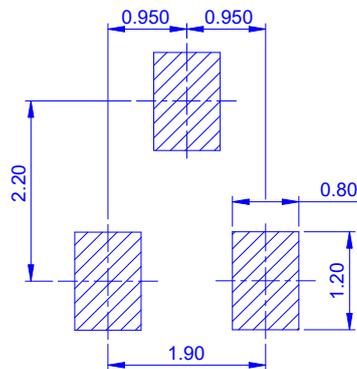
Outline Drawing



Dimension in mm

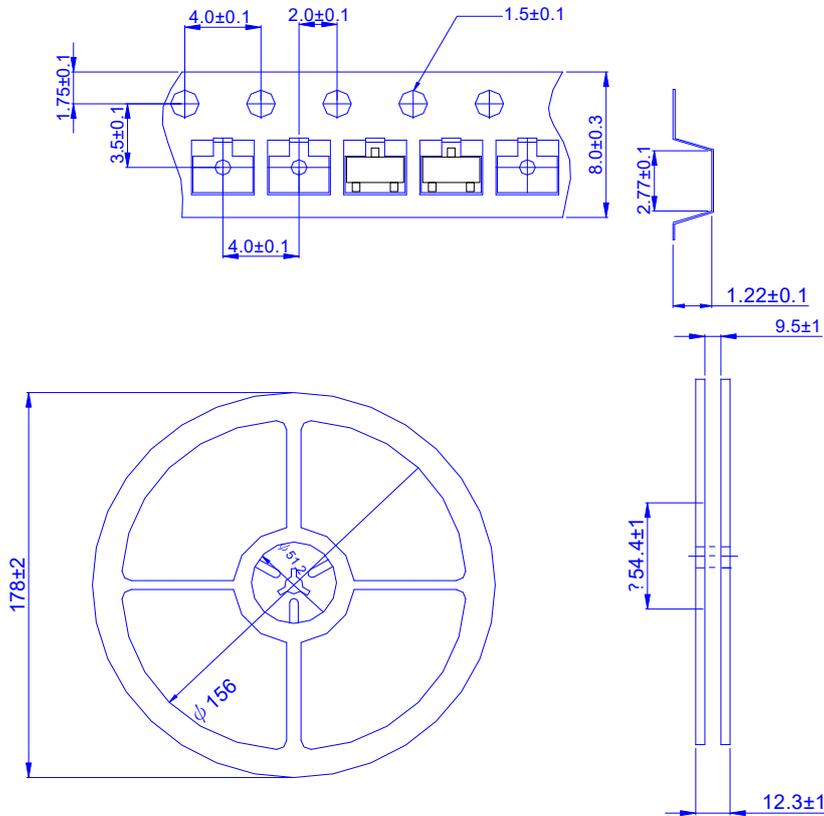
| Dimension | A    | A1   | b    | C     | D    | E    | E1   | e    | e1   | F    | G    | L1   |
|-----------|------|------|------|-------|------|------|------|------|------|------|------|------|
| Min.      | 0.70 | -    | 0.30 | 0.080 | 2.80 | 2.10 | 1.20 | 0.90 | 1.80 | 0.80 | 0.30 | 0.54 |
| Typ.      | 0.95 | -    | 0.40 | 0.127 | 2.90 | 2.50 | 1.30 | 0.95 | 1.90 | 0.95 | 0.40 | 0.57 |
| Max.      | 1.20 | 0.15 | 0.50 | 0.202 | 3.10 | 3.00 | 1.80 | 1.00 | 2.00 | 1.25 | 0.60 | 0.70 |

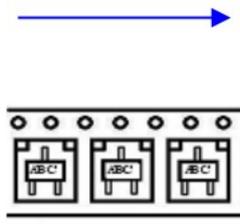
Footprint





◆ Tape&Reel Information:3000pcs/Reel(Dimension in millimeter)



|         |  |
|---------|--|
| 產品別     | SOT23-3  |
| Reel 尺寸 | 7"   |
| 編帶方式    | FEED DIRECTION<br> |
| 前空格     | 50   |
| 後空格     | 50   |
| 裝箱數     |  |
| 滿捲數量    | 3K   |
| 捲/內盒比   | 5 : 1  |
| 內盒滿箱數   | 15K  |
| 內/外箱比   | 12 : 1   |