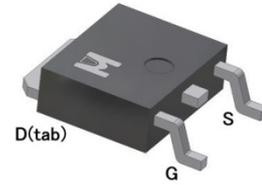
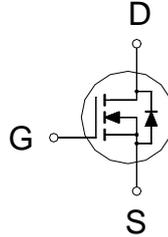


N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

|                     |              |
|---------------------|--------------|
| $BV_{DSS}$          | 150V         |
| $R_{DS(on) (MAX.)}$ | 60m $\Omega$ |
| $I_D$               | 32A          |



UIS, Rg 100% Tested

Pb-Free Lead Plating & Halogen Free



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

| PARAMETERS/TEST CONDITIONS                     |  | SYMBOL           | LIMITS     | UNIT             |
|--|--|------------------|------------|------------------|
| Drain-Source Voltage                           |  | $V_{DSS}$        | 150        | V                |
| Gate-Source Voltage                            |  | $V_{GS}$         | $\pm 30$   | V                |
| Continuous Drain Current                       | $T_C = 25\text{ }^\circ\text{C}$                     | $I_D$            | 32         | A                |
|  | $T_C = 100\text{ }^\circ\text{C}$                    |                  | 19         |                  |
| Pulsed Drain Current <sup>1</sup>              |  | $I_{DM}$         | 120        |                  |
| Avalanche Current                              |  | $I_{AS}$         | 18         |                  |
| Avalanche Energy                               | $L = 0.2\text{mH}, I_D = 18\text{A}, R_G = 25\Omega$ | $E_{AS}$         | 32.4       | mJ               |
| Repetitive Avalanche Energy <sup>2</sup>       | $L = 0.1\text{mH}$                                   | $E_{AR}$         | 16.2       |                  |
| Power Dissipation                              | $T_C = 25\text{ }^\circ\text{C}$                     | $P_D$            | 69         | W                |
|  | $T_C = 100\text{ }^\circ\text{C}$                    |                  | 27         |                  |
| 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-Case    | $R_{\theta JC}$ |         | 1.8     | $^\circ\text{C} / \text{W}$ |
| Junction-to-Ambient | $R_{\theta JA}$ |         | 75      |                             |

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

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

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  | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                                 | 150    |      |           | V         |
| Gate Threshold Voltage  | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                             | 2.0    | 3.0  | 4.5       |           |
| Gate-Body Leakage   | $I_{GSS}$     | $V_{DS} = 0V, V_{GS} = \pm 30V$                               |        |      | $\pm 100$ | nA        |
| Zero Gate Voltage Drain Current   | $I_{DSS}$     | $V_{DS} = 120V, V_{GS} = 0V$                                  |        |      | 1         | $\mu A$   |
|   |               | $V_{DS} = 100V, V_{GS} = 0V, T_J = 125\text{ }^\circ\text{C}$ |        |      | 25        |           |
| On-State Drain Current <sup>1</sup>   | $I_{D(ON)}$   | $V_{DS} = 10V, V_{GS} = 10V$                                  | 32     |      |           | A         |
| Drain-Source On-State Resistance <sup>1</sup>   | $R_{DS(ON)}$  | $V_{GS} = 10V, I_D = 20A$                                     |        | 50   | 60        | $m\Omega$ |
|   |               | $V_{GS} = 7V, I_D = 20A$                                      |        | 58   | 70        |           |
| Forward Transconductance <sup>1</sup>   | $g_{fs}$      | $V_{DS} = 5V, I_D = 20A$                                      |        | 25   |           | S         |
| <b>DYNAMIC</b>  |               |   |        |      |           |           |
| Input Capacitance   | $C_{iss}$     | $V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$                         |        | 2903 |           | $pF$      |
| Output Capacitance  | $C_{oss}$     |   |        | 172  |           |           |
| Reverse Transfer Capacitance  | $C_{rss}$     |   |        | 59   |           |           |
| Gate Resistance   | $R_g$         | $V_{GS} = 15mV, V_{DS} = 0V, f = 1MHz$                        |        | 2.3  |           | $\Omega$  |
| Total Gate Charge <sup>1,2</sup>  | $Q_g$         | $V_{DS} = 80V, V_{GS} = 10V,$<br>$I_D = 20A$                  |        | 38.2 |           | $nC$      |
| Gate-Source Charge <sup>1,2</sup>   | $Q_{gs}$      |   |        | 9.8  |           |           |
| Gate-Drain Charge <sup>1,2</sup>  | $Q_{gd}$      |   |        | 14.5 |           |           |
| Turn-On Delay Time <sup>1,2</sup>   | $t_{d(on)}$   | $V_{DS} = 75V,$<br>$I_D = 1A, V_{GS} = 10V, R_{GS} = 6\Omega$ |        | 15   |           | $nS$      |
| Rise Time <sup>1,2</sup>  | $t_r$         |   |        | 40   |           |           |
| Turn-Off Delay Time <sup>1,2</sup>  | $t_{d(off)}$  |   |        | 45   |           |           |
| Fall Time <sup>1,2</sup>  | $t_f$         |   |        | 38   |           |           |
| <b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (<math>T_c = 25\text{ }^\circ\text{C}</math>)</b> |               |   |        |      |           |           |
| Continuous Current  | $I_S$         |   |        |      | 32        | A         |
| Pulsed Current <sup>3</sup>   | $I_{SM}$      |   |        |      | 120       |           |
| Forward Voltage <sup>1</sup>  | $V_{SD}$      | $I_F = I_S, V_{GS} = 0V$                                      |        |      | 1.3       | V         |
| Reverse Recovery Time   | $t_{rr}$      | $I_F = 20A, di_F/dt = 100A / \mu S$                           |        | 100  |           | nS        |
| Reverse Recovery Charge   | $Q_{rr}$      |   |        | 360  |           | nC        |

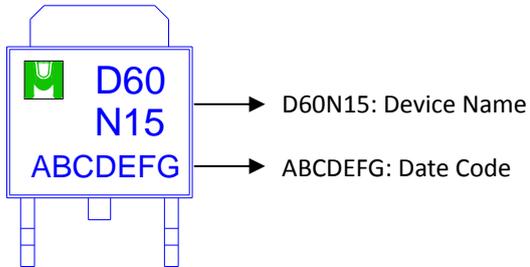
<sup>1</sup>Pulse test : Pulse Width  $\leq 300\text{ }\mu\text{sec}$ , Duty Cycle  $\leq 2\%$ .

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

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

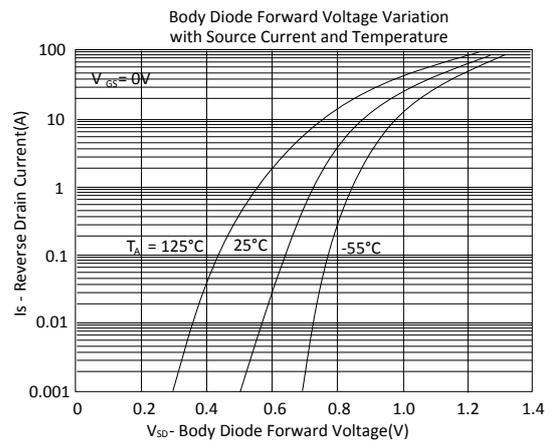
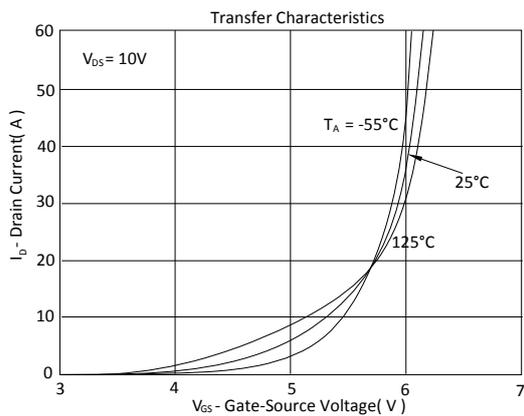
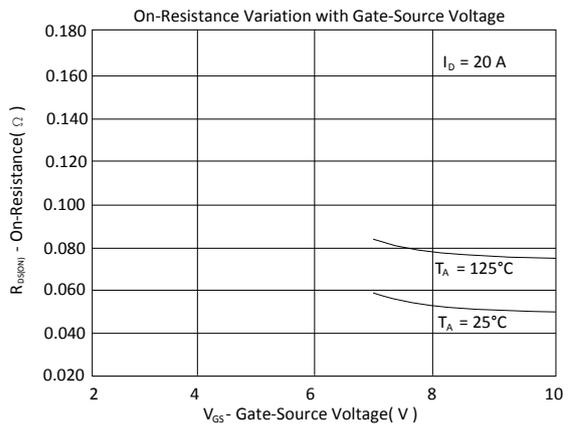
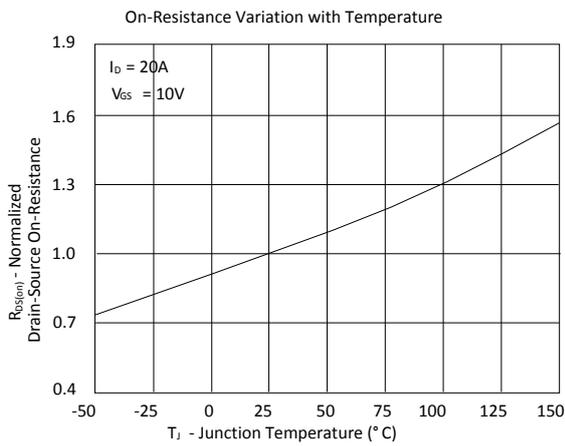
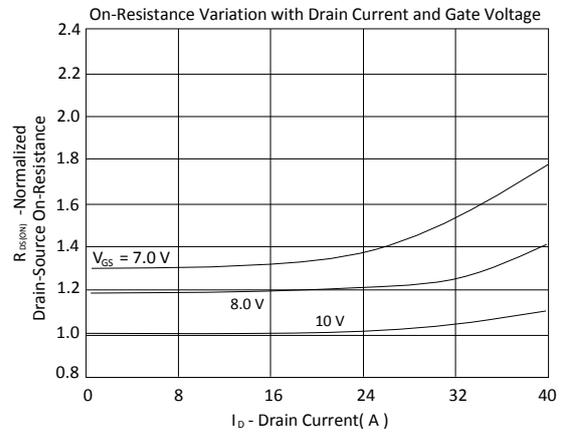
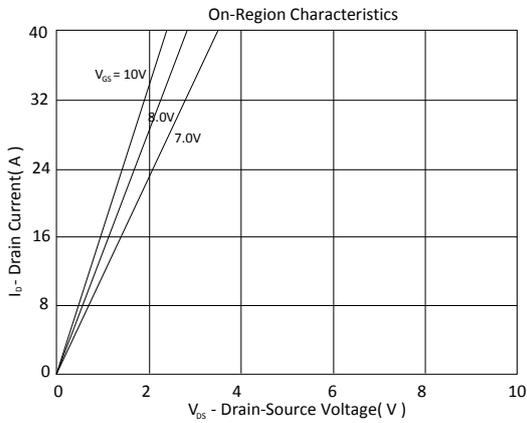
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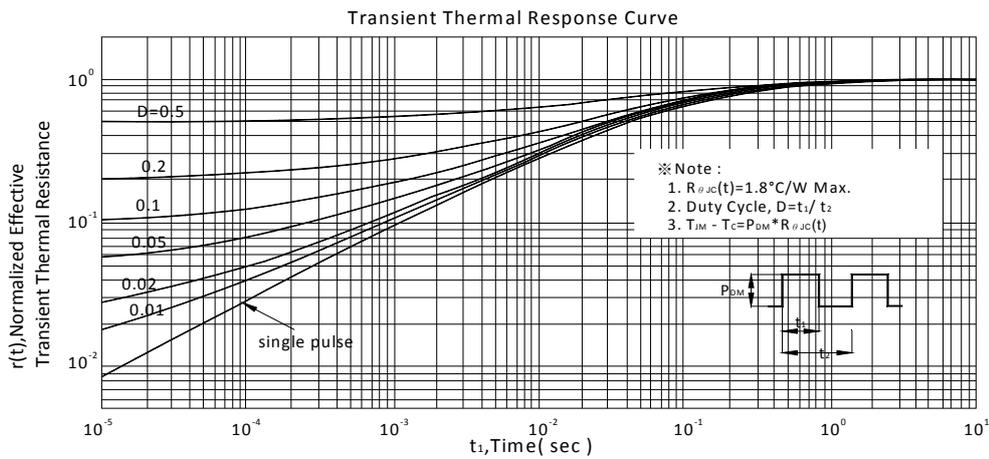
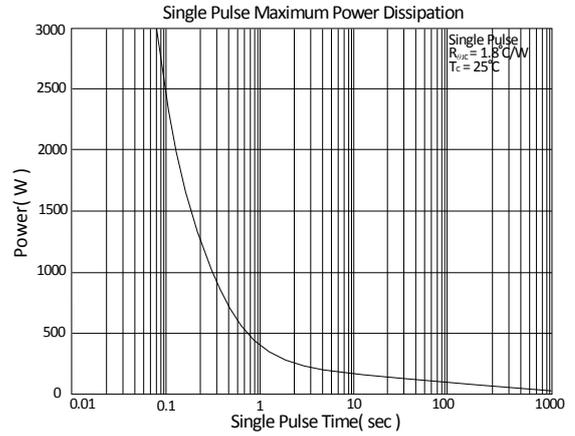
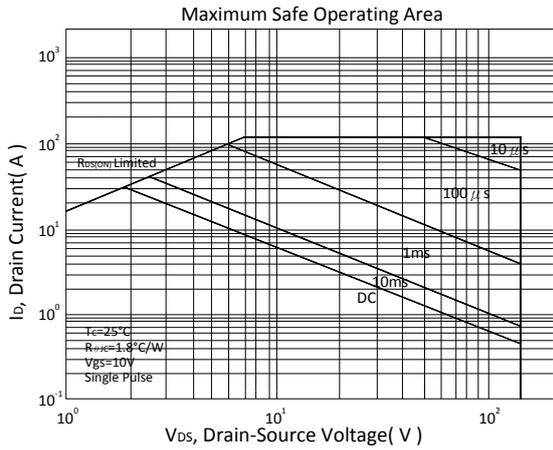
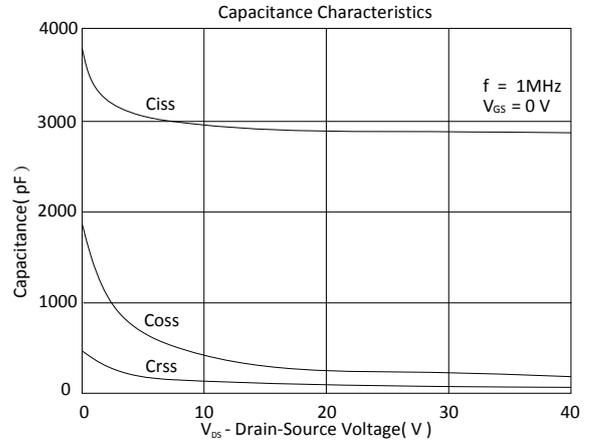
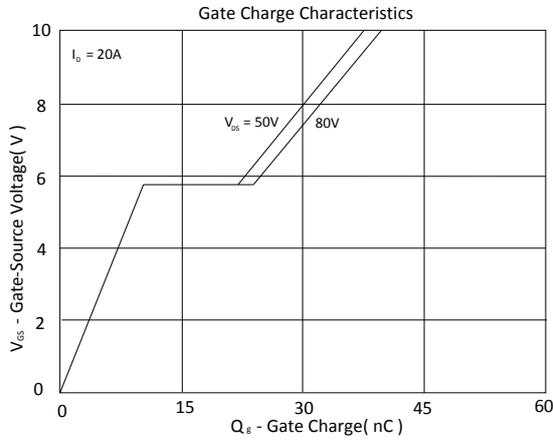
Device Name: EMD60N15A for DPAK (TO-252)





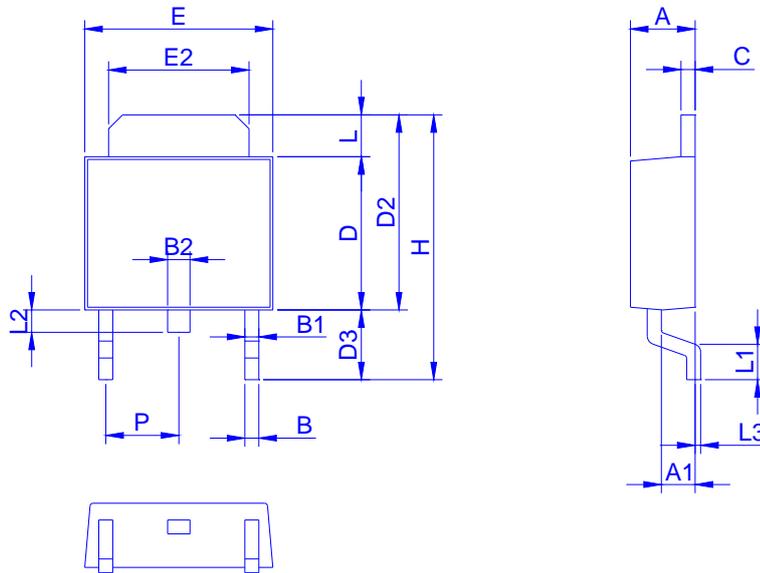
TYPICAL CHARACTERISTICS







Outline Drawing



Dimension in mm

| Dimension | A    | A1   | B    | B1   | B2   | C    | D    | D2   | D3   | E    | E2   | H     | L    | L1   | L2   | L3   | P    |
|-----------|------|------|------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|
| Min.      | 2.10 | 0.95 | 0.30 | 0.40 | 0.60 | 0.40 | 5.30 | 6.70 | 2.20 | 6.40 | 4.80 | 9.20  | 0.89 | 0.90 | 0.50 | 0.00 | 2.10 |
| Max.      | 2.50 | 1.30 | 0.85 | 0.94 | 1.00 | 0.60 | 6.20 | 7.30 | 3.00 | 6.70 | 5.45 | 10.15 | 1.70 | 1.65 | 1.10 | 0.30 | 2.50 |

Footprint

