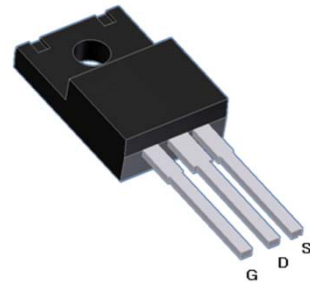
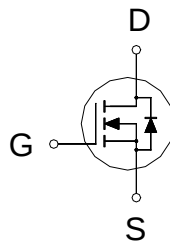


**N-Channel Logic Level Enhancement Mode Field Effect Transistor**

**Product Summary:**

|                     |               |
|---------------------|---------------|
| $BV_{DSS}$          | 600V          |
| $R_{DS(on)} (MAX.)$ | $1.55 \Omega$ |
| $I_D$               | 6A            |



UIS, 100% Tested

Pb-Free Lead Plating & Halogen Free



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

| PARAMETERS/TEST CONDITIONS                     |                                                    | SYMBOL           | LIMITS     | UNIT             |
|------------------------------------------------|----------------------------------------------------|------------------|------------|------------------|
| Gate-Source Voltage                            |                                                    | $V_{GS}$         | $\pm 30$   | V                |
| Continuous Drain Current                       | $T_C = 25^\circ\text{C}$                           | $I_D$            | 6          | A                |
|                                                | $T_C = 100^\circ\text{C}$                          |                  | 3.7        |                  |
| Pulsed Drain Current <sup>1</sup>              |                                                    | $I_{DM}$         | 24         |                  |
| Avalanche Current                              |                                                    | $I_{AS}$         | 6          | mJ               |
| Avalanche Energy                               | $L = 3\text{mH}, I_D = 6\text{A}, R_G = 25 \Omega$ | $E_{AS}$         | 54         |                  |
| Repetitive Avalanche Energy <sup>2</sup>       | $L = 0.5\text{mH}$                                 | $E_{AR}$         | 9          |                  |
| Power Dissipation                              | $T_C = 25^\circ\text{C}$                           | $P_D$            | 48         | W                |
|                                                | $T_C = 100^\circ\text{C}$                          |                  | 19         |                  |
| 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    | $R_{\theta JC}$ |         | 2.6     | $^\circ\text{C} / \text{W}$ |
| Junction-to-Ambient | $R_{\theta JA}$ |         | 60      |                             |

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

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

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

| PARAMETER                                                               | SYMBOL        | TEST CONDITIONS                                            | LIMITS |      |           | UNIT     |
|-------------------------------------------------------------------------|---------------|------------------------------------------------------------|--------|------|-----------|----------|
|                                                                         |               |                                                            | MIN    | TYP  | MAX       |          |
| STATIC                                                                  |               |                                                            |        |      |           |          |
| Drain-Source Breakdown Voltage                                          | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                              | 600    |      |           | V        |
| Gate Threshold Voltage                                                  | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                          | 2      | 3    | 4         |          |
| Gate-Body Leakage                                                       | $I_{GSS}$     | $V_{DS} = 0V, V_{GS} = \pm 30V$                            |        |      | $\pm 100$ | nA       |
| Zero Gate Voltage Drain Current                                         | $I_{DSS}$     | $V_{DS} = 600V, V_{GS} = 0V$                               |        |      | 10        | $\mu A$  |
|                                                                         |               | $V_{DS} = 480V, V_{GS} = 0V, T_J = 125\text{ }^{\circ}C$   |        |      | 25        |          |
| Drain-Source On-State Resistance <sup>1</sup>                           | $R_{DS(ON)}$  | $V_{GS} = 10V, I_D = 3A$                                   |        | 1.4  | 1.55      | $\Omega$ |
| Forward Transconductance <sup>1</sup>                                   | $g_{fs}$      | $V_{DS} = 25V, I_D = 3A$                                   |        | 6    |           | S        |
| DYNAMIC                                                                 |               |                                                            |        |      |           |          |
| Input Capacitance                                                       | $C_{iss}$     | $V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$                      |        | 660  |           | pF       |
| Output Capacitance                                                      | $C_{oss}$     |                                                            |        | 70   |           |          |
| Reverse Transfer Capacitance                                            | $C_{rss}$     |                                                            |        | 3.5  |           |          |
| Total Gate Charge <sup>1,2</sup>                                        | $Q_g$         | $V_{DS} = 300V, V_{GS} = 15V, I_D = 3A$                    |        | 11.5 |           | nC       |
| Gate-Source Charge <sup>1,2</sup>                                       | $Q_{gs}$      |                                                            |        | 2.9  |           |          |
| Gate-Drain Charge <sup>1,2</sup>                                        | $Q_{gd}$      |                                                            |        | 3.1  |           |          |
| Turn-On Delay Time <sup>1,2</sup>                                       | $t_{d(on)}$   | $V_{DS} = 300V, I_D = 3A, V_{GS} = 15V, R_{GS} = 10\Omega$ |        | 12   |           | nS       |
| Rise Time <sup>1,2</sup>                                                | $t_r$         |                                                            |        | 10   |           |          |
| Turn-Off Delay Time <sup>1,2</sup>                                      | $t_{d(off)}$  |                                                            |        | 26   |           |          |
| Fall Time <sup>1,2</sup>                                                | $t_f$         |                                                            |        | 10   |           |          |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T <sub>c</sub> = 25 °C) |               |                                                            |        |      |           |          |
| Continuous Current                                                      | $I_S$         |                                                            |        |      | 6         | A        |
| Pulsed Current <sup>3</sup>                                             | $I_{SM}$      |                                                            |        |      | 24        |          |
| Forward Voltage <sup>1</sup>                                            | $V_{SD}$      | $I_F = I_S, V_{GS} = 0V$                                   |        |      | 1.5       | V        |
| Reverse Recovery Time                                                   | $t_{rr}$      | $I_F = I_S, di_F/dt = 100A / \mu S$                        |        | 0.8  |           | $\mu S$  |
| Reverse Recovery Charge                                                 | $Q_{rr}$      |                                                            |        | 3.6  |           | nC       |

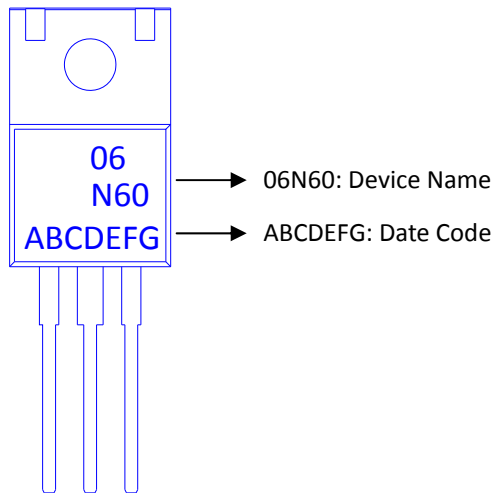
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

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

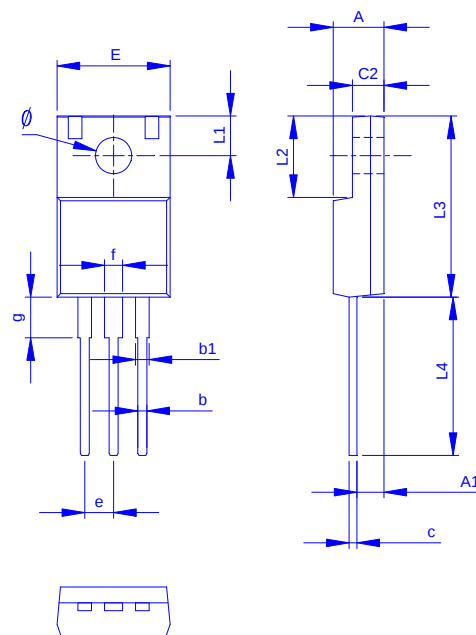
<sup>3</sup>Pulse width limited by maximum junction temperature.

## Ordering & Marking Information:

Device Name: LB06N60GF for TO-220F



## Outline Drawing



Dimension in mm

| Dimension | A    | A1   | b    | b1   | c    | c2   | E     | L1   | L2   | L3    | L4    | ø    | e    | f    | g    |
|-----------|------|------|------|------|------|------|-------|------|------|-------|-------|------|------|------|------|
| Min.      | 4.20 | 1.95 | 0.50 | 0.90 | 0.45 | 2.34 | 9.70  | 2.70 | 6.48 | 14.80 | 12.68 | 3.00 | 2.35 | 1.18 | 3.13 |
| Max.      | 4.90 | 2.96 | 1.05 | 1.50 | 0.80 | 3.20 | 10.66 | 3.80 | 7.50 | 16.30 | 14.50 | 3.50 | 2.75 | 1.90 | 4.00 |

## TYPICAL CHARACTERISTICS

