

## N-Channel Power MOSFET

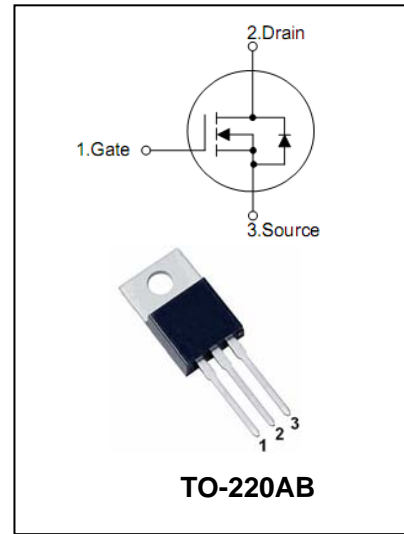
## BL15N30

### FEATURES

- $R_{DS(on)} = 240\text{ m}\Omega$  (Typ.) @  $V_{GS} = 10\text{ V}$ ,  $I_D = 7.5\text{ A}$
- Low Gate Charge (Typ. 28 nC)
- Low  $C_{rss}$  (Typ. 17 pF)
- 100% Avalanche Tested
- Improved  $dv/dt$  Capability
- RoHS Compliant

### APPLICATIONS

- Lighting
- Uninterruptible Power Supply



### MOSFET Maximum Ratings $T_C = 25^\circ\text{C}$ unless otherwise noted\*

| Symbol          | Parameter  | Value       | Unit                      |
|-----------------|--|-------------|---------------------------|
| $V_{DS}$        | Drain-Source Voltage   | 300         | V                         |
| $V_{GS}$        | Gate -Source Voltage   | $\pm 30$    | V                         |
| $I_D$           | Drain Current<br>Continuous at $T_C=25^\circ\text{C}$<br>Continuous at $T_C=100^\circ\text{C}$ | 15<br>9     | A                         |
| $I_{DM}$        | Drain Current(pulsed)Note1   | 60          | A                         |
| $E_{AS}$        | Single Pulsed Avalanche Energy<br>(Note 2)   | 731         | mJ                        |
| $E_{AR}$        | Repetitive Avalanche Energy<br>(Note 1)  | 17          | mJ                        |
| $I_{AR}$        | Avalanche Current<br>(Note 1)  | 15          | A                         |
| $dv/dt$         | Peak Diode Recovery $dv/dt$<br>(Note 3)  | 15          | V/ns                      |
| $P_D$           | Power Dissipation<br>$T_C=25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$                 | 170<br>1.45 | W<br>W/ $^\circ\text{C}$  |
| $R_{\theta JA}$ | Thermal Resistance,Junction-to-Ambient   | 62.5        | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JC}$ | Thermal Resistance,Junction-to-Case  | 0.7         | $^\circ\text{C}/\text{W}$ |
| $T_j$ $T_{stg}$ | Junction and Storage Temperature Range   | -55 to +150 | $^\circ\text{C}$          |

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**ELECTRICAL CHARACTERISTICS @ Ta=25 unless otherwise specified**

| Parameter                               | Symbol        | Test conditions                      | MIN | TYP  | MAX       | UNIT     |
|---|---------------|--------------------------------------|-----|------|-----------|----------|
| Drain-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$            | 300 | -    | -         | V        |
| Drain-Source Leakage Current            | $I_{DSS}$     | $V_{DS}=300V, V_{GS}=0V$             | -   | -    | 1         | $\mu A$  |
| Gate- Source Leakage Current            | $I_{GSS}$     | $V_{DS}=0V, V_{GS}=\pm 30V$          | -   | -    | $\pm 100$ | nA       |
| Gate Threshold Voltage                  | $V_{GS(th)}$  | $V_{DS}=V_{GS}, I_D=250\mu A$        | 3.0 | -    | 5.0       | V        |
| Static drain-Source On-State resistance | $R_{DS(on)}$  | $V_{GS}=10V, I_D=7.5A$               | -   | 0.24 | 0.3       | $\Omega$ |
| Drain-Source Diode Forward Voltage      | $V_{SD}$      | $I_{SD}=15A, V_{GS}=0$               | -   | -    | 1.4       | V        |
| Input Capacitance                       | $C_{ISS}$     | $V_{DS}=25V, V_{GS}=0V, f=1.0MHz$    | -   | 1310 | 1750      | pF       |
| Output Capacitance                      | $C_{OSS}$     |                                      | -   | 210  | 280       | pF       |
| Reverse Transfer Capacitance            | $C_{RSS}$     |                                      | -   | 17   | 25        | pF       |
| Turn-On Delay Time                      | $t_{D(ON)}$   | $V_{DD}=200V, I_D=15A, R_G=25\Omega$ | -   | 26   | 62        | ns       |
| Rise Time                               | $t_R$         |                                      | -   | 55   | 120       | ns       |
| Turn-Off Delay Time                     | $t_{D(OFF)}$  |                                      | -   | 72   | 154       | ns       |
| Fall Time                               | $t_F$         |                                      | -   | 40   | 90        | ns       |
| Total Gate Charge                       | $Q_g$         | $V_{DS}=320V, V_{GS}=10V, I_D=15A$   | -   | 28   | 36        | nC       |
| Gate-source Charge                      | $Q_{gs}$      |                                      | -   | 8    |           | nC       |
| Gate-drain Charge                       | $Q_{gd}$      |                                      | -   | 12   |           | nC       |
| Maximum Body-Diode Continuous Current   | $I_S$         |                                      | -   | -    | 15        | A        |
| Maximum Body-Diode Pulsed Current       | $I_{SM}$      |                                      | -   | -    | 60        | A        |

Notes: 1: Repetitive Rating: Pulse width limited by maximum junction temperature

2: L = 6.5mH, IAS = 15A, VDD = 50V, RG = 25 , Starting TJ = 25°C

3: ISD 15A, di/dt 200A/ s, VDD BVDSS, Starting TJ = 25°C

4: Essentially Independent of Operating Temperature Typical Characteristics

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**PACKAGE OUTLINE**

Plastic surface mounted package

TO-220AB

