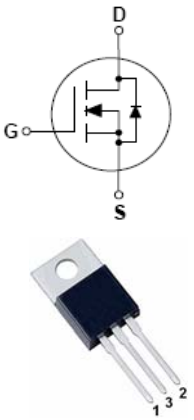
# N-Channel Enhancement Mode Field Effect Transistor BL8N60

## FEATURES

- RDS(ON) =1.2Ω@VGS = 10V.
- Ultra Low gate charge (typical 28nC)
- Low reverse transfer capacitance (CRSS = typical 12.0 pF)
- Fast switching capability
- Avalanche energy specified
- Improved dv/dt capability, high ruggedness

Pb
Lead-free




TO-220AB

## MAXIMUM RATING operating temperature range applies unless otherwise specified

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-Source voltage | 600 | V |
| $V_{GS}$ | Gate -Source voltage | ±30 | V |
| $I_D$ | Continuous Drain current $T_C$=25℃ | 7.5 | A |
| | Continuous Drain current $T_C$=100℃ | 4.6 | A |
| $E_{AS}$ | Single Pulse Avalanche Energy(Note2) | 230 | mJ |
| $E_{AR}$ | Avalanche Energy,Repetitive(Note1) | 14.7 | mJ |
| $I_{AR}$ | Avalanche Current(Note2) | 7.5 | A |
| ISD | Continuous Drain-Source Current | 7.5 | A |
| ISM | Pulsed Drain-Source Current | 30 | A |
| dv/dt | Peak Diode Recovery dv/dt(Note4) | 4.5 | V/ns |
| $P_D$ | Power Dissipation | 147 | W |
| | Derating Fcator above 25℃ | 0.32 | W/℃ |
| $R_{\theta JC}$ | Junction-to-Case | 0.85 | ℃/W |
| $R_{\theta JA}$ | Junction-to-Ambient | 62.5 | ℃/W |
| $T_J$, $T_{stg}$ | Junction and Storage Temperature | -55 to +150 | ℃ |
| $T_L$ | Maximum Temperature for Soldering | +150 | ℃ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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## ELECTRICAL CHARACTERISTICS

| Parameter | Symbol | Test conditions | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V,$I_D$=250μA | 600 | - | - | V |
| Bvdss Temperature Coefficient | $\triangle BV_{DSS}/\triangle T_J$ | $I_D$=250mA, | - | 0.7 | - | V/℃ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}$= $V_{GS}$, $I_D$ =250uA | 2 | | 4 | V |
| Drain to Source Leakage Current | $I_{DSS}$ | $V_{DS}$=600V, $V_{GS}$=0V | - | - | 10 | uA |
| Static drain-Source on-resistance | $R_{DS(ON)}$ | $V_{GS}$=10V,$I_D$=3.75A | - | 1.0 | 1.2 | Ω |
| Gate-body Leakage Forward Reverse | $I_{GSS}$ | $V_{GS}$=±30V | | | ±100 | nA |
| Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V $V_{DS}$ = 25V f = 1.0MHz | - | 965 | 1255 | pF |
| Output Capacitance | $C_{oss}$ | | - | 105 | 135 | |
| Reverse Transfer Capacitance | $C_{rss}$ | | - | 12 | 16 | |
| Turn-on Delay Time | $td_{(ON)}$ | $I_D$ =7.5A $V_{DD}$ = 300V | - | 16.5 | 45 | ns |
| Rise Time | tr | | - | 60.5 | 130 | |
| Turn-Off Delay Time | $td_{(OFF)}$ | | - | 81 | 170 | |
| Fall Time | tf | | - | 64.5 | 140 | |
| Total Gate Charge | $Q_g$ | $I_D$ =1.2A $V_{DD}$ =480V $V_{GS}$ = 10V | - | 28 | 36 | nC |
| Gate to Source Charge | $Q_{gs}$ | | - | 4.5 | | nC |
| Gate to Drain (“Miller”)Charge | $Q_{gd}$ | | - | 12 | | nC |
| Reverse Recovery Time | trr | $I_S$=7.5A,Tj = 25℃ dIF/dt=100A/us, VGS=0V | - | 365 | - | ns |
| Reverse Recovery Charge | Qrr | | - | 3.4 | - | nC |

Note: 1. Repetitive Rating : Pulse width limited by TJ
2. L = 7.3mH, IAS = 7.5A, VDD = 50V, RG = 25 Ω, Starting TJ = 25°C
3. ISD ≤ 7.5A, di/dt ≤200A/μs, VDD ≤ BVDSS, Starting TJ = 25°C
4. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%
5. Essentially independent of operating temperature

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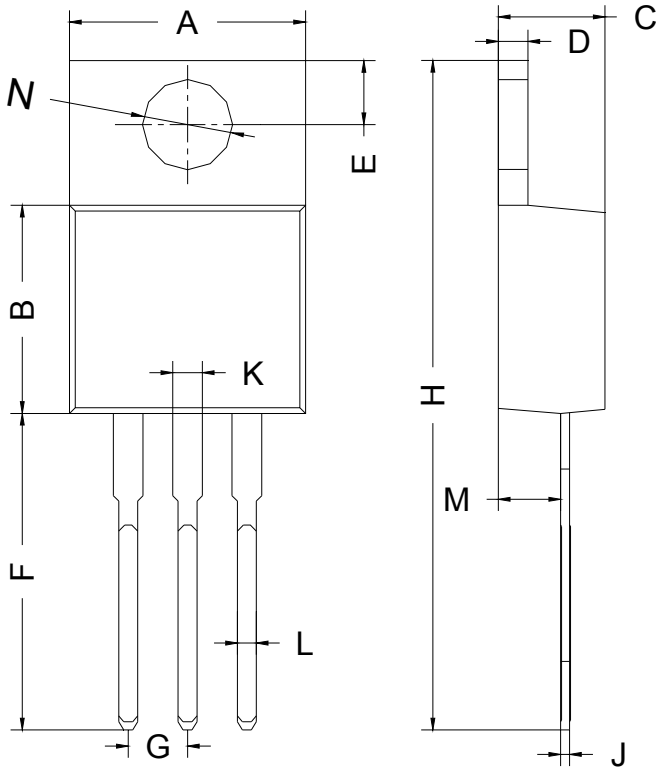
## PACKAGE OUTLINE

Plastic surface mounted package TO-220AB




| TO-220AB | | |
|---|---|---|
| Dim | Min | Max |
| A | 9.80 | 10.30 |
| B | 8.70 | 9.10 |
| C | 4.57 Typical | |
| D | 1.27 Typical | |
| E | 2.64 | 2.84 |
| F | 13.14 | 13.74 |
| G | 2.44 | 2.64 |
| H | 28.03 | 28.83 |
| J | 0.38 Typical | |
| K | 1.22 | 1.32 |
| L | 0.71 | 0.91 |
| M | 2.50 Typical | |
| N | 3.86 Typical | |
| All Dimensions in mm | | |