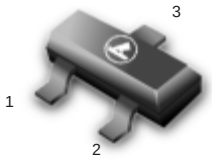
# 60V N-Channel Enhancement-Mode MOSFET

## FEATURES

- $R_{DS(ON)}$ ≦100mΩ@$V_{GS}$=10V
- $R_{DS(ON)}$ ≦130mΩ@$V_{GS}$=4.5V
- $R_{DS(ON)}$ ≦200mΩ@$V_{GS}$=3.3V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Capable doing Cu wire bonding
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

LN2308LT1G
S-LN2308LT1G



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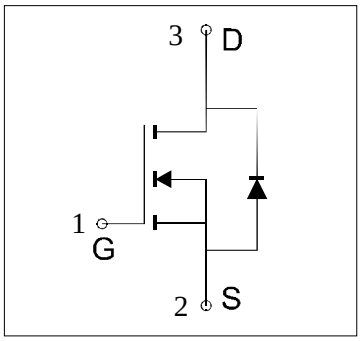


## APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Load Switch
- DSC

## Ordering Information

| Device | Marking | Shipping |
|---|---|---|
| LN2308LT1G<br>S-LN2308LT1G | N08 | 3000/Tape&Reel |
| LN2308LT3G<br>S-LN2308LT3G | N08 | 10000/Tape&Reel |

## Absolute Maximum Ratings ($T_A$=25℃ Unless Otherwise Noted)

| Parameter | | Symbol | Limit | | Unit |
|---|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | 60 | | V |
| Gate-Source Voltage | | $V_{GSS}$ | ±20 | | V |
| Continuous Drain Current(tJ=150℃) | $T_A$=25℃ | $I_D$ | 2.6 | | A |
| | $T_A$=70℃ | | 1.8 | | |
| Pulsed Drain Current | | $I_{DM}$ | 8 | | |
| Maximum Body-Diode Continuous Current | | $I_S$ | 1.6 | | A |
| Maximum Power Dissipation | $T_A$=25℃ | $P_D$ | 0.7 | | W |
| | $T_A$=70℃ | | 0.45 | | |
| Operating Junction Temperature | | $T_J$ | 150 | | ℃ |
| Maximum Junction-to-Ambient | | $R_{thJA}$ | T≦10 sec | 150 | ℃/W |
| | | | Steady State | 175 | |
| Thermal Resistance-Junction to Case | | $R_{\theta JC}$ | 120 | | ℃/W |

*The device mounted on 1in$^2$ FR4 board with 2 oz copper

**Electrical Characteristics** ($T_a$=25℃ Unless Otherwise Specified)

| Symbol | Parameter | Limit | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **STATIC** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0, $I_D$=250μA | 60 | | | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_D$=250μA | 1 | | 3 | V |
| $I_{GSS}$ | Gate Body Leakage | $V_{DS}$=0V, $V_{GS}$=±20V | | | ±100 | nA |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=60V, $V_{GS}$=0V | | | 1 | μA |
| $R_{DS(ON)}$ | Drain-Source On-Resistance | $V_{GS}$=10V, $I_D$= 2.6A | | 82 | 100 | mΩ |
| | | $V_{GS}$=4.5V, $I_D$= 2.1A | | 96 | 130 | |
| | | $V_{GS}$=3.3V, $I_D$= 1.8A | | 139 | 200 | |
| $V_{SD}$ | Diode Forward Voltage | $I_S$=1.0A, $V_{GS}$=0V | | 0.8 | 1.2 | V |
| **DYNAMIC** | | | | | | |
| Qg | Total Gate Charge | $V_{DS}$=30V, $V_{GS}$=10V, $I_D$=2.6A | | 12 | | nC |
| Qg | Total Gate Charge | $V_{DS}$=30V, $V_{GS}$=4.5V, $I_D$=2.6A | | 6.5 | | |
| Qgs | Gate-Source Charge | | | 2.2 | | |
| Qgd | Gate-Drain Charge | | | 2.7 | | |
| Ciss | Input capacitance | $V_{DS}$=30V, $V_{GS}$=0V, f=1MHz | | 350 | | pF |
| Coss | Output Capacitance | | | 40 | | |
| Crss | Reverse Transfer Capacitance | | | 12 | | |
| Rg | Gate Resistance | $V_{DS}$=0V, $V_{GS}$=0V, f=1MHz | | 0.7 | | Ω |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DD}$=20V, $R_L$ =20Ω<br>$I_D$=1A, $V_{GEN}$=10V<br>$R_G$=1Ω | | 10 | | ns |
| $t_r$ | Turn-On Rise Time | | | 11 | | |
| $t_{d(off)}$ | Turn-Off Delay Time | | | 29 | | |
| $t_f$ | Turn-Off Fall Time | | | 3 | | |

Notes: Pulse test; pulse width≦ 300us, duty cycle≦ 2%.

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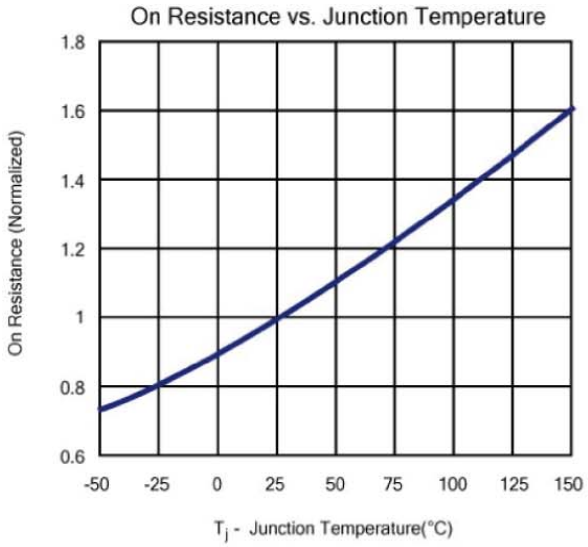
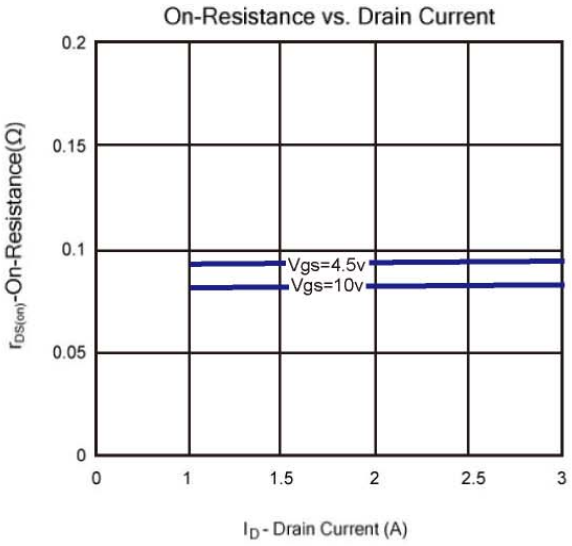
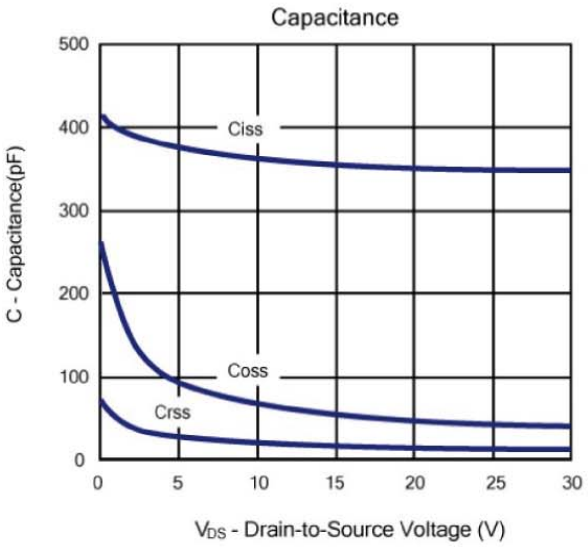
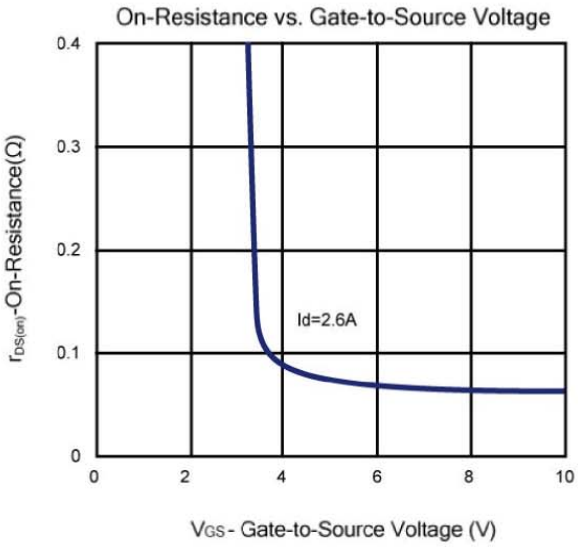
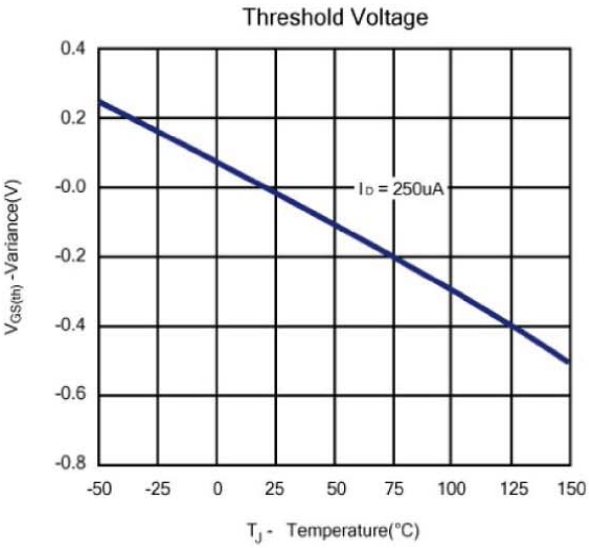
## Typical Characteristics (Ta =25℃ Noted)

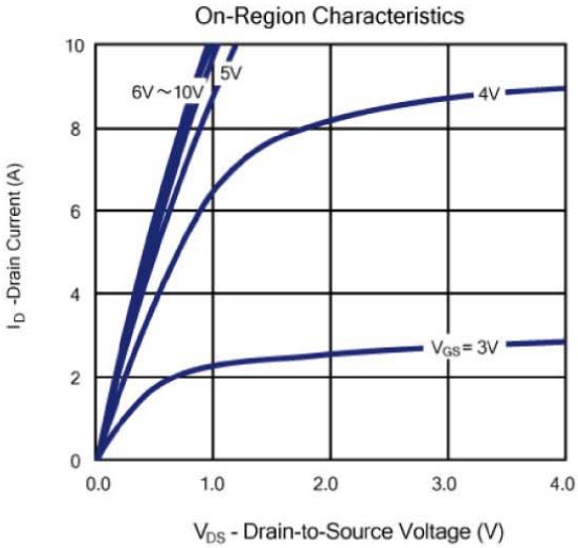


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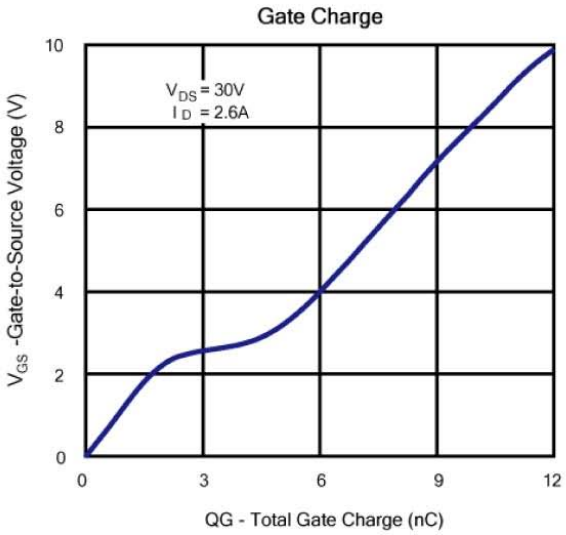


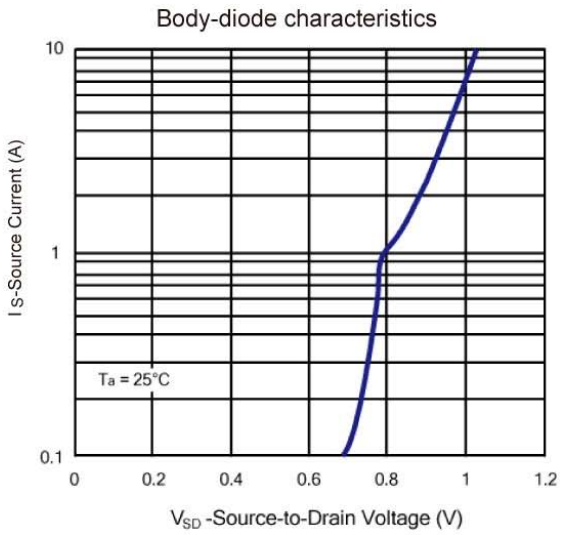


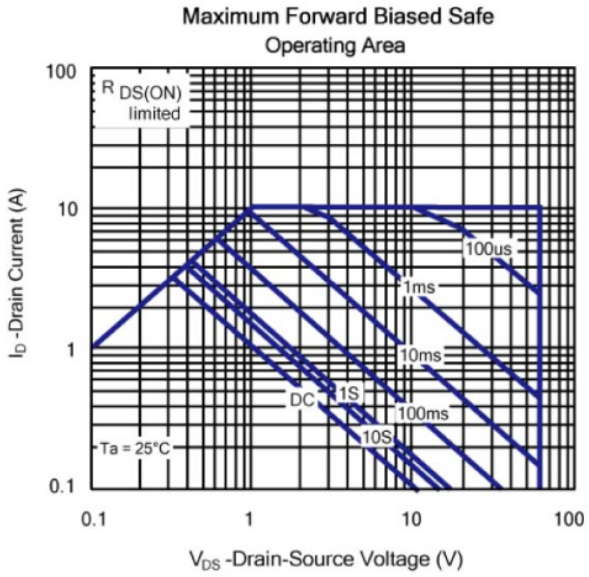


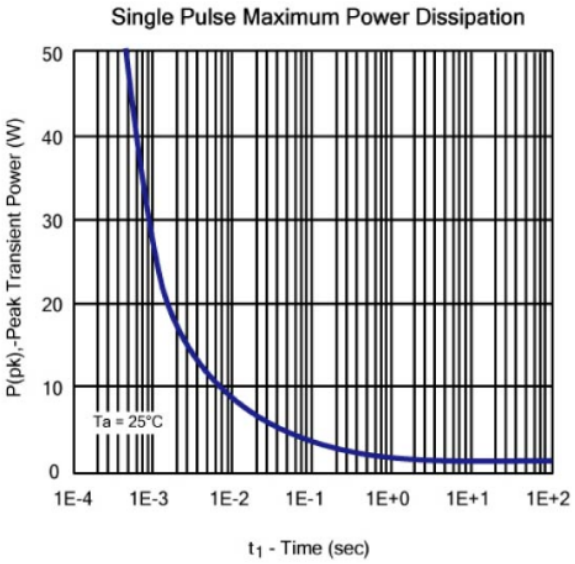

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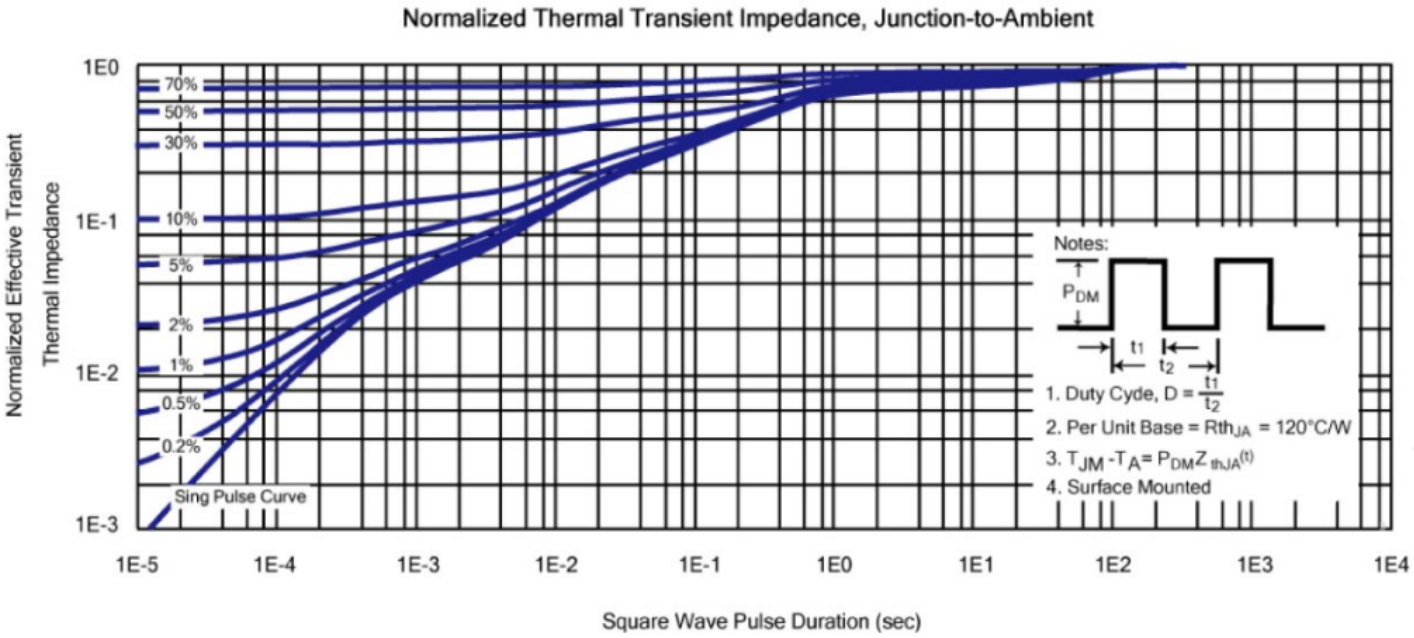

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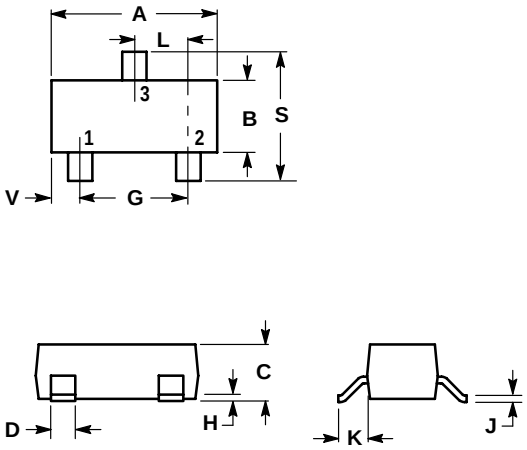


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 0.1102 | 0.1197 | 2.80 | 3.04 |
| B | 0.0472 | 0.0551 | 1.20 | 1.40 |
| C | 0.0350 | 0.0440 | 0.89 | 1.11 |
| D | 0.0150 | 0.0200 | 0.37 | 0.50 |
| G | 0.0701 | 0.0807 | 1.78 | 2.04 |
| H | 0.0005 | 0.0040 | 0.013 | 0.100 |
| J | 0.0034 | 0.0070 | 0.085 | 0.177 |
| K | 0.0140 | 0.0285 | 0.35 | 0.69 |
| L | 0.0350 | 0.0401 | 0.89 | 1.02 |
| S | 0.0830 | 0.1039 | 2.10 | 2.64 |
| V | 0.0177 | 0.0236 | 0.45 | 0.60 |