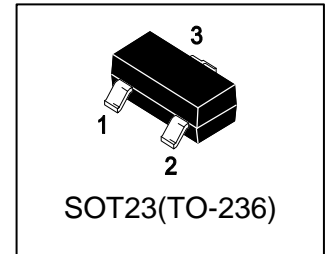


LP2309LT1G

P-Channel 60V (D-S) MOSFET

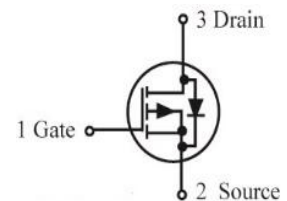
1. FEATURES

- $R_{DS(ON)} \leq 215m\Omega$, $V_{GS} @ -10V$.
- $R_{DS(ON)} \leq 260m\Omega$, $V_{GS} @ -4.5V$.
- Super high density cell design for extremely low $R_{DS(ON)}$.
- Exceptional on-resistance and maximum DC current capability.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.



2. APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter



3. DEVICE MARKING AND ORDERING INFORMATION

| Device | Marking | Shipping |
|------------|---------|-----------------|
| LP2309LT1G | P09 | 3000/Tape&Reel |
| LP2309LT3G | P09 | 10000/Tape&Reel |

4. MAXIMUM RATINGS($T_a = 25^\circ C$)

| Parameter | Symbol | Limits | Unit |
|--|---------------|------------------|--------------|
| Drain–Source Voltage | VDSS | -60 | V |
| Gate–to–Source Voltage – Continuous | VGS | ± 20 | V |
| Continuous Drain Current | ID | $T_a=25^\circ C$ | -1.9 |
| | | $T_a=70^\circ C$ | -1.5 |
| Pulsed Drain Current | IDM | -7.6 | A |
| Maximum Power Dissipation | PD | $T_a=25^\circ C$ | 1.4 |
| | | $T_a=70^\circ C$ | 0.9 |
| Junction Temperature | Tj | 150 | $^\circ C$ |
| Storage Temperature Range | Tstg | -55~+150 | $^\circ C$ |
| Thermal Resistance-Junction to Ambient(Note 1) | R θ JA | t \leq 10s | 170 |
| | | Steady State | 225 |
| Thermal Resistance-Junction to Case(Note 1) | R θ JC | 90 | $^\circ C/W$ |

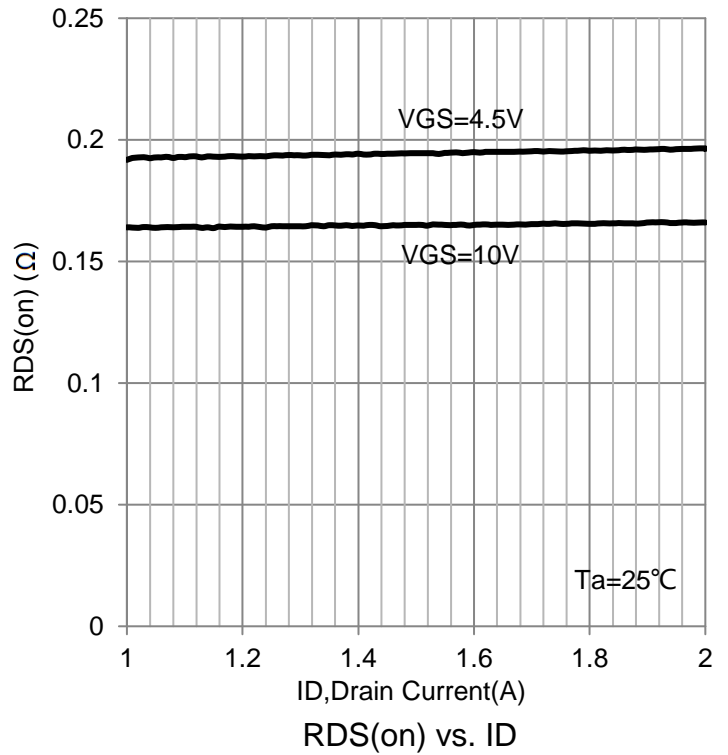
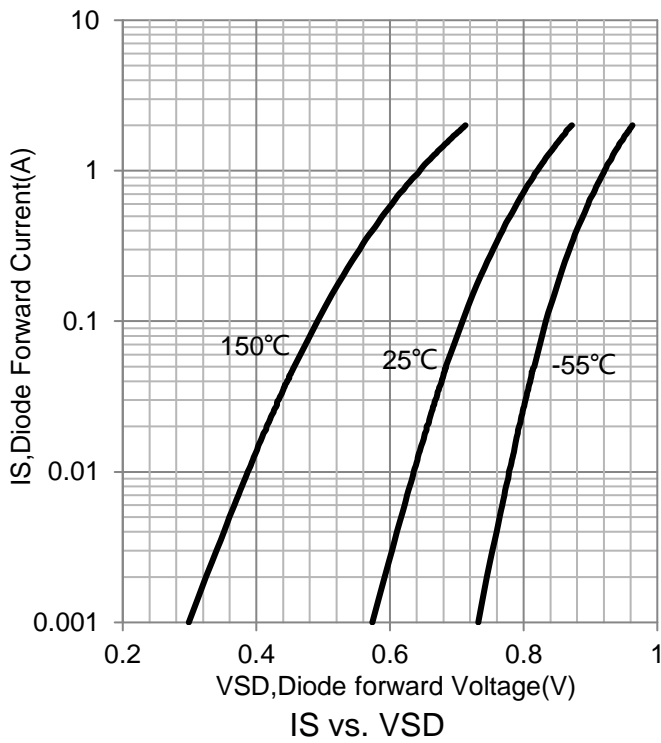
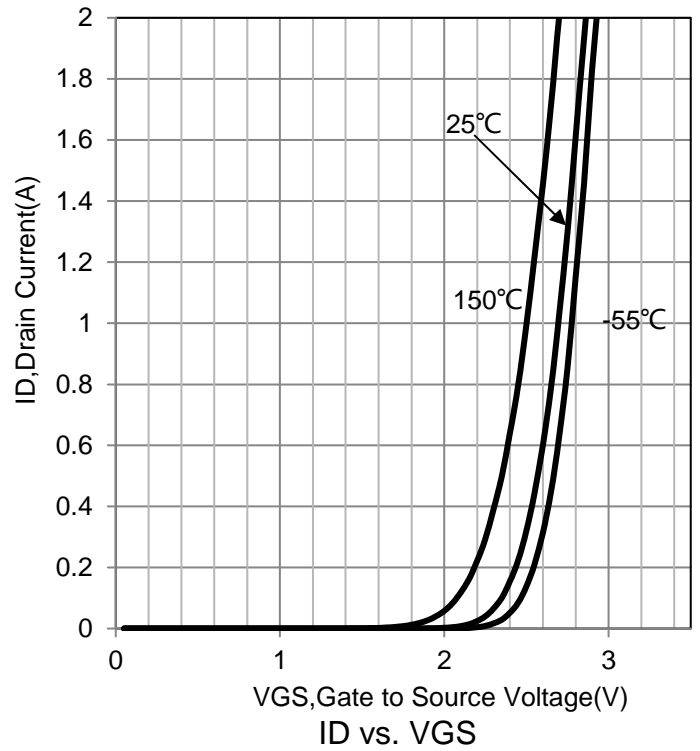
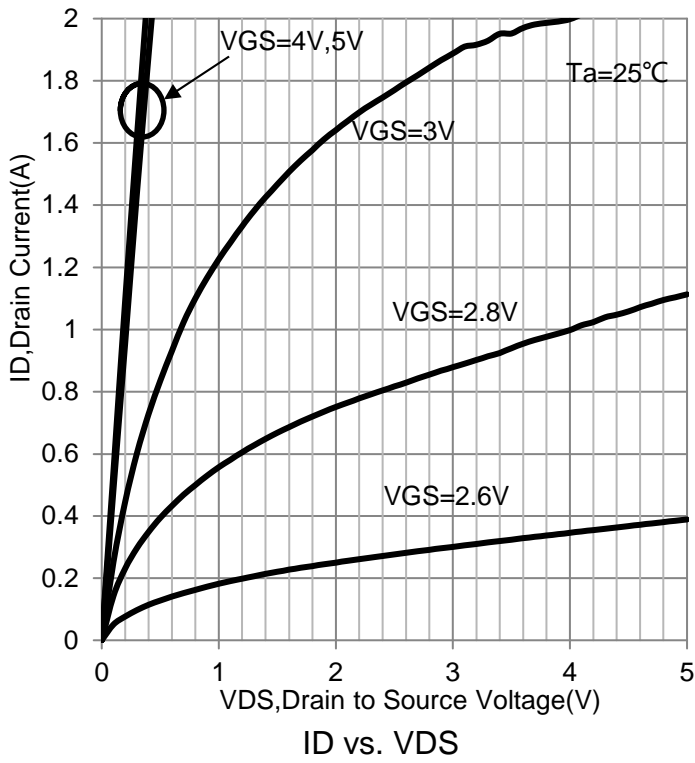
1.The device mounted on 1in² FR4 board with 2 oz copper

5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

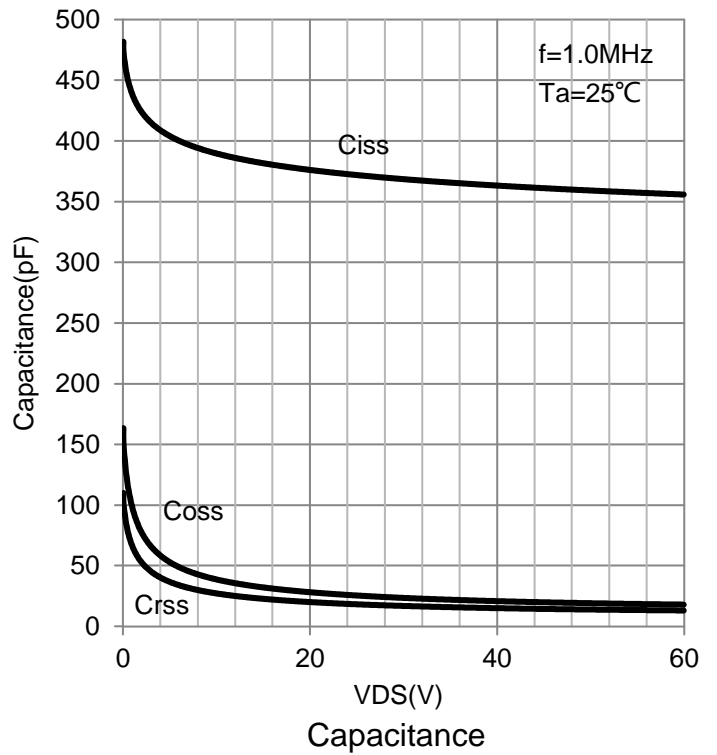
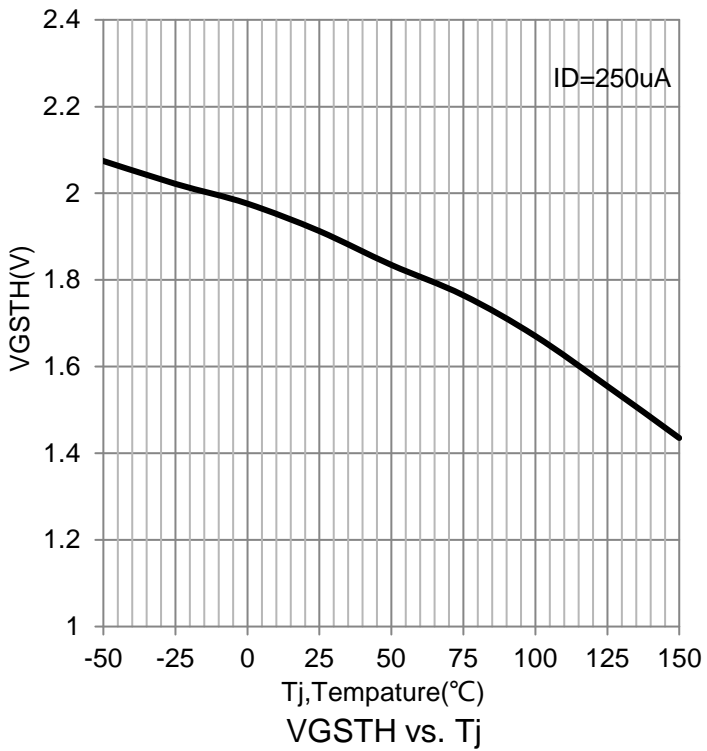
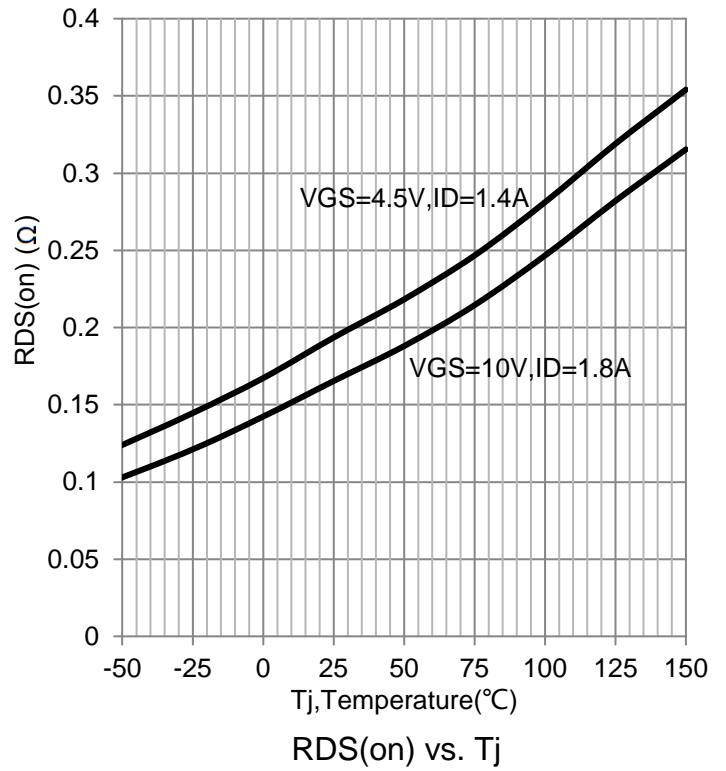
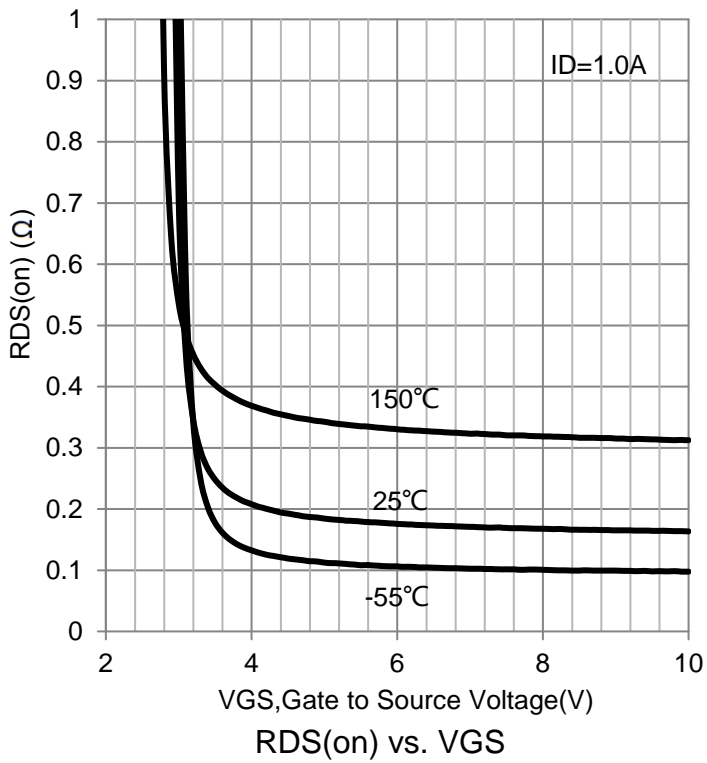
| Characteristic | Symbol | Min. | Typ. | Max. | Unit |
|--|---|---------|------------|------------|------|
| STATIC | | | | | |
| Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA) | VBRDSS | -60 | - | - | V |
| Gate Threshold Voltage (VDS = VGS, ID = -250μA) | VGS(th) | -1 | - | -3 | V |
| Gate Leakage Current (VDS = 0V, VGS = ±20V) | IGSS | - | - | ±100 | nA |
| Zero Gate Voltage Drain Current (VGS = 0V, VDS = -60 V) | IDSS | - | - | -10 | μA |
| Static Drain–Source On–State Resistance (VGS = -10 V, ID = -1.8 A) (VGS = -4.5 V, ID = -1.4 A) | RDS(on) | - | 170 200 | 215 260 | mΩ |
| Forward Voltage (VGS = 0 V, IS = -1.2 A) | VSD | - | - | -1.2 | V |
| DYNAMIC | | | | | |
| Total Gate Charge (VGS = -4.5 V, ID = -1A, VDS = -48 V) | Qg | - | 6.3 | - | nC |
| Gate-Source Charge (VGS = -4.5 V, ID = -1A, VDS = -48 V) | Qgs | - | 2.3 | - | |
| Gate-Drain Charge (VGS = -4.5 V, ID = -1A, VDS = -48 V) | Qgd | - | 1.8 | - | |
| Input Capacitance (VGS = 0 V, f = 1.0MHz, VDS = -30 V) | Ciss | - | 358 | - | pF |
| Output Capacitance (VGS = 0 V, f = 1.0MHz, VDS = -30 V) | Coss | - | 23 | - | |
| Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz, VDS = -30 V) | Crss | - | 17 | - | |
| Turn-On Delay Time | (VDS = -30V, RL = 30Ω ID = -1A, VGS = -10V RG = 3.3Ω) | td(on) | - | 20 | ns |
| Rise Time | | tr | - | 33.1 | |
| Turn-Off Delay Time | | td(off) | - | 5.2 | |
| Fall Time | | tf | - | 3.8 | |

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

6.ELECTRICAL CHARACTERISTICS CURVES



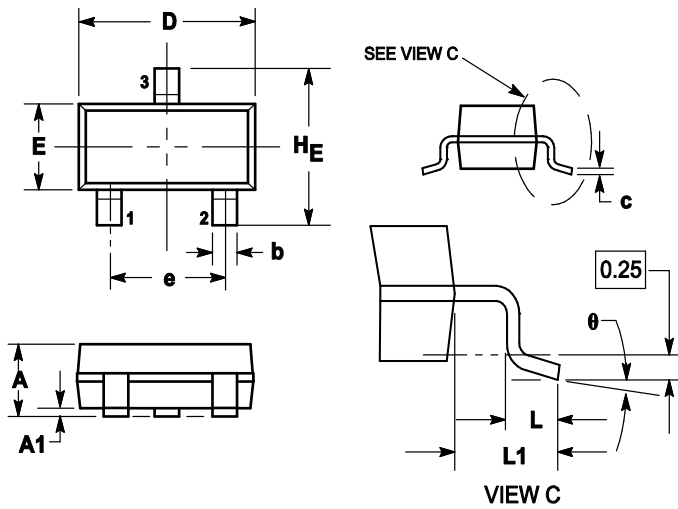
6.ELECTRICAL CHARACTERISTICS CURVES(Con.)



7. OUTLINE AND DIMENSIONS

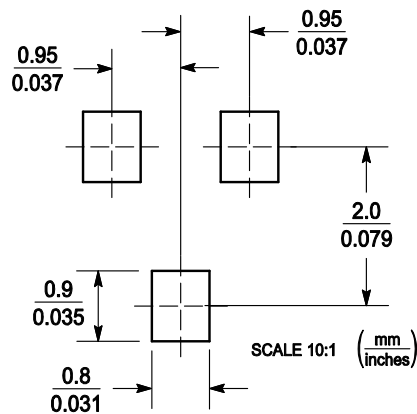
Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|--------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.89 | 1 | 1.11 | 0.035 | 0.04 | 0.044 |
| A1 | 0.01 | 0.06 | 0.1 | 0.001 | 0.002 | 0.004 |
| b | 0.37 | 0.44 | 0.5 | 0.015 | 0.018 | 0.02 |
| c | 0.09 | 0.13 | 0.18 | 0.003 | 0.005 | 0.007 |
| D | 2.80 | 2.9 | 3.04 | 0.11 | 0.114 | 0.12 |
| E | 1.20 | 1.3 | 1.4 | 0.047 | 0.051 | 0.055 |
| e | 1.78 | 1.9 | 2.04 | 0.07 | 0.075 | 0.081 |
| L | 0.10 | 0.2 | 0.3 | 0.004 | 0.008 | 0.012 |
| L1 | 0.35 | 0.54 | 0.69 | 0.014 | 0.021 | 0.029 |
| HE | 2.10 | 2.4 | 2.64 | 0.083 | 0.094 | 0.104 |
| θ | 0° | --- | 10° | 0° | --- | 10° |

8. SOLDERING FOOTPRINT



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