

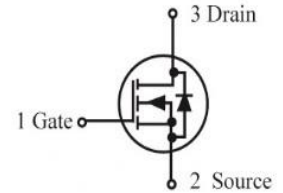
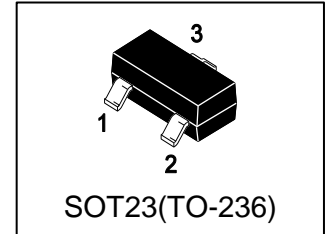
# LN2306LT1G

## S-LN2306LT1G

30V N-Channel Enhancement-Mode MOSFET

### 1. FEATURES

- VDS= 30V
- RDS(ON), VGS@10V, IDS@5.8A = 38mΩ
- RDS(ON), VGS@4.5V, IDS@5.0A = 43mΩ
- RDS(ON), VGS@2.5V, IDS@4.0A = 62mΩ
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.



### 2. APPLICATIONS

- Advanced trench process technology
- High density cell design for ultra low on-resistance

### 3. DEVICE MARKING AND ORDERING INFORMATION

| Device     | Marking | Shipping        |
|------------|---------|-----------------|
| LN2306LT1G | N06     | 3000/Tape&Reel  |
| LN2306LT3G | N06     | 10000/Tape&Reel |

### 4. MAXIMUM RATINGS(Ta = 25°C)

| Parameter                           | Symbol | Limits | Unit |
|-------------------------------------|--------|--------|------|
| Drain–Source Voltage                | VDSS   | 30     | V    |
| Gate–to–Source Voltage – Continuous | VGS    | ±12    | V    |
| Drain Current                       |        |        | A    |
| – Continuous TA = 25°C              | ID     | 5.8    |      |
| – Pulsed(Note 1)                    | IDM    | 30     |      |

### 5. THERMAL CHARACTERISTICS

| Parameter  | Symbol  | Limits   | Unit |
|--|---------|----------|------|
| Maximum Power Dissipation                          | PD      | 1.4      | W    |
| Thermal Resistance,<br>Junction–to–Ambient(Note 2) | RθJA    | 140      | °C/W |
| Junction and Storage temperature                   | TJ,Tstg | –55~+150 | °C   |

1. Repetitive Rating: Pulse width limited by the Maximum junction temperature.
2. 1-in<sup>2</sup> 2oz Cu PCB board.

**6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)**
**OFF CHARACTERISTICS**

| Characteristic  | Symbol   | Min. | Typ. | Max. | Unit |
|---|----------|------|------|------|------|
| Drain–Source Breakdown Voltage<br>(VGS = 0, ID = 250μAdc)     | V(BR)DSS | 30   | -    | -    | Vdc  |
| Zero Gate Voltage Drain Current<br>(VDS=9.6V, VGS=0V)         | IDSS     | -    | -    | 1    | μAdc |
| Gate–Body Leakage Current, Forward<br>(VDS = 0 V, VGS = 8 V)  | IGSSF    | -    | -    | 100  | nAdc |
| Gate–Body Leakage Current, Reverse<br>(VDS = 0 V, VGS = -8 V) | IGSSR    | -    | -    | -100 | nAdc |
| Forward Transconductance<br>(VDS = 5.0 V, ID = 5 A)           | gfs      | 10   | 15   | -    | S    |

**ON CHARACTERISTICS (Note 3)**

|   |         |             |                |                |     |
|---|---------|-------------|----------------|----------------|-----|
| Gate Threshold Voltage<br>(VDS = VGS, ID = 250μAdc)   | VGS(th) | 0.7         | -              | 1.4            | Vdc |
| Static Drain–Source On–State Resistance<br>(VGS = 10 V, ID =5.8 A)<br>(VGS = 4.5 V, ID =5 A)<br>(VGS = 2.5 V, ID = 4 A) | RDS(on) | -<br>-<br>- | 31<br>34<br>45 | 38<br>43<br>62 | mΩ  |

**DYNAMIC CHARACTERISTICS**

|  |      |   |        |   |    |
|--|------|---|--------|---|----|
| Input Capacitance<br>(VGS = 0 V, f = 1.0MHz, VDS= 15 V)            | Ciss | - | 513.51 | - | pF |
| Output Capacitance<br>(VGS = 0 V, f = 1.0MHz, VDS= 15 V)           | Coss | - | 80.85  | - | pF |
| Reverse Transfer Capacitance<br>(VGS = 0 V, f = 1.0MHz, VDS= 15 V) | Crss | - | 54.87  | - | pF |

**SWITCHING CHARACTERISTICS**

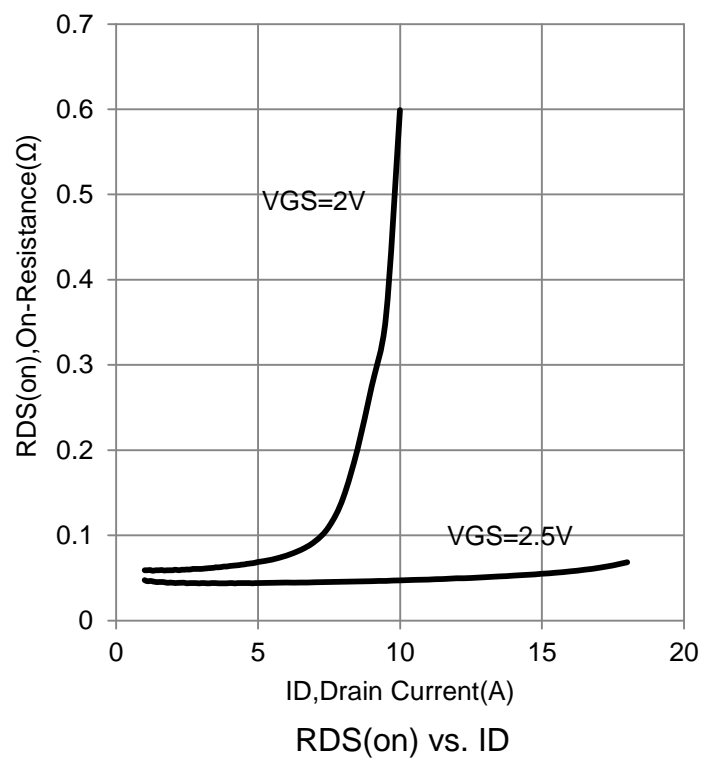
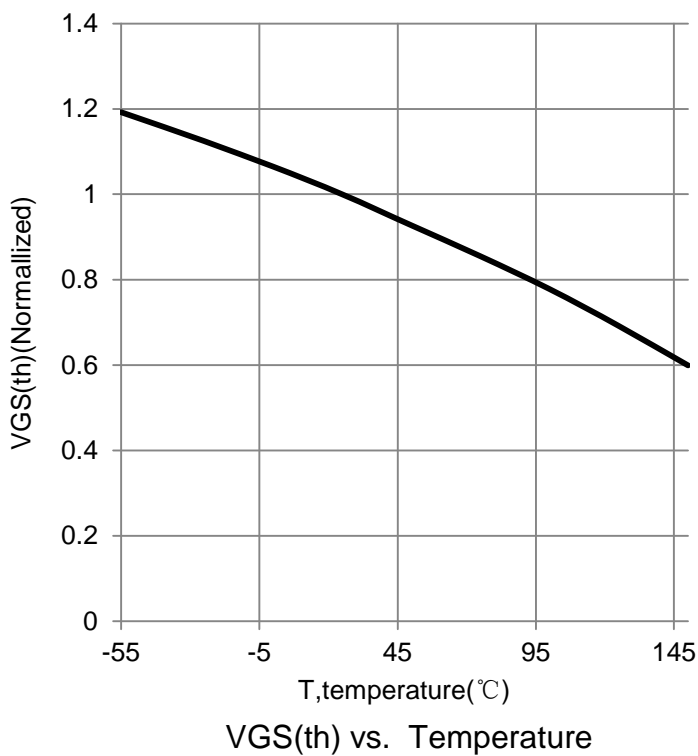
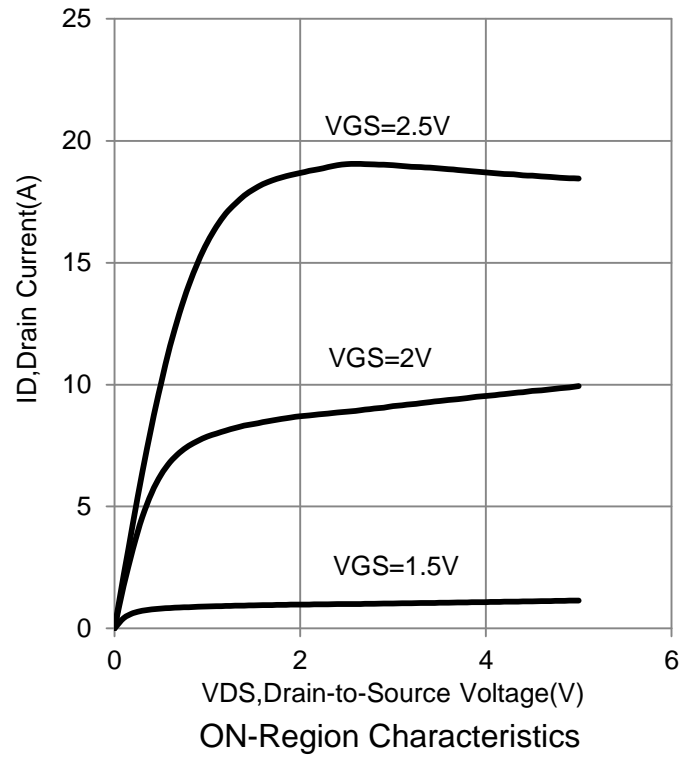
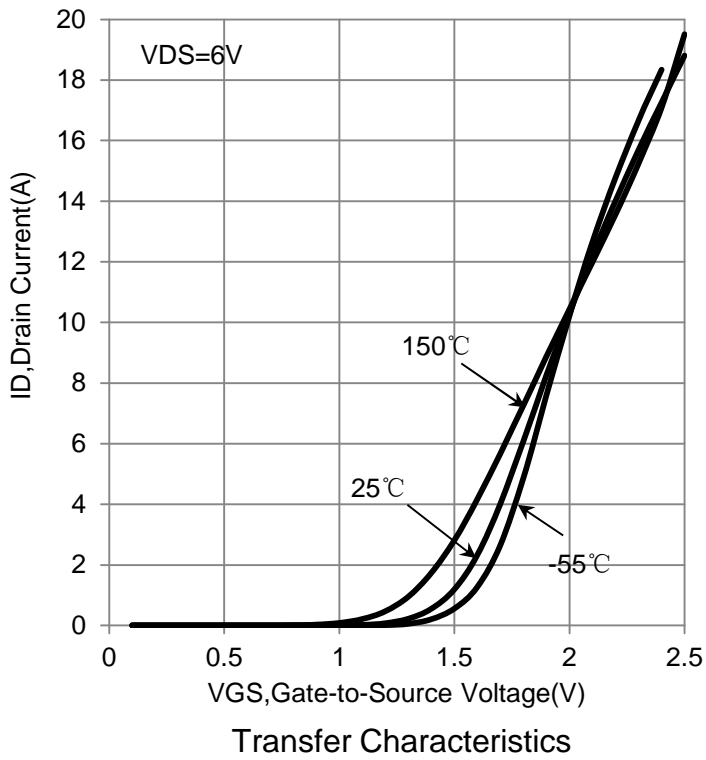
|                     |  |         |   |    |    |    |
|---------------------|--|---------|---|----|----|----|
| Turn-On Delay Time  | (VDD = 15V, RL = 2.7Ω<br>ID = 1A, VGEN = 10V, RG<br>= 3Ω ) | td(on)  | - | 7  | 14 | ns |
| Rise Time           |  | tr      | - | 15 | 30 |    |
| Turn-Off Delay Time |  | td(off) | - | 38 | 76 |    |
| Fall Time           |  | tf      | - | 3  | 6  |    |

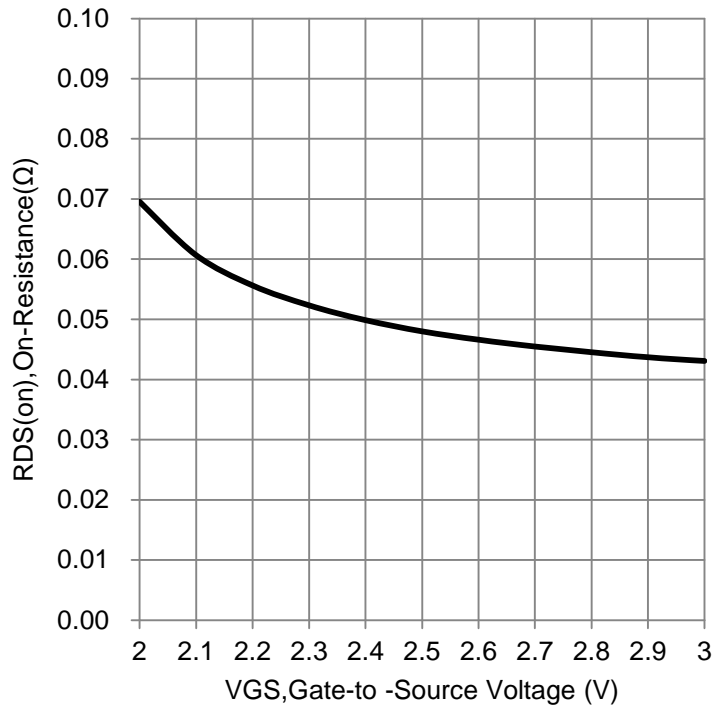
**SOURCE–DRAIN DIODE CHARACTERISTICS**

|   |     |   |   |     |   |
|---|-----|---|---|-----|---|
| Forward Voltage<br>(VGS = 0 Vdc, ISD = 1 Adc) | VSD | - | - | 1.2 | V |
|---|-----|---|---|-----|---|

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

### 7. ELECTRICAL CHARACTERISTICS CURVES



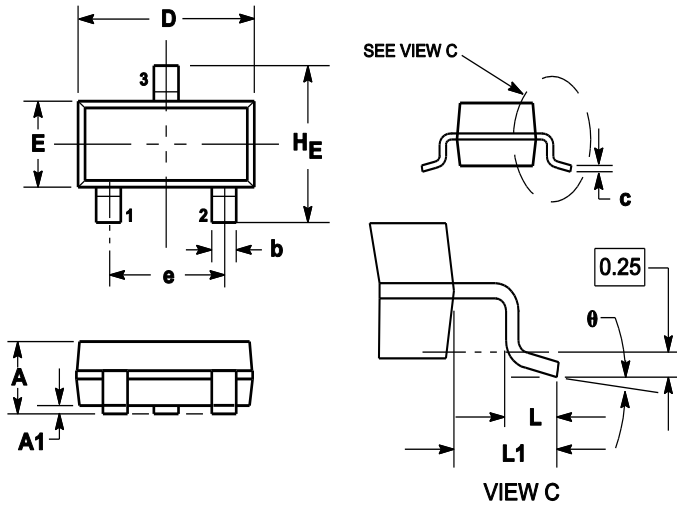
**7. ELECTRICAL CHARACTERISTICS CURVES (Con.)**

RDS(on) vs. VGS

### 8.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°   |

### 9.SOLDERING FOOTPRINT

