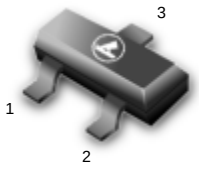
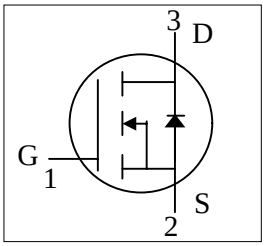
# 30V N-Channel Enhancement-Mode MOSFET

## LN2306LT1G




SOT– 23 (TO–236AB)




●APPLICATIONS

1)Advanced trench process technology

2)High Density Cell Design For Ultra Low On-Resistance

3)We declare that the material of product compliant with RoHS requirements and Halogen Free.

●FEATURES

1)$V_{DS}$= 30V

2)$R_{DS(ON)}$, Vgs@10V, Ids@5.8A = 38mΩ

3)$R_{DS(ON)}$, Vgs@4.5V, Ids@5.0A = 43mΩ

4)$R_{DS(ON)}$, Vgs@2.5V, Ids@4.0A = 62mΩ

●DEVICE MARKING AND ORDERING INFORMATION

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

●MAXIMUM RATINGS(Ta = 25℃)

| Parameter | Symbol | Limits | Unit |
|---|---|---|---|
| Drain−to−Source Voltage | $V_{DSS}$ | 30 | V |
| Gate−to−Source Voltage | $V_{GS}$ | ±12 | V |
| Continuous Drain Current | $I_D$ | 5.8 | A |
| Pulsed Drain Current (Note1) | $I_{DM}$ | 30 | A |
| Maximum Power Dissipation | $P_D$ | 1.4 | W |
| Operating and Storage Temperature Range | $T_J$, Tstg | –55 to +150 | °C |
| Junction to Ambient Thermal Resistance(PCB mounted)(Note 2) | $R_{\theta JA}$ | 140 | °C/W |

1. Repetitive Rating: Pulse width limited by the Maximum junction temperation

2. 1-in$^2$ 2oz Cu PCB board

●ELECTRICAL CHARACTERISTICS (Ta= 25℃)

STATIC

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Drain−to−Source Breakdown Voltage | $V_{(BR)DSS}$ | 30 | – | – | V | $V_{GS}$ = 0 V, $I_D$ = 250 μA |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 0.7 | – | 1.4 | V | $V_{GS}$ = $V_{DS}$, $I_D$ = 250 μA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | – | – | -1 | μA | VDS=24V, VGS=0V |
| Gate−to−Source Leakage Current | $I_{GSS}$ | – | – | ±100 | nA | $V_{DS}$ = 0 V, $V_{GS}$ = ±12 V |
| Drain−to−Source On Resistance | $R_{DS(on)}$ | – | 31 | 38 | mΩ | $V_{GS}$ = 10 V, $I_D$ =5.8 A |
| | | – | 34 | 43 | | $V_{GS}$ = 4.5 V, $I_D$ =5 A |
| | | – | 45 | 62 | | $V_{GS}$ = 2.5 V, $I_D$ = 4 A |
| Forward Diode Voltage | $V_{SD}$ | | | 1.2 | V | $V_{GS}$ = 0 V, $I_{SD}$ = -1A |
| Forward Transconductance | $g_{FS}$ | 10 | 15 | – | S | $V_{DS}$ = 5.0 V, $I_D$ = 5 A |

DYNAMIC(Note 3)

| | | | | | | |
|---|---|---|---|---|---|---|
| Input Capacitance | Ciss | – | 513.51 | – | pF | $V_{GS}$ = 0 V, f = 1.0 MHz, $V_{DS}$= 15 V |
| Output Capacitance | Coss | – | 80.85 | – | | |
| Reverse Transfer Capacitance | Crss | – | 54.87 | – | | |
| Total Gate Charge | $Q_G$ | – | 11.00 | 14.3 | nC | $V_{GS}$ =4.5 V,$V_{DS}$ = 15 V $I_D$ = 5.8 A |
| Gate−to−Source Gate Charge | $Q_{GS}$ | – | 1.60 | 2.08 | | |
| Gate−to−Drain Charge | $Q_{GD}$ | – | 2.80 | 3.64 | | |
| Turn−On Delay Time | $t_{d(on)}$ | – | 7.00 | 14 | ns | $V_{DD}$ = 15V, $R_L$ = 2.7Ω $I_D$ = 1A, $V_{GEN}$ = 10V $R_G$ = 3Ω |
| Rise Time | tr | – | 15.00 | 30 | | |
| Turn−Off Delay Time | $t_{d(off)}$ | – | 38.00 | 76 | | |
| Fall Time | tf | – | 3.00 | 6 | | |

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

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## ELECTRICAL CHARACTERISTIC CURVES

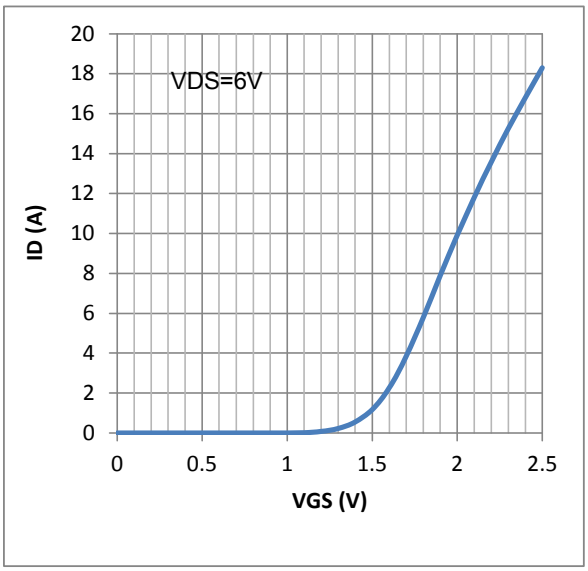


FIG.1 Transfer Characteristics

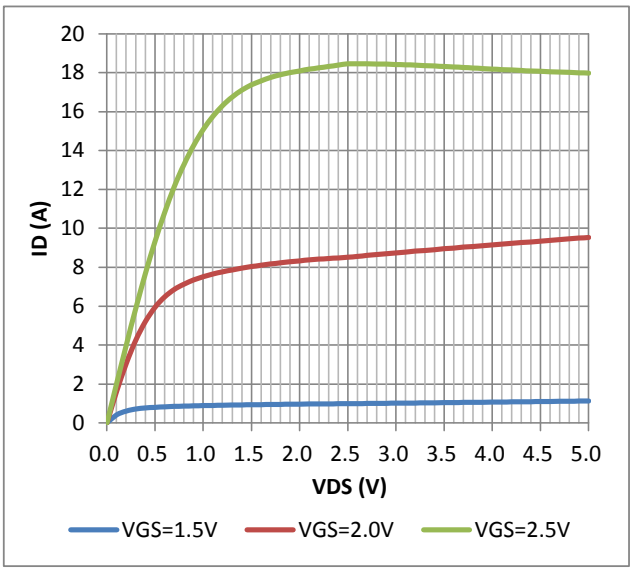


FIG.2 On-Region Characteristics

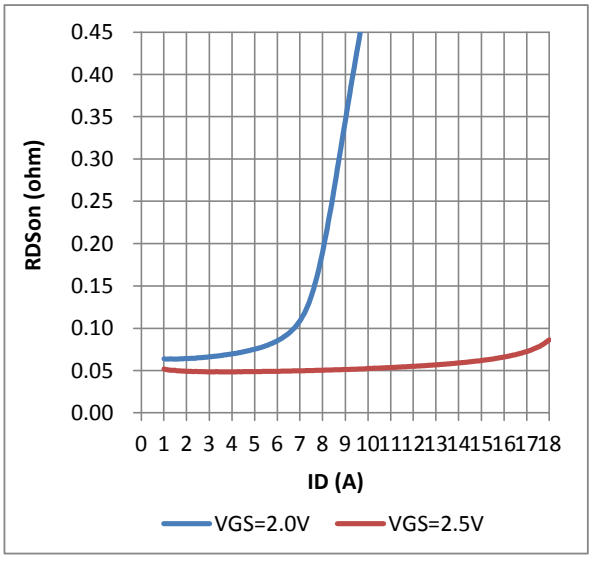


FIG.3 On-Resistance vs. Drain Current

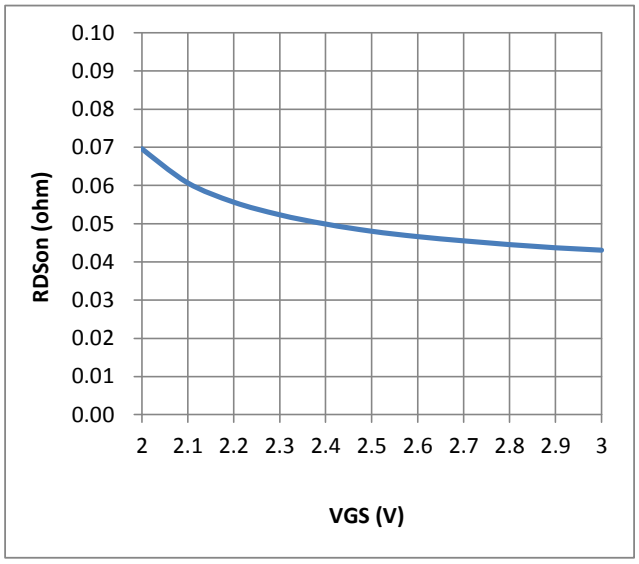


FIG.4 On-Resistance vs. Gate-to-Source Voltage

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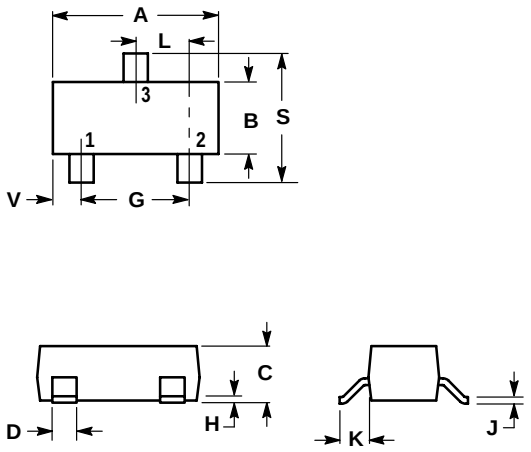
## SOT–23




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 |