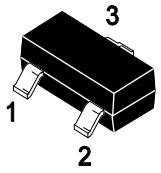
# LMUN2211LT1G

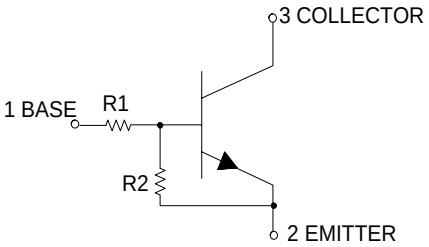
Bias Resistor Transistor
NPN Silicon Surface Mount Transistor
with Monolithic Bias Resistor Network



SOT23(TO-236)

## 1. FEATURES

- Simplifies circuit design
- Reduces board space and component count
- We declare that the material of product compliance with RoHS requirements and Halogen Free.




## 2. DEVICE MARKING AND RESISTOR VALUES

| Device | Marking | R1(K) | R2(K) | Vin(V) | Shipping |
|---|---|---|---|---|---|
| LMUN2211LT1G | A8A | 10 | 10 | -10+40 | 3000/Tape&Reel |
| LMUN2211LT3G | A8A | 10 | 10 | -10+40 | 13000/Tape&Reel |

## 3. MAXIMUM RATINGS(Ta = 25ºC)

| Parameter | Symbol | Limits | Unit |
|---|---|---|---|
| Collector–Emitter Voltage | VCEO | 50 | V |
| Collector–Base Voltage | VCBO | 50 | V |
| Collector Current — Continuous | IC | 100 | mA |

## 4. THERMAL CHARACTERISTICS

| Parameter | Symbol | Limits | Unit |
|---|---|---|---|
| Total Device Dissipation,<br>FR−5 Board (Note 1) @ TA = 25ºC<br>Derate above 25ºC | PD | <br>246<br>1.5 | <br>mW<br>mW/ºC |
| Thermal Resistance,<br>Junction–to–Ambient(Note 1) | RΘJA | 508 | ºC/W |
| Junction and Storage temperature | TJ,Tstg | −55~+150 | ° C |

1. FR–5 @ Minimum Pad.

## 5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

OFF CHARACTERISTICS

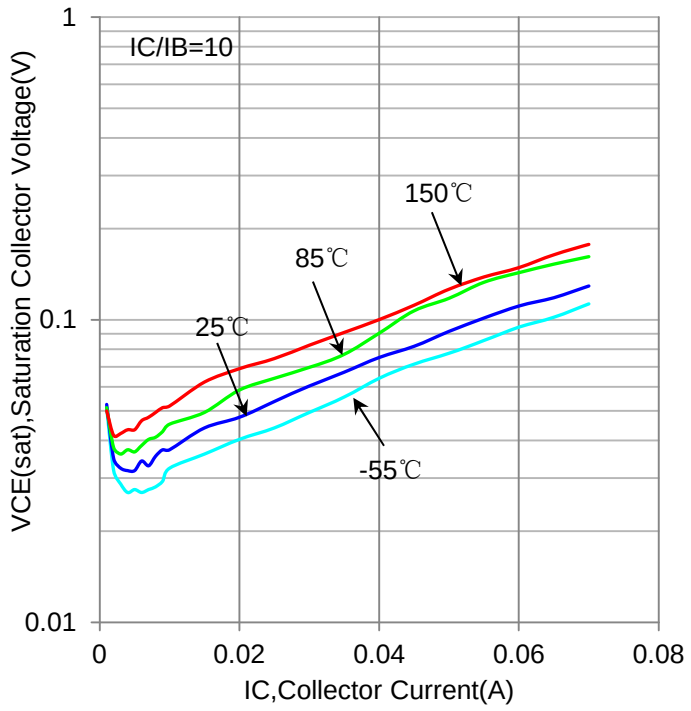
| Characteristic | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Collector–Emitter Breakdown Voltage (IC = 2.0 mA, IB = 0) | VBR(CEO) | 50 | - | - | V |
| Collector–Base Breakdown Voltage (IC = 10 μA, IE = 0) | VBR(CBO) | 50 | - | - | V |
| Collector-Base Cutoff Current (VCB = 50 V, IE = 0) | ICBO | - | - | 100 | nA |
| Collector-Emitter Cutoff Current (VCE = 50 V, IB = 0) | ICEO | - | - | 500 | nA |
| Emitter-Base Cutoff Current (VEB = 6.0 V, IC = 0) | IEBO | - | - | 0.5 | mA |

ON CHARACTERISTICS (Note 2.)

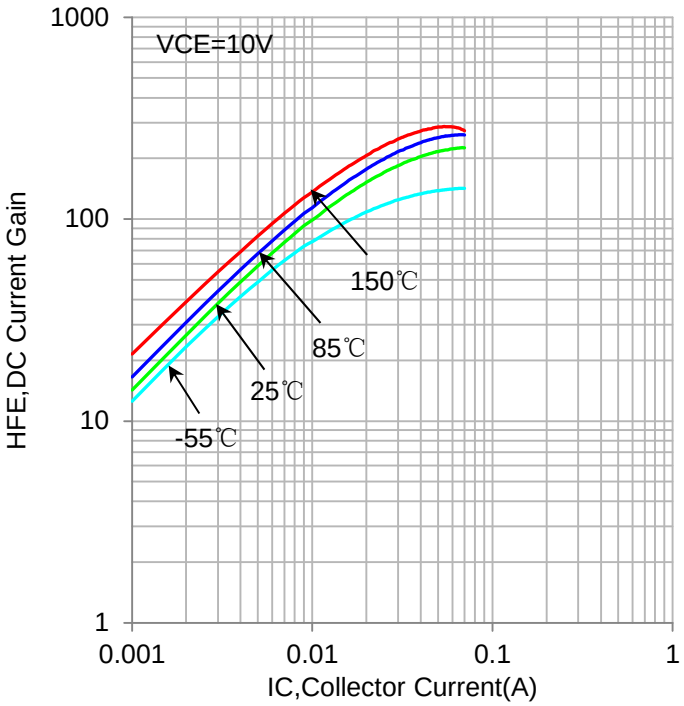
| | | | | | |
|---|---|---|---|---|---|
| DC Current Gain (IC = 5.0 mA, VCE = 10 V) | HFE | 35 | 60 | - | |
| Collector–Emitter Saturation Voltage (IC = 10 mA, IB = 0.3 mA) | VCE(sat) | - | - | 0.25 | V |
| Input Voltage(on) (VCE =0.3V, IC =10mA) | VIN(on) | 3.0 | - | - | V |
| Input Voltage(off) (VCE =5V, IC =100μA) | VIN(off) | - | - | 0.5 | V |
| Output Voltage (on) (VCC = 5.0 V, VB = 2.5 V, RL =1.0KΩ) | VOL | - | - | 0.2 | V |
| Output Voltage (on) (VCC = 5.0 V, VB = 0.5 V, RL =1.0KΩ) | VOH | 4.9 | - | - | V |
| Transition Frequency (VCE = 10V, IE = 5mA, f = 100MHz) | fT | - | 250 | - | MHz |
| Input Resistor | R1 | 7 | 10 | 13 | KΩ |
| Resistor Ratio | R1/R2 | 0.8 | 1 | 1.2 | |

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

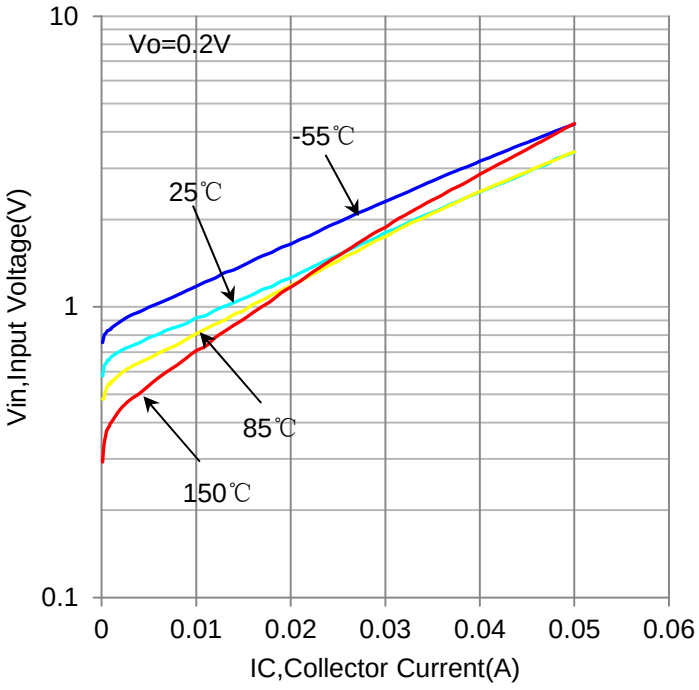
## 6. ELECTRICAL CHARACTERISTICS CURVES



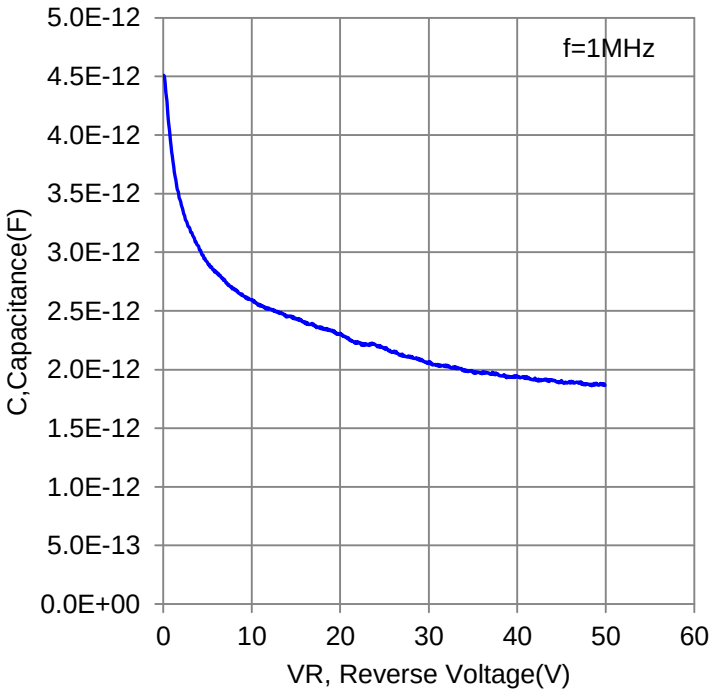

VCE(sat) vs.IC




DC Current Gain

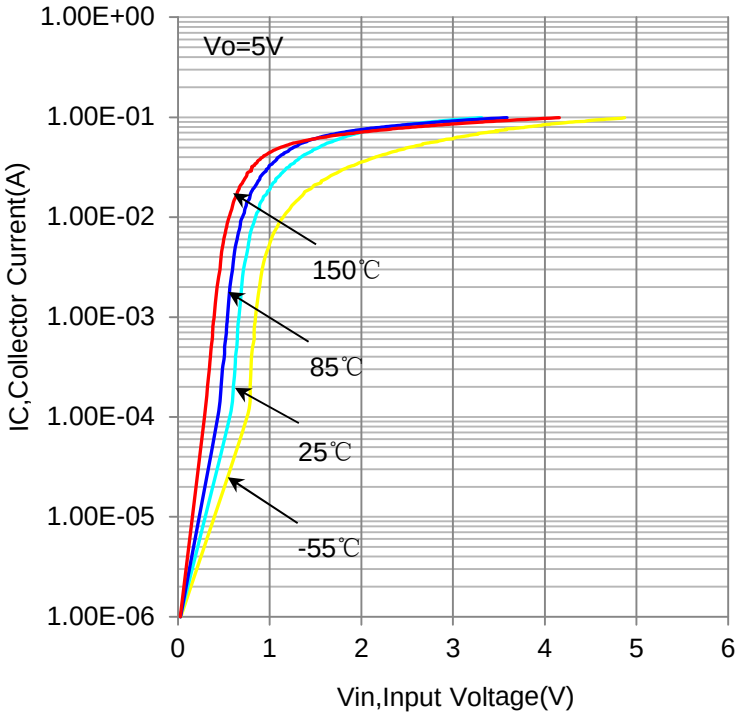



Vin vs. IC



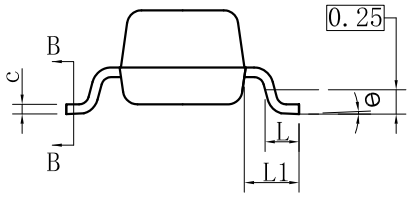

Capacitance vs. VR

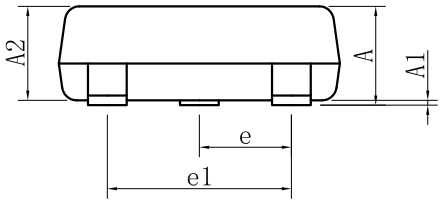
## 6. ELECTRICAL CHARACTERISTICS CURVES(Con.)

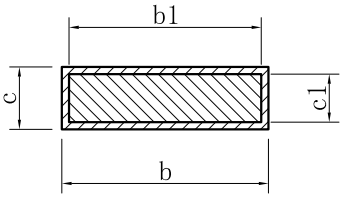


IC vs. Vin

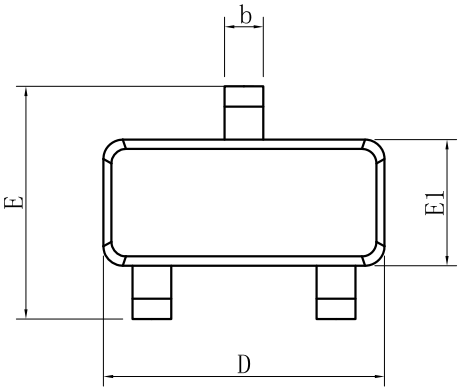
## 7.OUTLINE AND DIMENSIONS




SECTION B-B

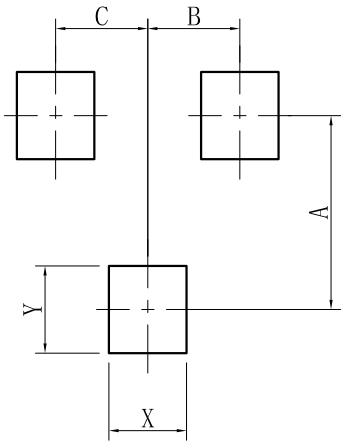



| SOT23 | | | |
|---|---|---|---|
| DIM | MIN | NOR | MAX |
| A | 0.89 | - | 1.12 |
| A1 | 0.01 | - | 0.10 |
| A2 | 0.88 | 0.95 | 1.02 |
| b | 0.30 | - | 0.50 |
| b1 | 0.30 | 0.40 | 0.45 |
| c | 0.08 | - | 0.20 |
| c1 | 0.08 | 0.10 | 0.16 |
| D | 2.80 | 2.90 | 3.04 |
| E | 2.10 | - | 2.64 |
| E1 | 1.20 | 1.30 | 1.40 |
| e | 0.95BSC | | |
| e1 | 1.90BSC | | |
| L | 0.40 | 0.46 | 0.60 |
| L1 | 0.54REF | | |
| θ | 0° | - | 8° |
| All Dimensions in mm | | | |

GENERAL NOTES

1. Top package surface finish Ra0.4±0.2um
2. Bottom package surface finish Ra0.7±0.2um
3. Side package surface finish Ra0.4±0.2um

## 8.SOLDERING FOOTPRINT




| SOT-23 | |
|---|---|
| DIM | (mm) |
| X | 0.80 |
| Y | 0.90 |
| A | 2.00 |
| B | 0.95 |
| C | 0.95 |

## DISCLAIMER

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.

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