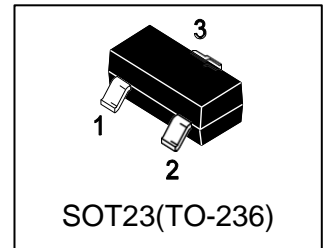
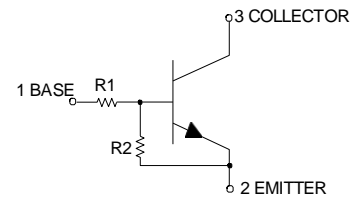


**Bias Resistor Transistor**  
**NPN Silicon Surface Mount Transistor**  
**with Monolithic Bias Resistor Network**



**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.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.



**2. DEVICE MARKING AND RESISTOR VALUES**

| Device       | Marking | R1(K) | R2(K) | Vin(V) | Shipping       |
|--------------|---------|-------|-------|--------|----------------|
| LMUN2213LT1G | A8C     | 47    | 47    | -10~40 | 3000/Tape&Reel |

**3. MAXIMUM RATINGS(Ta = 25°C)**

| 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 = 25°C<br>Derate above 25°C | PD       | 246<br>1.5 | mW<br>mW/°C |
| Thermal Resistance,<br>Junction–to–Ambient(Note 1)                                | ROJA     | 508        | °C/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<br>(IC = 2.0 mA, IB = 0) | VBR(CEO) | 50   | -    | -    | V    |
| Collector–Base Breakdown Voltage<br>(IC = 10 μA, IE = 0)     | VBR(CBO) | 50   | -    | -    | V    |
| Collector-Base Cutoff Current<br>(VCB = 50 V, IE = 0)        | ICBO     | -    | -    | 100  | nA   |
| Collector-Emitter Cutoff Current<br>(VCE = 50 V, IB = 0)     | ICEO     | -    | -    | 500  | nA   |
| Emitter-Base Cutoff Current<br>(VEB = 6.0 V, IC = 0)         | IEBO     | -    | -    | 0.1  | mA   |

### ON CHARACTERISTICS (Note 2.)

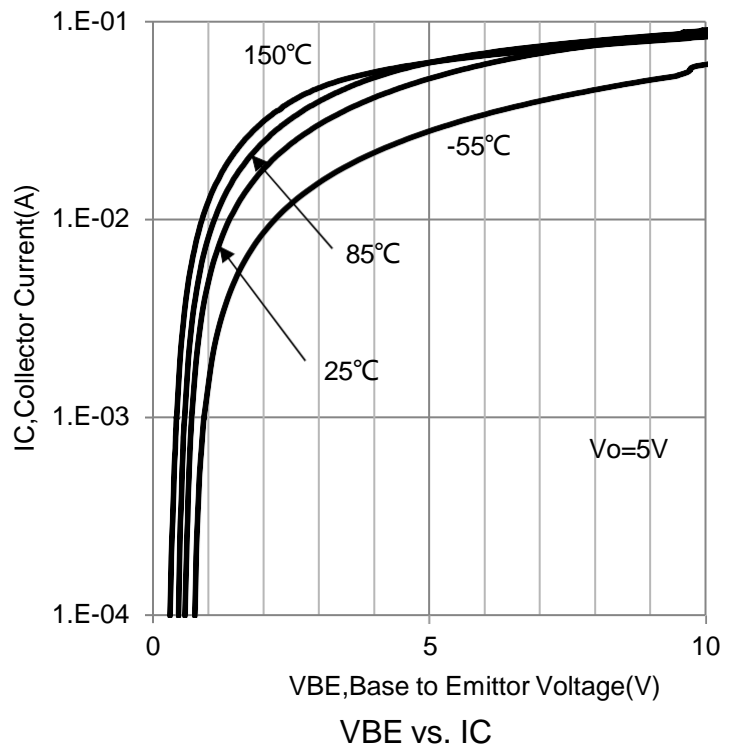
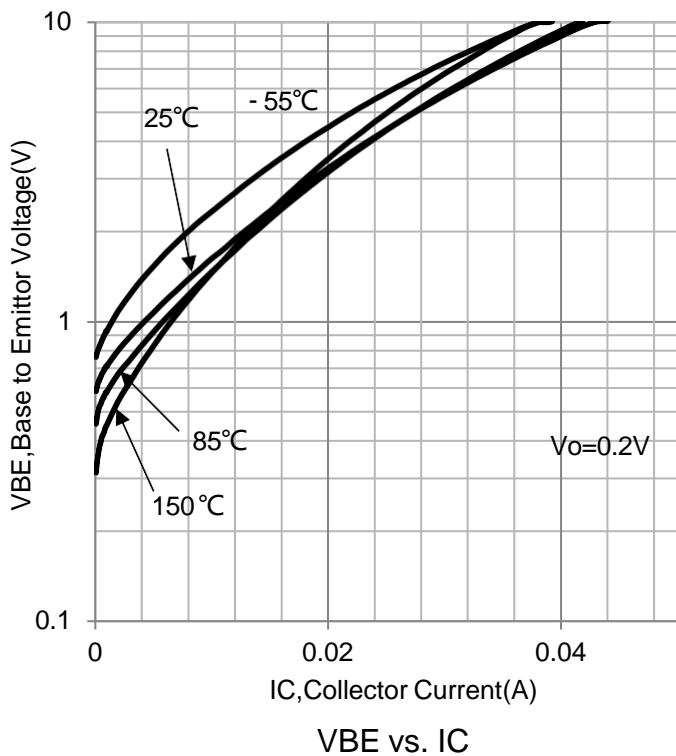
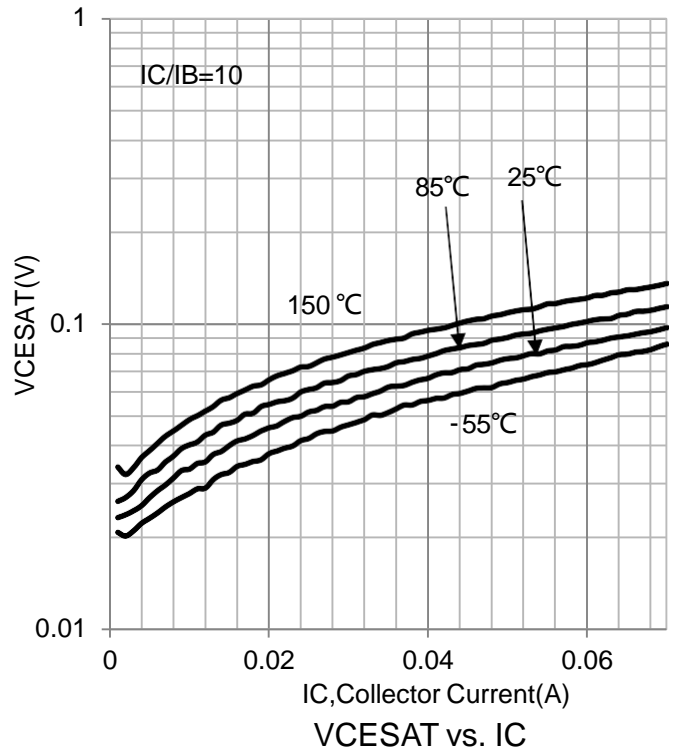
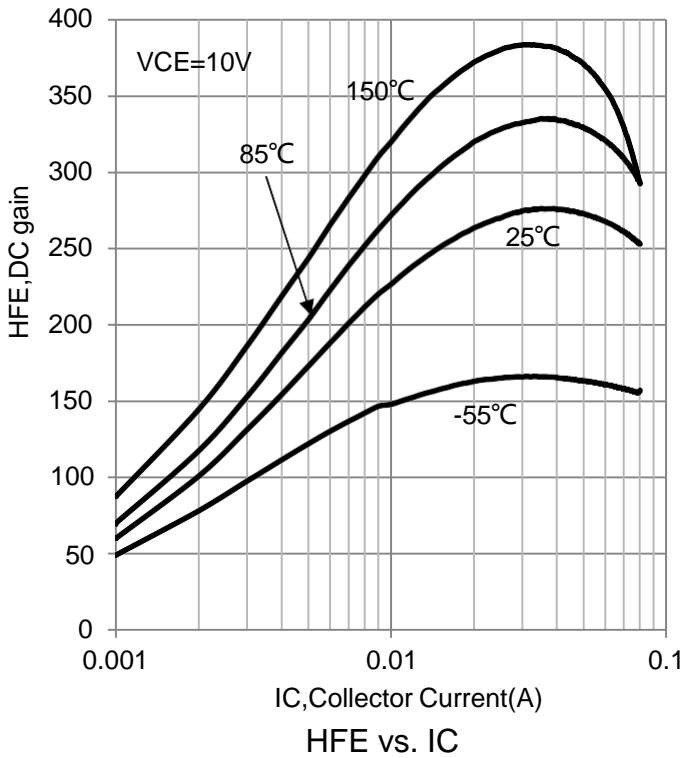
|   |          |      |     |      |    |
|---|----------|------|-----|------|----|
| DC Current Gain<br>(IC = 5.0 mA, VCE = 10 V)                      | HFE      | 80   | 140 | -    |    |
| Collector–Emitter Saturation Voltage<br>(IC = 10 mA, IB = 0.3 mA) | VCE(sat) | -    | -   | 0.25 | V  |
| Output Voltage (on)<br>(VCC = 5.0 V, VB = 3.5 V, RL =1.0KΩ)       | VOL      | -    | -   | 0.2  | V  |
| Output Voltage (on)<br>(VCC = 5.0 V, VB = 0.5 V, RL =1.0KΩ)       | VOH      | 4.9  | -   | -    | V  |
| Input Resistor  | R1       | 32.9 | -   | 61.1 | KΩ |
| Resistor Ratio  | R1/R2    | 0.8  | -   | 1.2  |    |

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



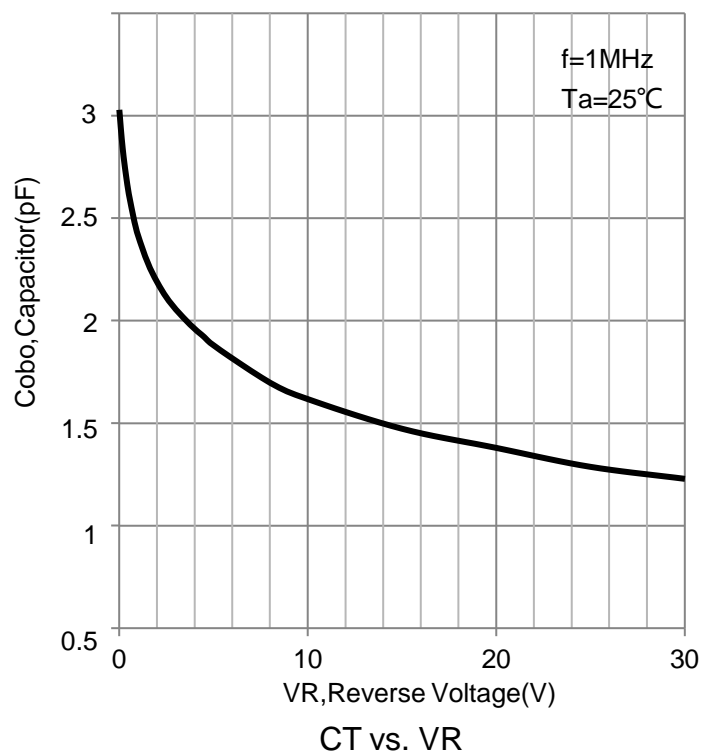
# S-LMUN2213LT1G

## 6. ELECTRICAL CHARACTERISTICS CURVES





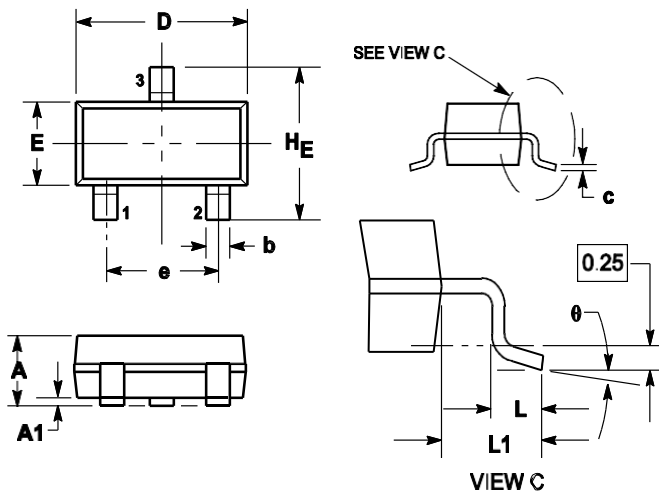
# S-LMUN2213LT1G



## 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

