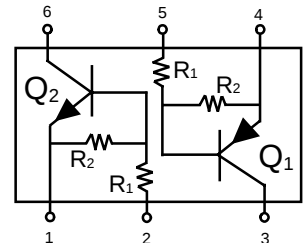
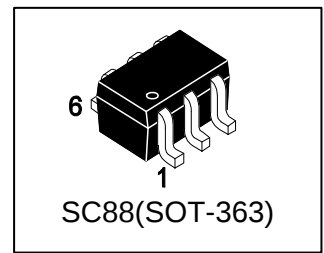


# S-LMUN5314DW1T1G

Dual Bias Resistor Transistors

NPN and PNP Silicon Surface Mount Transistors  
with Monolithic Bias Resistor Network



## 1. FEATURES

- Simplifies circuit design
- Reduces board space.
- Reduces 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)(PNP) | Vin(V)(NPN) | Shipping        |
|------------------|---------|-------|-------|-------------|-------------|-----------------|
| S-LMUN5314DW1T1G | 14      | 10    | 47    | -40~+6      | -6~+40      | 3000/Tape&Reel  |
| S-LMUN5314DW1T3G | 14      | 10    | 47    | -40~+6      | -6~+40      | 13000/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 (One Junction Heated)                                        | Symbol  | Limits     | Unit        |
|------------------------------------------------------------------------|---------|------------|-------------|
| Total Device Dissipation,<br>(Note 1) @ TA = 25°C<br>Derate above 25°C | PD      | 187<br>1.5 | mW<br>mW/°C |
| Thermal Resistance,<br>Junction-to-Ambient(Note 1)                     | RθJA    | 670        | °C/W        |
| Parameter (Both Junctions Heated)                                      | Symbol  | Limits     | Unit        |
| Total Device Dissipation,<br>(Note 1) @ TA = 25°C<br>Derate above 25°C | PD      | 250<br>2   | mW<br>mW/°C |
| Thermal Resistance,<br>Junction-to-Ambient(Note 1)                     | RθJA    | 493        | °C/W        |
| Thermal Resistance,<br>Junction-to-Lead(Note 1)                        | RθJL    | 188        | °C/W        |
| Junction and Storage temperature                                       | TJ,Tstg | -55~+150   | °C          |

1. FR-4 @ 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     | -    | -    | 0.2  | mA   |

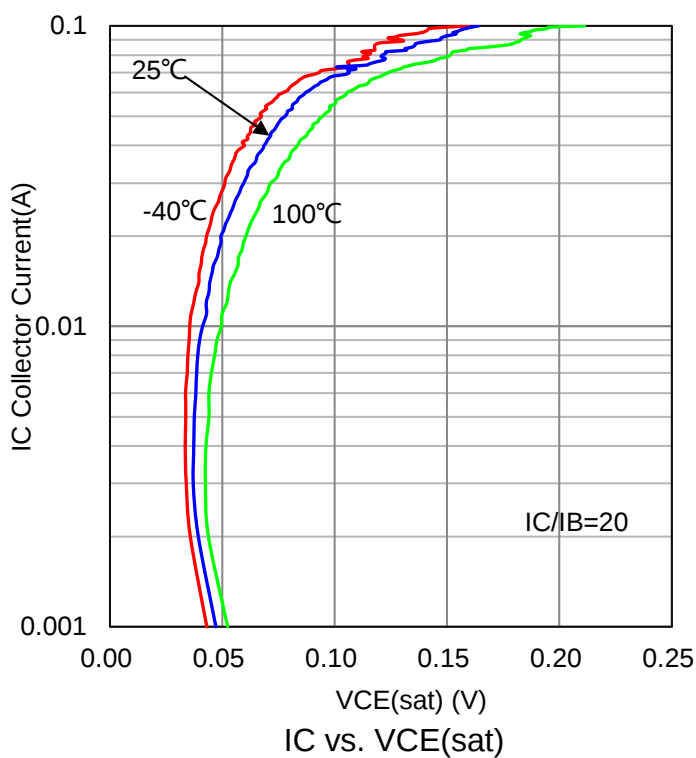
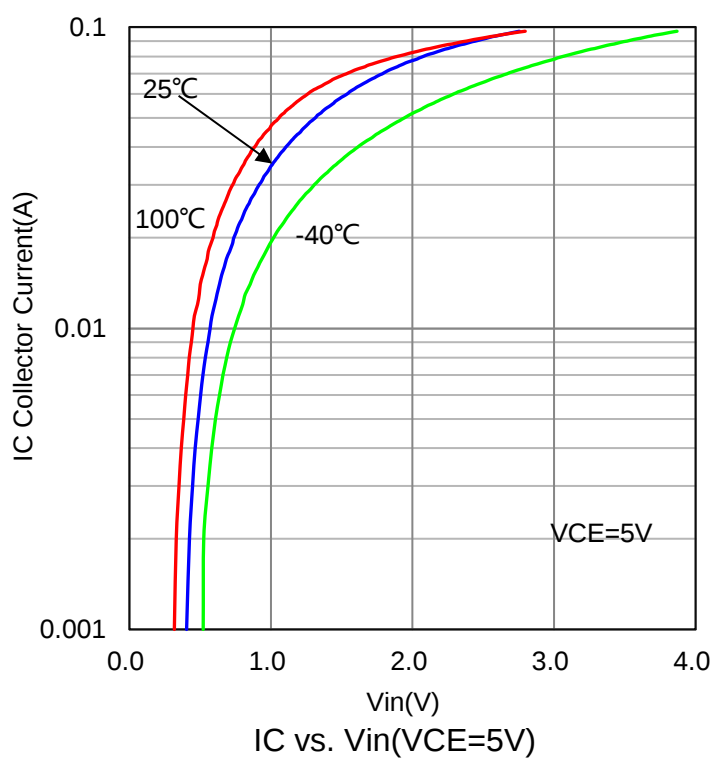
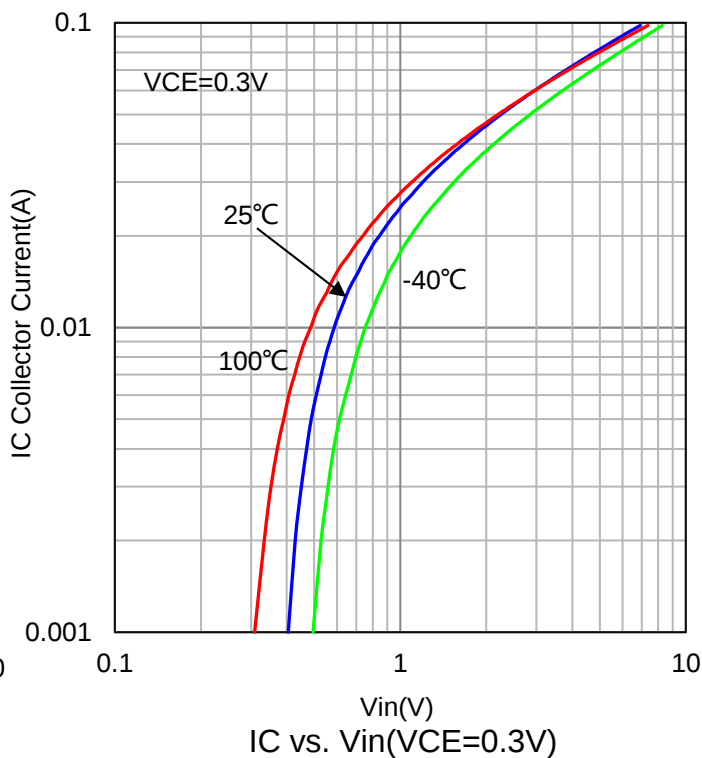
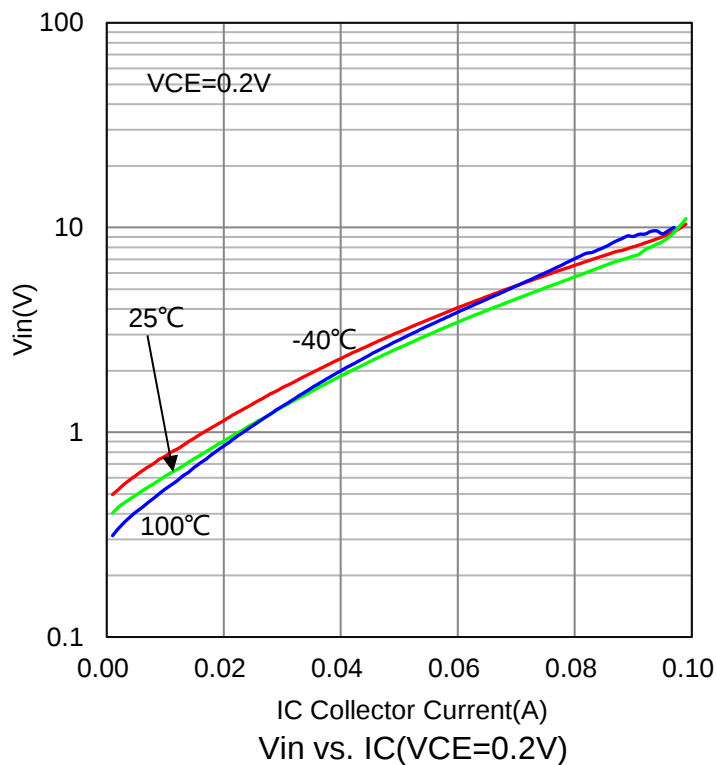
### ON CHARACTERISTICS (Note 2.)

|                                                                                                |          |         |            |             |     |
|------------------------------------------------------------------------------------------------|----------|---------|------------|-------------|-----|
| 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   |
| On-State Input Voltage<br>(VCE=0.2V, IC=5mA)(NPN)<br>(VCE=-0.2V, IC=-5mA)(PNP)                 | VI(on)   | 2<br>-2 | -<br>-     | -<br>-      | V   |
| Off-State Input Voltage<br>(VCE=5V, IC=0.1mA)(NPN)<br>(VCE=-5V, IC=-0.1mA)(PNP)                | VI(off)  | -<br>-  | -<br>-     | 0.5<br>-0.5 | V   |
| Output Voltage (on)<br>(VCC = 5.0 V, VB = 2.5 V, RL = 1.0KΩ)                                   | VOL      | -       | -          | 0.2         | V   |
| Output Voltage (off)<br>(VCC = 5.0 V, VB = 0.5 V, RL = 1.0KΩ)                                  | VOH      | 4.9     | -          | -           | V   |
| Input Resistor                                                                                 | R1       | 7       | 10         | 13          | KΩ  |
| Resistor Ratio                                                                                 | R1/R2    | 0.17    | 0.21       | 0.25        |     |
| Current–Gain — Bandwidth Product<br>(VCE = 10V, IE = 5mA)(NPN)<br>(VCE = -10V, IE = -5mA)(PNP) | fT       | -<br>-  | 250<br>250 | -<br>-      | MHz |

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

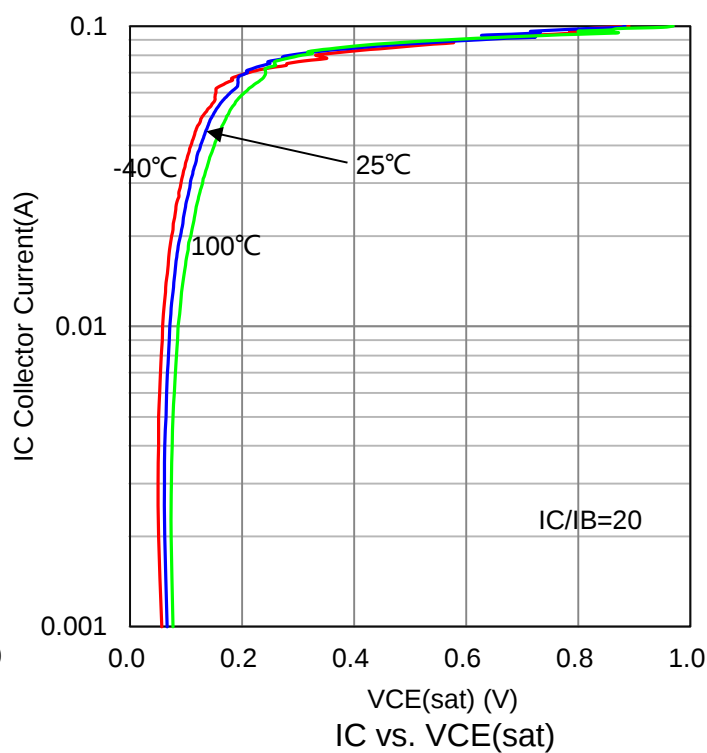
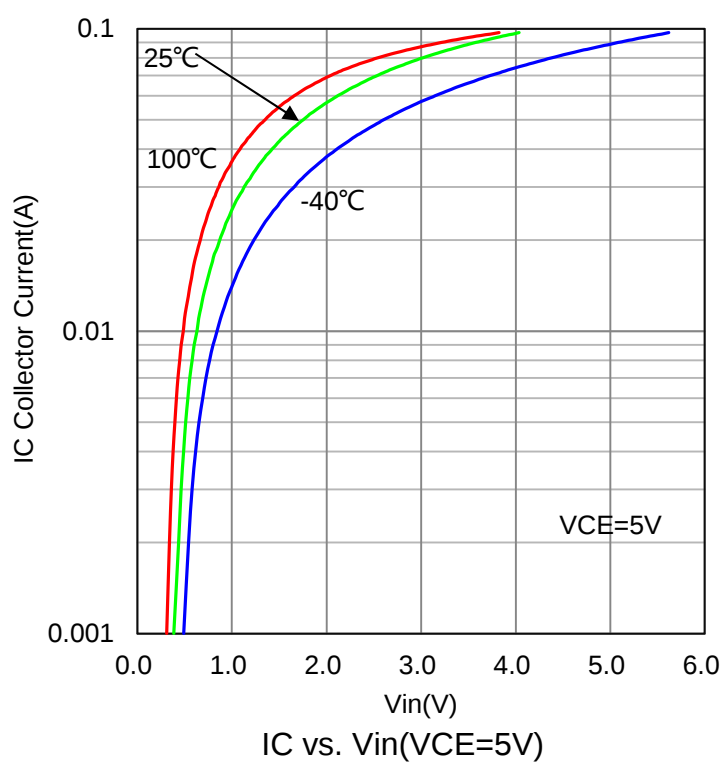
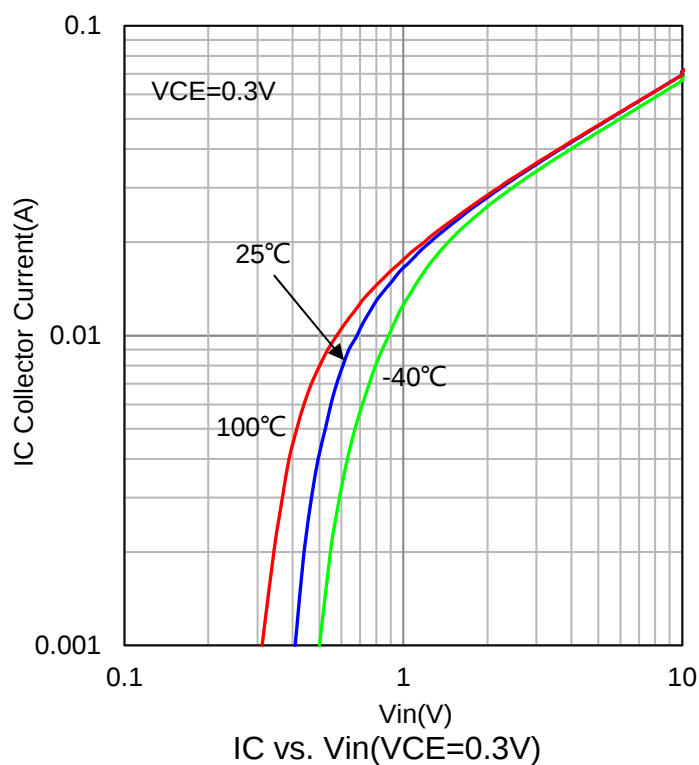
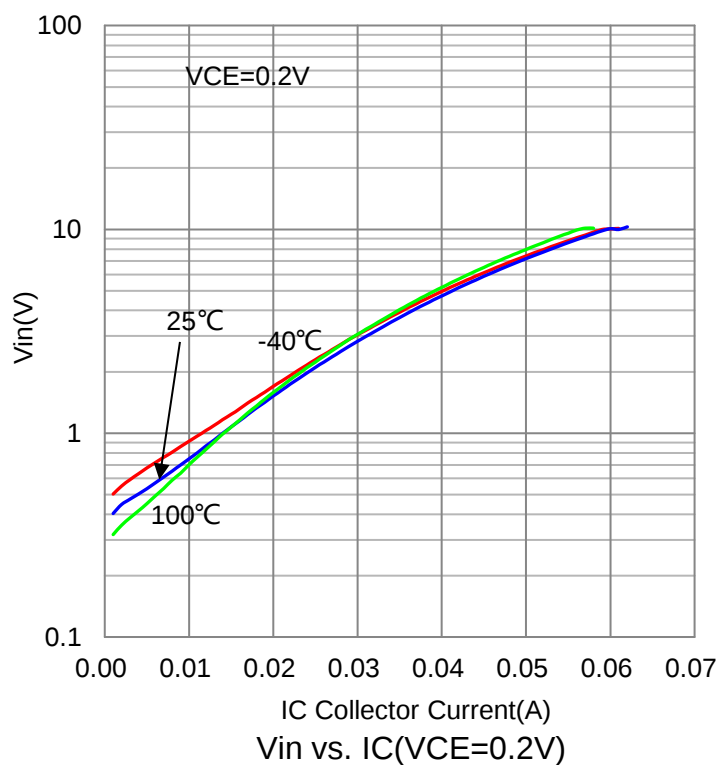
## 6.ELECTRICAL CHARACTERISTICS CURVES

NPN



## 6.ELECTRICAL CHARACTERISTICS CURVES(Con.)

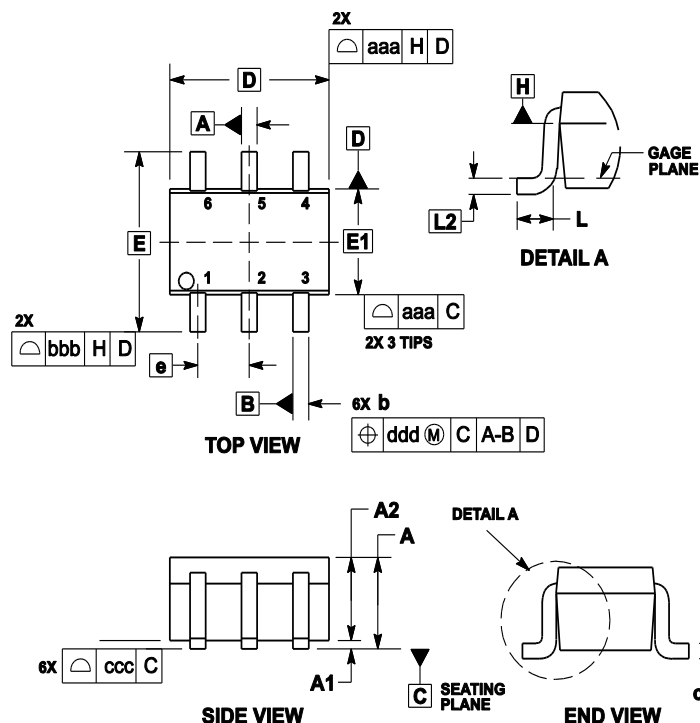
PNP



## 7.OUTLINE AND DIMENSIONS

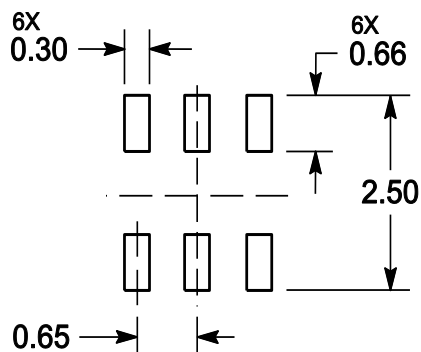
Notes:

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 E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



| DIM | MILLIMETERS |      |      | INCHES    |       |       |
|-----|-------------|------|------|-----------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A   | ---         | ---  | 1.10 | ---       | ---   | 0.043 |
| A1  | 0.00        | ---  | 0.10 | 0         | ---   | 0.004 |
| A2  | 0.70        | 0.90 | 1.00 | 0.027     | 0.035 | 0.039 |
| b   | 0.15        | 0.20 | 0.25 | 0.006     | 0.008 | 0.01  |
| C   | 0.08        | 0.15 | 0.22 | 0.003     | 0.006 | 0.009 |
| D   | 1.80        | 2.00 | 2.20 | 0.07      | 0.078 | 0.086 |
| E   | 2.00        | 2.10 | 2.20 | 0.078     | 0.082 | 0.086 |
| E1  | 1.15        | 1.25 | 1.35 | 0.045     | 0.049 | 0.053 |
| e   | 0.65 BSC    |      |      | 0.026 BSC |       |       |
| L   | 0.26        | 0.36 | 0.46 | 0.010     | 0.014 | 0.018 |
| L2  | 0.15 BSC    |      |      | 0.006 BSC |       |       |
| aaa | 0.15        |      |      | 0.01      |       |       |
| bbb | 0.30        |      |      | 0.01      |       |       |
| ccc | 0.10        |      |      | 0.00      |       |       |
| ddd | 0.10        |      |      | 0.00      |       |       |

## 8.SOLDERING FOOTPRINT



## **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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