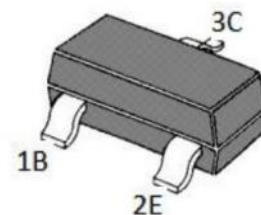




### MMBTSC3356 Silicon Epitaxial Planar Transistor

for microwave low noise amplifier at VHF,  
UHF and CATV band

The transistor is subdivided into three  
groups, Q, R and S, according to its DC  
current gain.



SOT-23-3L

| HFE | MARKING |
|-----|---------|
| Q   | R23     |
| R   | R24     |
| S   | R25     |

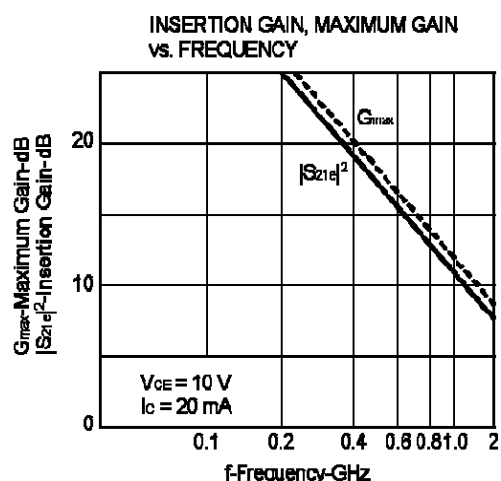
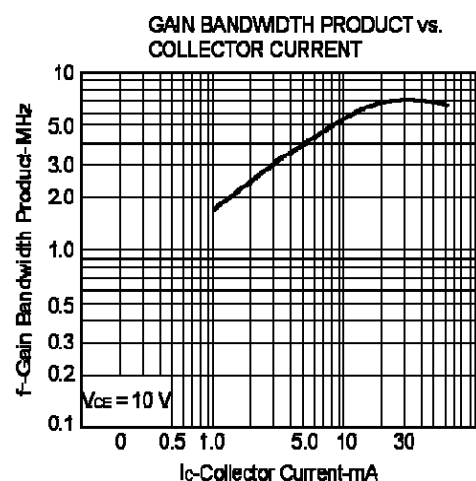
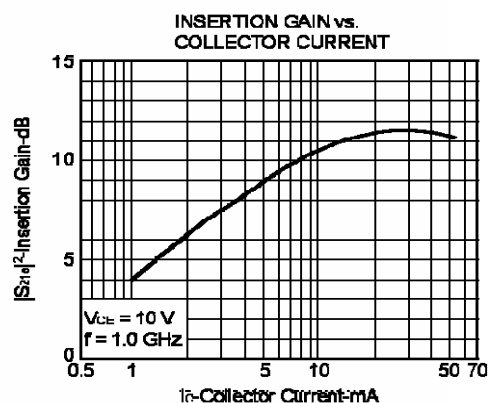
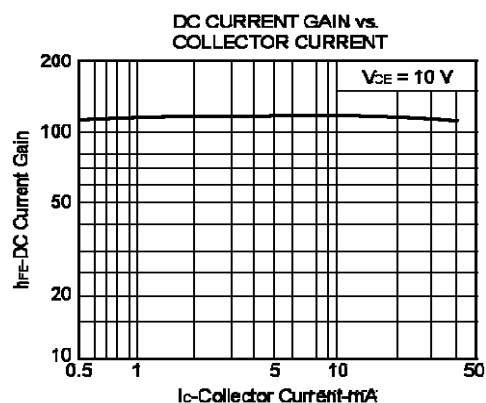
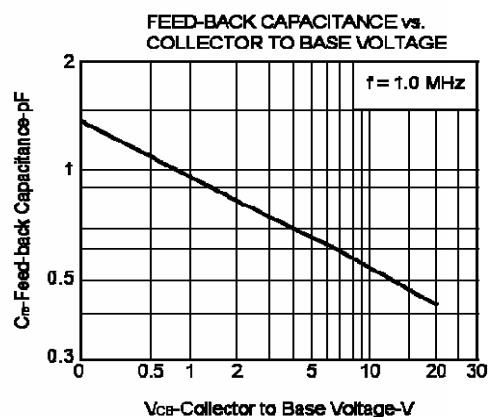
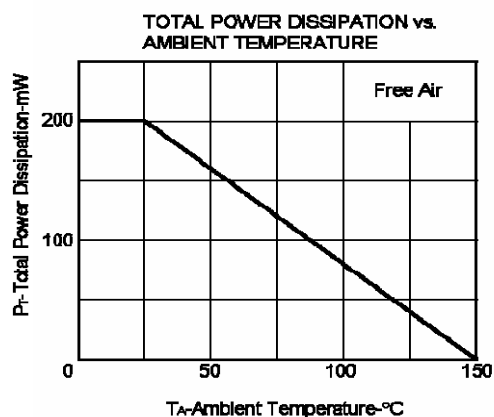
#### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

| Parameter                 | Symbol    | Value         | Unit             |
|---------------------------|-----------|---------------|------------------|
| Collector Base Voltage    | $V_{CBO}$ | 20            | V                |
| Collector Emitter Voltage | $V_{CEO}$ | 12            | V                |
| Emitter Base Voltage      | $V_{EBO}$ | 3             | V                |
| Collector Current         | $I_C$     | 100           | mA               |
| Power Dissipation         | $P_{tot}$ | 200           | mW               |
| Junction Temperature      | $T_j$     | 150           | $^\circ\text{C}$ |
| Storage Temperature Range | $T_S$     | - 65 to + 150 | $^\circ\text{C}$ |

#### Characteristics ( $T_a = 25^\circ\text{C}$ )

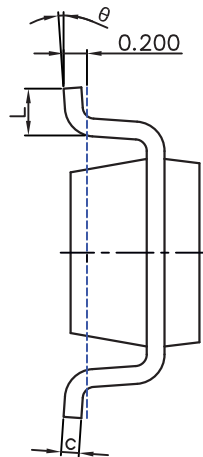
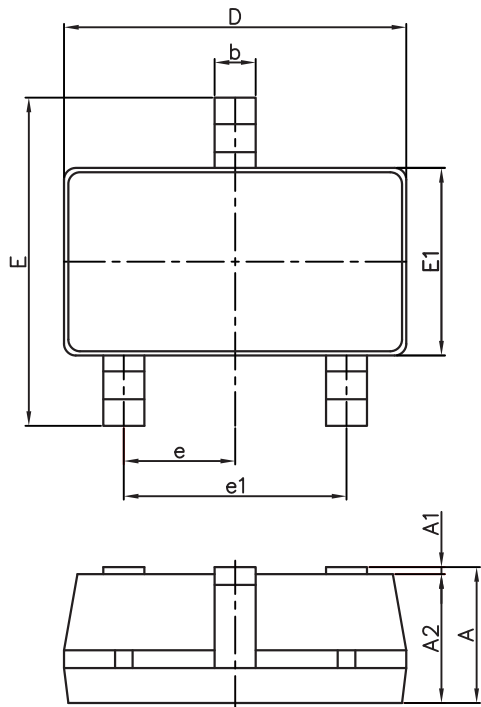
| Parameter                                                                                 | Symbol        | Min. | Typ. | Max. | Unit          |
|-------------------------------------------------------------------------------------------|---------------|------|------|------|---------------|
| DC Current Gain<br>at $V_{CE} = 10\text{ V}$ , $I_C = 20\text{ mA}$<br>Current Gain Group | Q             |      |      |      |               |
|                                                                                           | R             |      |      |      |               |
|                                                                                           | S             |      |      |      |               |
|                                                                                           |               |      |      |      |               |
| Collector Cutoff Current<br>at $V_{CB} = 10\text{ V}$                                     | $I_{CBO}$     | -    | -    | 1    | $\mu\text{A}$ |
| Emitter Cutoff Current<br>at $V_{EB} = 1\text{ V}$                                        | $I_{EBO}$     | -    | -    | 1    | $\mu\text{A}$ |
| Gain Bandwidth Product<br>at $V_{CE} = 10\text{ V}$ , $I_C = 20\text{ mA}$                | $f_T$         | -    | 7    | -    | GHz           |
| Feed-Back Capacitance<br>at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$                   | $C_{re}^{1)}$ | -    | 0.55 | 1    | pF            |
| Noise Figure<br>at $V_{CE} = 10\text{ V}$ , $I_C = 7\text{ mA}$ , $f = 1\text{ GHz}$      | NF            | -    | 1.1  | 2    | dB            |

1) The emitter terminal and the case shall be connected to the guard terminal of the three-terminal capacitance bridge.



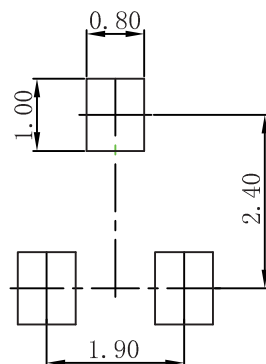


## SOT23-3L Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 1.050                     | 1.250 | 0.041                | 0.049 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 1.050                     | 1.150 | 0.041                | 0.045 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.100                     | 0.200 | 0.004                | 0.008 |
| D      | 2.820                     | 3.020 | 0.111                | 0.119 |
| E1     | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 2.650                     | 2.950 | 0.104                | 0.116 |
| e      | 0.950(BSC)                |       | 0.037(BSC)           |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.300                     | 0.600 | 0.012                | 0.024 |
| K      | 0°                        | 8°    | 0°                   | 8°    |

## SOT23-3L Suggested Pad Lay out



Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.