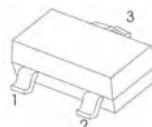




## FEATURES

The transistor is subdivided into three groups Y and G, according to its DC current gain. As complementary type the NPN transistor 2SC3356 is recommended.

### SOT-23



- 1.BASE
- 2.EMITTER
- 3.COLLECTOR

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

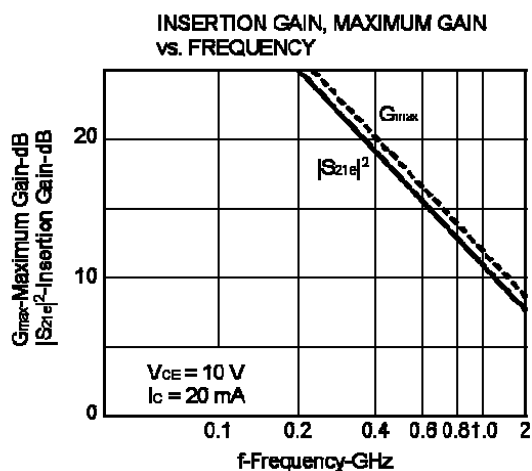
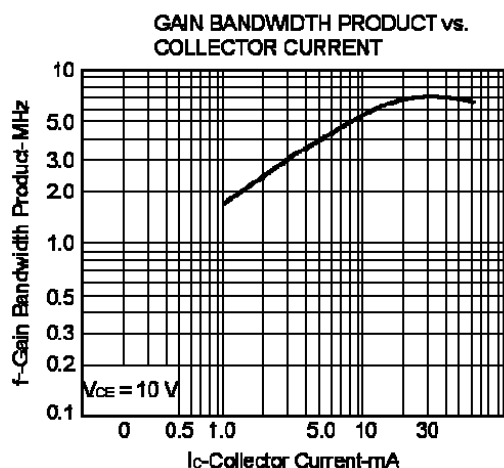
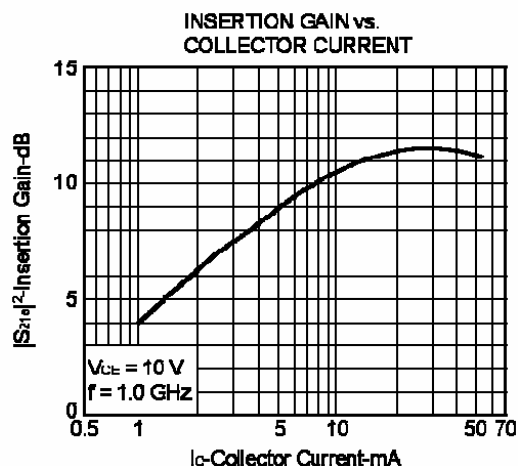
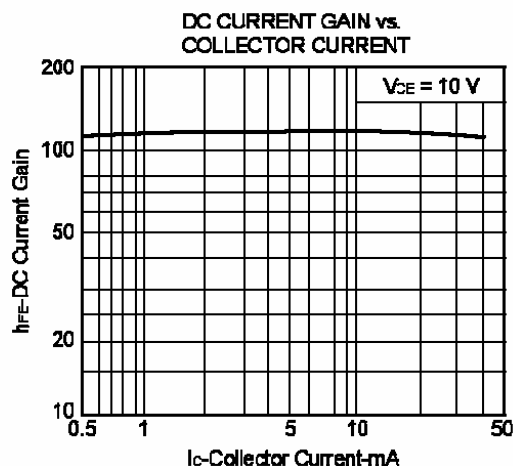
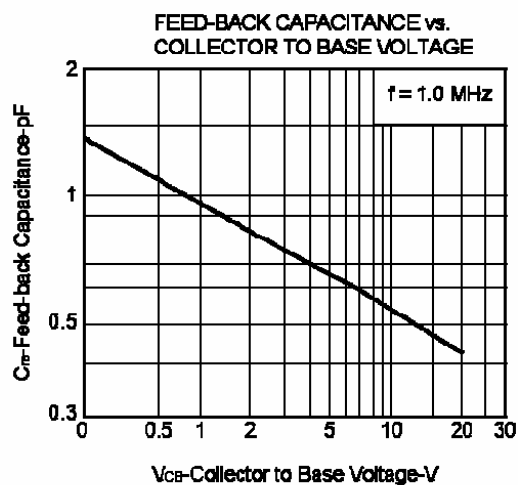
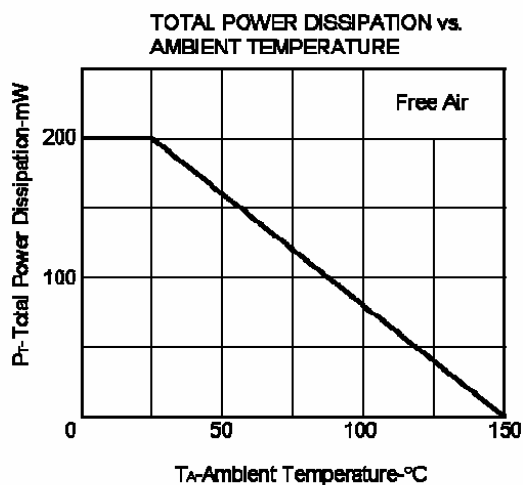
| Parameter                 | Symbol    | Value         | Unit               |
|---------------------------|-----------|---------------|--------------------|
| Collector Base Voltage    | $V_{CBO}$ | 20            | V                  |
| Collector Emitter Voltage | $V_{CEO}$ | 12            | V                  |
| 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 <sub>CE</sub> = 10 V, I <sub>C</sub> = 20 mA        | Current Gain Group<br>Q<br>R<br>S | h <sub>FE</sub> | 50   | -    | 100  | - |
|                                                                             |                                   | h <sub>FE</sub> | 80   | -    | 160  | - |
|                                                                             |                                   | h <sub>FE</sub> | 125  | -    | 250  | - |
| Collector Cutoff Current<br>at V <sub>CB</sub> = 10 V                       | I <sub>CBO</sub>                  | -               | -    | 1    | μA   |   |
| Emitter Cutoff Current<br>at V <sub>EB</sub> = 1 V                          | I <sub>EBO</sub>                  | -               | -    | 1    | μA   |   |
| Gain Bandwidth Product<br>at V <sub>CE</sub> = 10 V, I <sub>C</sub> = 20 mA | f <sub>T</sub>                    | -               | 7    | -    | GHz  |   |
| Feed-Back Capacitance<br>at V <sub>CB</sub> = 10 V, f = 1 MHz               | C <sub>re</sub> <sup>1)</sup>     | -               | 0.55 | 1    | pF   |   |
| Noise Figure<br>at V <sub>CE</sub> = 10 V, I <sub>C</sub> = 7 mA, f = 1 GHz | NF                                | -               | 1.1  | 2    | dB   |   |

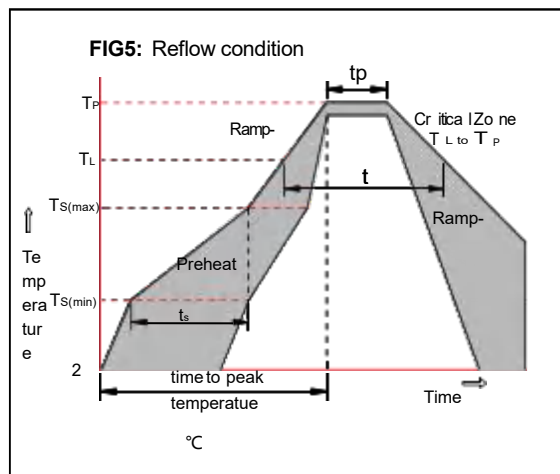
<sup>1)</sup> The emitter terminal and the case shall be connected to the guard terminal of the three-terminal capacitance bridge.

RATING AND CHARACTERISTIC CURVES



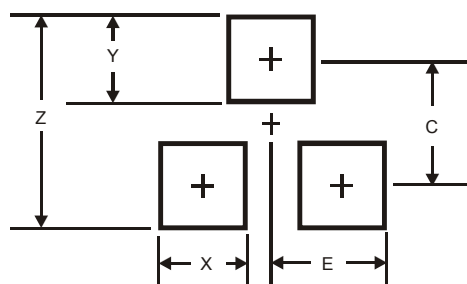
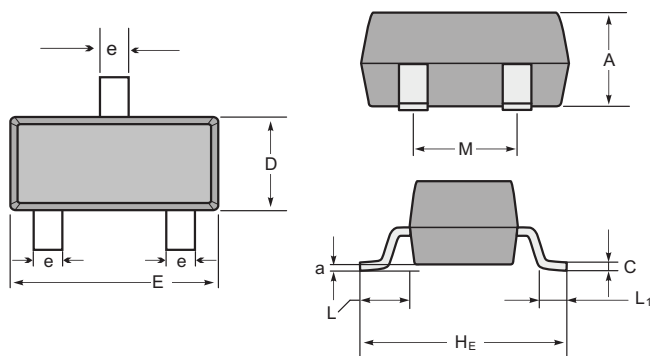
## Soldering parameters

| Reflow Condition                                        |                                   | Pb-Free assembly<br>(see as below) |
|---------------------------------------------------------|-----------------------------------|------------------------------------|
| Pre Heat                                                | -Temperature Min ( $T_{s(min)}$ ) | +150°C                             |
|                                                         | -Temperature Max( $T_{s(max)}$ )  | +200°C                             |
|                                                         | -Time (Min to Max) (ts)           | 60-180 secs.                       |
| Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak) |                                   | 3°C/sec. Max                       |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                    |                                   | 3°C/sec. Max                       |
| Reflow                                                  | -Temperature( $T_L$ )(Liquid us)  | +217°C                             |
|                                                         | -Temperature( $t_L$ )             | 60-150 secs.                       |
| Peak Temp ( $T_P$ )                                     |                                   | +260(+0/-5)°C                      |
| Time within 5°C of actual Peak Temp ( $t_P$ )           |                                   | 30 secs. Max                       |
| Ramp-down Rate                                          |                                   | 6°C/sec. Max                       |
| Time 25°C to Peak Temp ( $T_P$ )                        |                                   | 8 min. Max                         |
| Do not exceed                                           |                                   | +260°C                             |



## Package Dimensions & Suggested Pad Layout

### SOT23



### SOT-23 mechanical data

| UNIT | A   | C   | D    | E   | H <sub>E</sub> | e   | M   | L    | L <sub>1</sub> | a          |
|------|-----|-----|------|-----|----------------|-----|-----|------|----------------|------------|
| mm   | max | 1.1 | 0.15 | 1.4 | 3.0            | 2.6 | 0.5 | 1.95 | 0.55 (ref)     | 0.36 (ref) |
|      | min | 0.9 | 0.08 | 1.2 | 2.8            | 2.2 | 0.3 | 1.7  |                | 0.15       |
| mil  | max | 43  | 6    | 55  | 118            | 102 | 20  | 77   | 22 (ref)       | 14 (ref)   |
|      | min | 35  | 3    | 47  | 110            | 87  | 12  | 67   |                | 6          |

| Dimensions | SOT23 |
|------------|-------|
| Z          | 2.9   |
| X          | 0.8   |
| Y          | 0.9   |
| C          | 2.0   |
| E          | 1.35  |

## Tape & reel specification

Technical drawing of a tape showing top and side views with dimensions P0, P1, P2, E, F, W, ØD0, ØD1, B0, K0, T, and A0. It also includes a cross-section labeled SECTION: A-A and another labeled SECTION: B-B.

| Symbol | Dimension (mm) |
|--------|----------------|
| P0     | 4.00±0.10      |
| P1     | 4.00±0.10      |
| P2     | 2.00±0.10      |
| D0     | 1.55±0.10      |
| D1     | 1.05±0.10      |
| E      | 1.55±0.10      |
| F      | 3.60±0.10      |
| W      | 8.00±0.10      |
| A0     | 3.80±0.20      |
| B0     | 3.25±0.20      |
| K0     | 1.45±0.10      |
| T      | 0.25±0.05      |
| D2     | 178.0±3.0      |
| D3     | 55Min.         |
| D4     | R24.0±3.0      |
| G      | R82.0±3.0      |
| I      | 13.0±2.0       |
| W1     | 11.0±3.0       |

Quantity: 3000PCS

Technical drawing of a 7 inch reel showing top and side views with dimensions D2, D3, D4, G, and W1.