

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

# 2SC5086FT

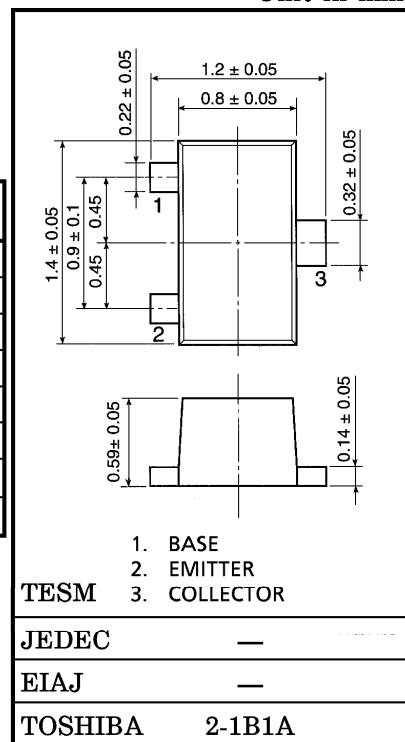
VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

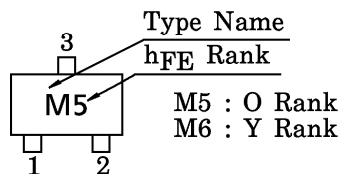
- Low Noise Figure, High Gain.
- $NF = 1.1dB$ ,  $|S_{21e}|^2 = 11dB$  ( $f = 1GHz$ )

MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

| CHARACTERISTIC              | SYMBOL    | RATING  | UNIT       |
|-----------------------------|-----------|---------|------------|
| Collector-Base Voltage      | $V_{CBO}$ | 20      | V          |
| Collector-Emitter Voltage   | $V_{CEO}$ | 12      | V          |
| Emitter-Base Voltage        | $V_{EBO}$ | 3       | V          |
| Base Current                | $I_B$     | 40      | mA         |
| Collector Current           | $I_C$     | 80      | mA         |
| Collector Power Dissipation | $P_C$     | 100     | mW         |
| Junction Temperature        | $T_j$     | 125     | $^\circ C$ |
| Storage Temperature Range   | $T_{stg}$ | -55~125 | $^\circ C$ |



MARKING



MICROWAVE CHARACTERISTICS ( $T_a = 25^\circ C$ )

| CHARACTERISTIC       | SYMBOL            | TEST CONDITION                         | MIN. | TYP. | MAX. | UNIT |
|----------------------|-------------------|--|------|------|------|------|
| Transition Frequency | $f_T$             | $V_{CE} = 10V, I_C = 20mA$             | 5    | 7    | —    | GHz  |
| Insertion Gain       | $ S_{21e} ^2 (1)$ | $V_{CE} = 10V, I_C = 20mA, f = 500MHz$ | —    | 16.5 | —    | dB   |
|                      | $ S_{21e} ^2 (2)$ | $V_{CE} = 10V, I_C = 20mA, f = 1GHz$   | 7.5  | 11   | —    |      |
| Noise Figure         | NF (1)            | $V_{CE} = 10V, I_C = 5mA, f = 500MHz$  | —    | 1    | —    | dB   |
|                      | NF (2)            | $V_{CE} = 10V, I_C = 5mA, f = 1GHz$    | —    | 1.1  | 2    |      |

ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )

| CHARACTERISTIC               | SYMBOL            | TEST CONDITION                    | MIN. | TYP. | MAX. | UNIT    |
|------------------------------|-------------------|-----------------------------------|------|------|------|---------|
| Collector Cut-off Current    | $I_{CBO}$         | $V_{CB} = 10V, I_E = 0$           | —    | —    | 1    | $\mu A$ |
| Emitter Cut-off Current      | $I_{EBO}$         | $V_{EB} = 1V, I_C = 0$            | —    | —    | 1    | $\mu A$ |
| DC Current Gain              | $h_{FE}$ (Note 1) | $V_{CE} = 10V, I_C = 20mA$        | 80   | —    | 240  | —       |
| Output Capacitance           | $C_{ob}$          | $V_{CB} = 10V, I_E = 0, f = 1MHz$ | —    | 1.0  | —    | pF      |
| Reverse Transfer Capacitance | $C_{re}$          | (Note 2)                          | —    | 0.65 | 1.15 | pF      |

- (Note 1) :  $h_{FE}$  Classification    O : 80~160, Y : 120~240  
 (Note 2) :  $C_{re}$  is measured by 3 terminal method with capacitance bridge.

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