

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

## 2SC5086FT

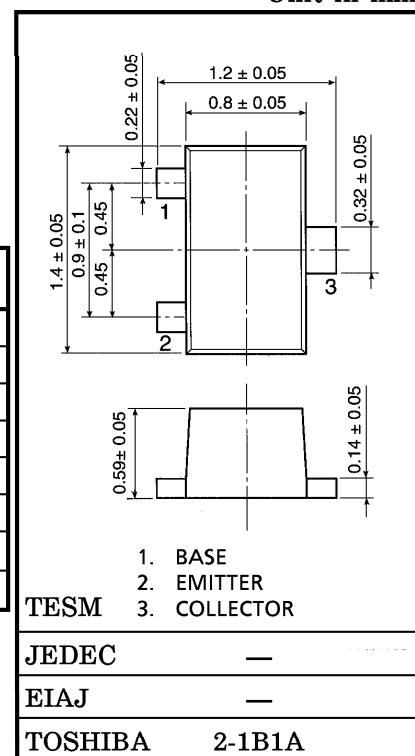
VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

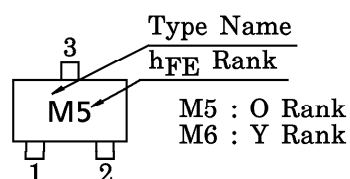
- Low Noise Figure, High Gain.
- $NF=1.1\text{dB}$ ,  $|S_{21e}|^2=11\text{dB}$  ( $f=1\text{GHz}$ )

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

| 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           | $^\circ\text{C}$ |
| Storage Temperature Range   | $T_{stg}$ | $-55\sim 125$ | $^\circ\text{C}$ |



## MARKING

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

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

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## ELECTRICAL CHARACTERISTICS (Ta = 25°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           | $C_{ob}$          | $V_{CB}=10V, I_E=0, f=1MHz$<br>(Note 2) | —    | 1.0  | —    | pF      |
| Reverse Transfer Capacitance | $C_{re}$          |                                         | —    | 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.