

TENTATIVE

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

# HN9C19FT

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

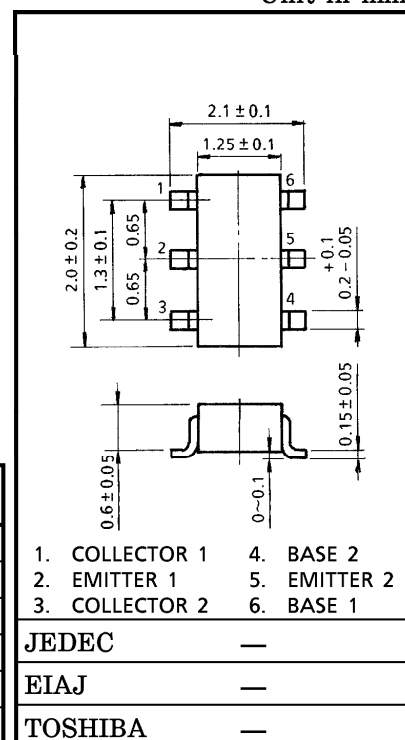
- TWO devices are built in to the super-thin and ultra super mini (6pins) package : TU6

## MOUNTED DEVICES

|                                                  | Q1      | Q2      |
|--------------------------------------------------|---------|---------|
| Three-pins (SSM) mold products are corresponded. | 2SC5096 | 2SC5464 |

## MAXIMUM RATINGS (Ta = 25°C)

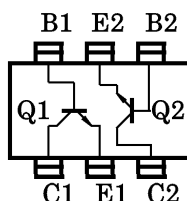
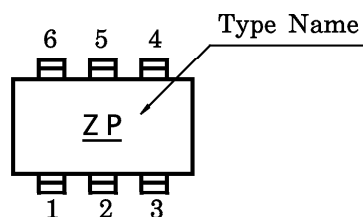
| CHARACTERISTIC              | SYMBOL           | Q1      | Q2 | UNIT |
|-----------------------------|------------------|---------|----|------|
| Collector-Base Voltage      | V <sub>CB0</sub> | 20      |    | V    |
| Collector-Emitter Voltage   | V <sub>CEO</sub> | 8       | 12 | V    |
| Emitter-Base Voltage        | V <sub>EBO</sub> | 1.5     | 3  | V    |
| Collector Current           | I <sub>C</sub>   | 15      | 60 | mA   |
| Base Current                | I <sub>B</sub>   | 7       | 30 | mA   |
| Collector Power Dissipation | P <sub>C</sub>   | 200     |    | mW   |
| Junction Temperature        | T <sub>j</sub>   | 125     |    | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -55~125 |    | °C   |



Weight : 0.008g

## MARKING

## PIN ASSIGNMENT (TOP VIEW)



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## ELECTRICAL CHARACTERISTICS Q1 (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           | $h_{FE}$          | $V_{CE} = 6V, I_C = 7mA$              | 50   | —    | 160  | —       |
| Transition Frequency      | $f_T$             | $V_{CE} = 6V, I_C = 7mA$              | 7    | 10   | —    | GHz     |
| Insertion Gain            | $ S_{21e} ^2 (1)$ | $V_{CE} = 6V, I_C = 7mA, f = 1000MHz$ | —    | 13   | —    | dB      |
|                           | $ S_{21e} ^2 (2)$ | $V_{CE} = 6V, I_C = 7mA, f = 2000MHz$ | 4.5  | 7.5  | —    | dB      |
| Noise Figure              | NF (1)            | $V_{CE} = 6V, I_C = 3mA, f = 1000MHz$ | —    | 1.4  | —    | dB      |
|                           | NF (2)            | $V_{CE} = 6V, I_C = 3mA, f = 2000MHz$ | —    | 1.8  | 3    | dB      |

## ELECTRICAL CHARACTERISTICS Q2 (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           | $h_{FE}$          | $V_{CE} = 8V, I_C = 15mA$              | 80   | —    | 240  | —       |
| Transition Frequency      | $f_T$             | $V_{CE} = 8V, I_C = 15mA$              | 5    | 7    | —    | GHz     |
| Insertion Gain            | $ S_{21e} ^2 (1)$ | $V_{CE} = 8V, I_C = 15mA, f = 500MHz$  | —    | 17   | —    | dB      |
|                           | $ S_{21e} ^2 (2)$ | $V_{CE} = 8V, I_C = 15mA, f = 1000MHz$ | 8    | 12   | —    | dB      |
| Noise Figure              | NF (1)            | $V_{CE} = 8V, I_C = 5mA, f = 500MHz$   | —    | 1    | —    | dB      |
|                           | NF (2)            | $V_{CE} = 8V, I_C = 5mA, f = 1000MHz$  | —    | 1.1  | 2    | dB      |