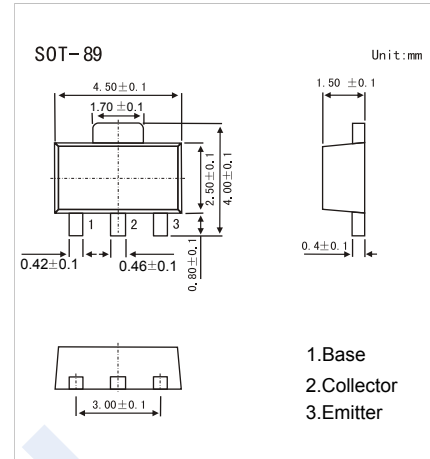


## NPN Transistors

## 2SC3357

## ■ Features

- Low noise and high gain
- High power gain
- Large  $P_{tot}$

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

| Parameter                      | Symbol        | Rating     | Unit                      |
|--------------------------------|---------------|------------|---------------------------|
| Collector - Base Voltage       | $V_{CBO}$     | 20         | V                         |
| Collector - Emitter Voltage    | $V_{CEO}$     | 12         |                           |
| Emitter - Base Voltage         | $V_{EBO}$     | 3          |                           |
| Collector Current - Continuous | $I_C$         | 100        | mA                        |
| Collector Power Dissipation    | $P_C$         | 1.2        | W                         |
| Junction to Ambient Resistance | $R_{th(j-a)}$ | 62.5       | $^\circ\text{C}/\text{W}$ |
| Junction Temperature           | $T_J$         | 150        | $^\circ\text{C}$          |
| Storage Temperature Range      | $T_{stg}$     | -55 to 150 |                           |

■ Electrical Characteristics  $T_a = 25^\circ\text{C}$ 

| Parameter                            | Symbol        | Test Conditions   | Min | Typ | Max | Unit          |
|--------------------------------------|---------------|---|-----|-----|-----|---------------|
| Collector- base breakdown voltage    | $V_{CBO}$     | $I_C = 100 \mu\text{A}$ , $I_E = 0$                               | 20  |     |     | V             |
| Collector- emitter breakdown voltage | $V_{CEO}$     | $I_C = 1 \text{mA}$ , $I_B = 0$                                   | 12  |     |     |               |
| Emitter - base breakdown voltage     | $V_{EBO}$     | $I_E = 100 \mu\text{A}$ , $I_C = 0$                               | 3   |     |     |               |
| Collector-base cut-off current       | $I_{CBO}$     | $V_{CB} = 20\text{V}$ , $I_E = 0$                                 |     |     | 1   | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = 3\text{V}$ , $I_C = 0$                                  |     |     | 1   |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 50 \text{mA}$ , $I_B = 5 \text{mA}$                        |     |     | 0.4 | V             |
| Base - emitter saturation voltage    | $V_{BE(sat)}$ | $I_C = 50 \text{mA}$ , $I_B = 5 \text{mA}$                        |     |     | 1.2 |               |
| DC current gain (Note.1)             | $h_{FE}$      | $V_{CE} = 10\text{V}$ , $I_C = 20 \text{mA}$                      | 50  |     | 250 |               |
| Insertion Power Gain                 | $ S_{21e} ^2$ | $V_{CE} = 10\text{V}$ , $I_C = 20 \text{mA}$ , $f = 1 \text{GHz}$ |     | 9   |     | dB            |
| Noise Figure                         | NF            | $V_{CE} = 10\text{V}$ , $I_C = 7 \text{mA}$ , $f = 1 \text{GHz}$  |     | 1.1 |     |               |
|                                      |               | $V_{CE} = 10\text{V}$ , $I_C = 40 \text{mA}$ , $f = 1 \text{GHz}$ |     | 1.8 | 3   |               |
| Reverse Transfer Capacitance         | $C_{re}$      | $V_{CB} = 10\text{V}$ , $I_E = 0$ , $f = 1 \text{MHz}$            |     |     | 1   | pF            |
| Transition frequency                 | $f_T$         | $V_{CE} = 10\text{V}$ , $I_C = 20 \text{mA}$                      |     | 6.5 |     | GHz           |

Note.1: Pulse measurement:  $PW \leq 350 \mu\text{s}$ , Duty Cycle  $\leq 2\%$

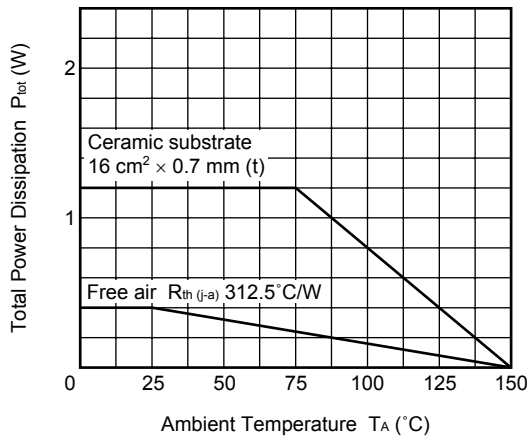
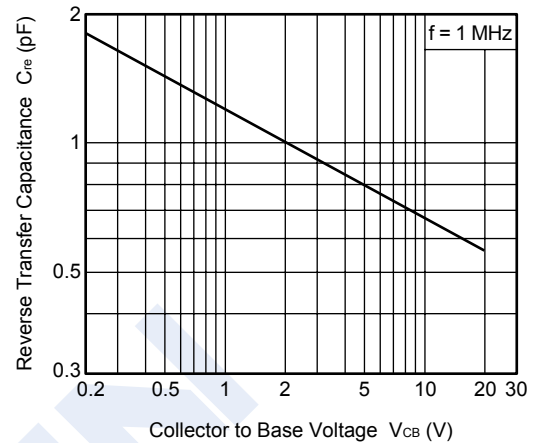
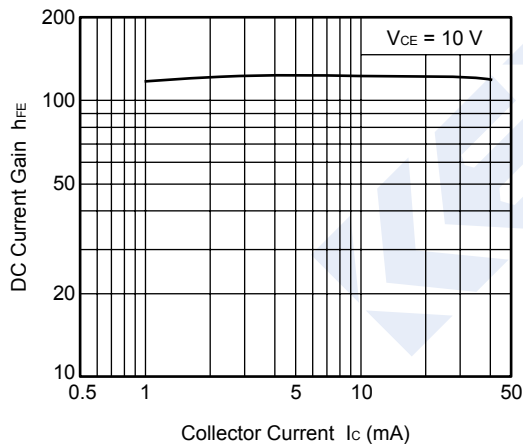
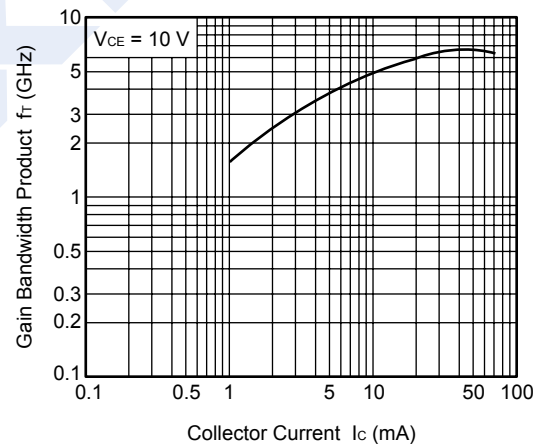
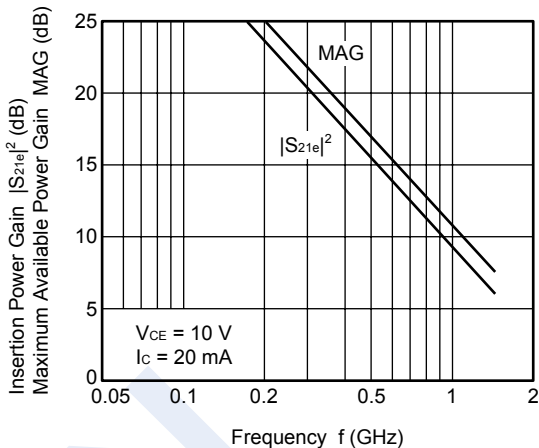
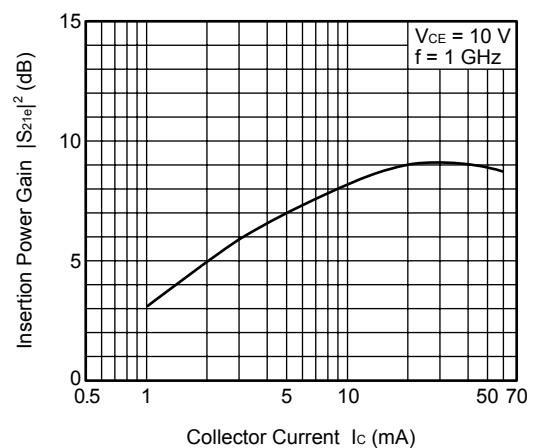
■ Classification of  $h_{FE}$ 

| Type    | 2SC3357-H | 2SC3357-F | 2SC3357-E |
|---------|-----------|-----------|-----------|
| Range   | 50-100    | 80-160    | 125-250   |
| Marking | RH        | RF        | RE        |

## NPN Transistors

## 2SC3357

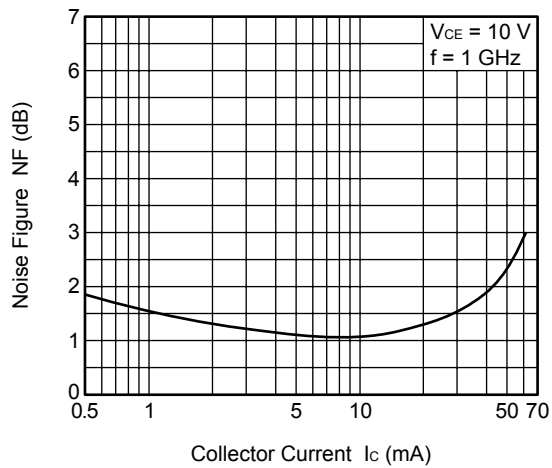
## ■ Typical Characteristics

TOTAL POWER DISSIPATION  
vs. AMBIENT TEMPERATUREREVERSE TRANSFER CAPACITANCE  
vs. COLLECTOR TO BASE VOLTAGEDC CURRENT GAIN vs.  
COLLECTOR CURRENTGAIN BANDWIDTH PRODUCT  
vs. COLLECTOR CURRENTINSERTION POWER GAIN, MAG  
vs. FREQUENCYINSERTION POWER GAIN  
vs. COLLECTOR CURRENT

## NPN Transistors

## 2SC3357

## ■ Typical Characteristics

NOISE FIGURE vs.  
COLLECTOR CURRENTIM<sub>2</sub>, IM<sub>3</sub> vs. COLLECTOR CURRENT