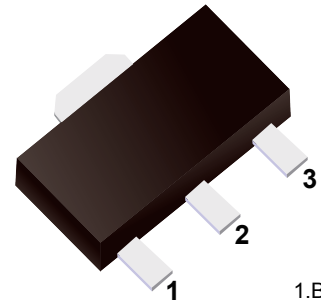


## 2SC3357

### ■ NPN Transistors

#### ■ Features

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



1.Base  
2.Collector  
3.Emitter

#### ■ Simplified outline(SOT-89)

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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CB0}$	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	$V_{CB0}$	$I_c = 100 \mu\text{A}, I_E = 0$	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	$I_{CB0}$	$V_{CB} = 20\text{V}, I_E = 0$			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

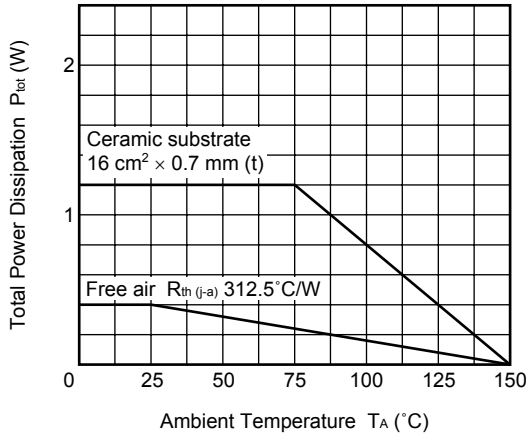
Note.1: Pulse measurement:  $PW \leq 350 \mu\text{s}$ , Duty Cycle  $\leq 2\%$

#### ■ Classification of $h_{FE}$

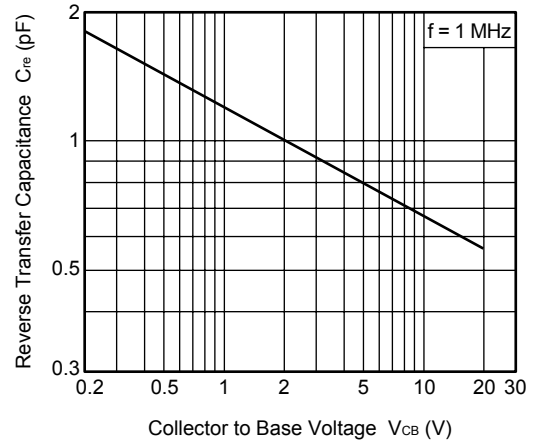
Type	2SC3357-F	2SC3357-E
Range	80-160	125-250
Marking	RF	RE

### ■ Typical Characteristics

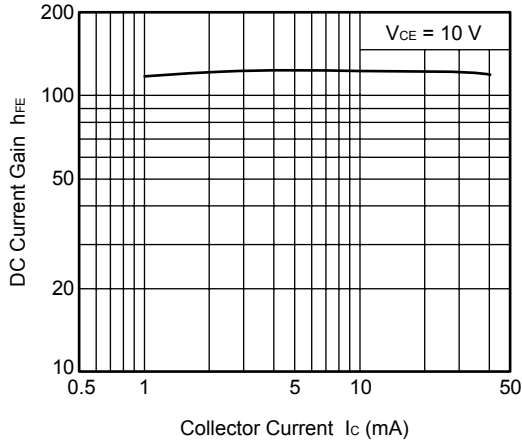
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



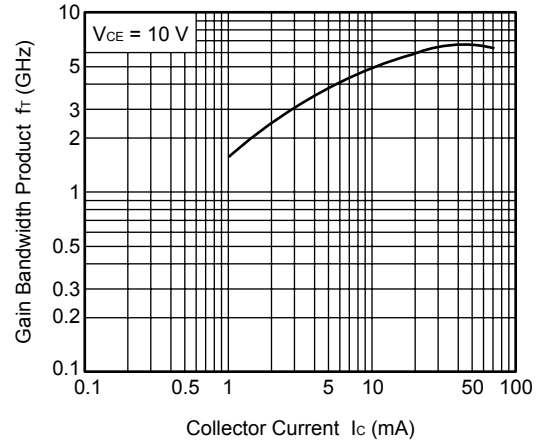
REVERSE TRANSFER CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



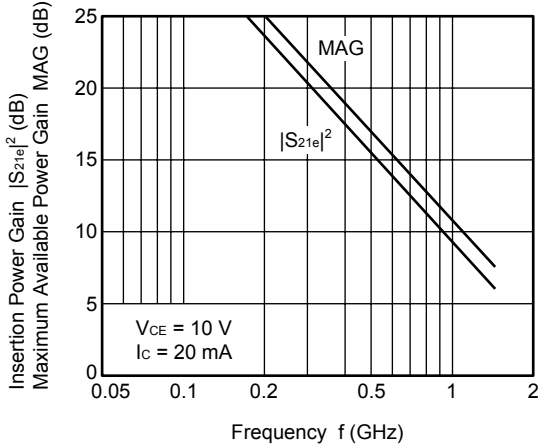
DC CURRENT GAIN vs. COLLECTOR CURRENT



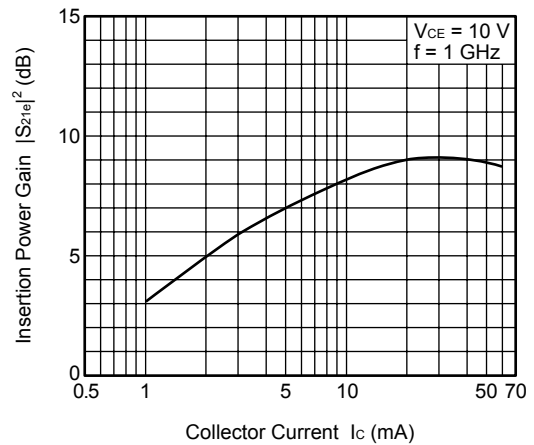
GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



INSERTION POWER GAIN, MAG vs. FREQUENCY

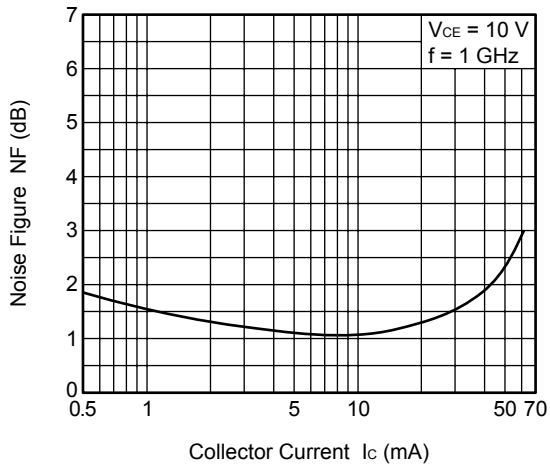


INSERTION POWER GAIN vs. COLLECTOR CURRENT

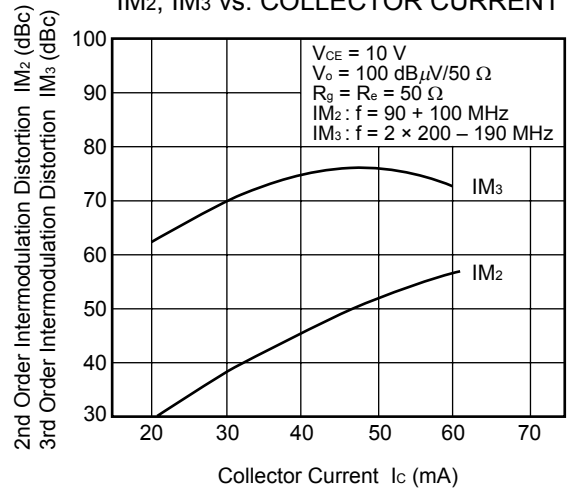


■ Typical Characteristics

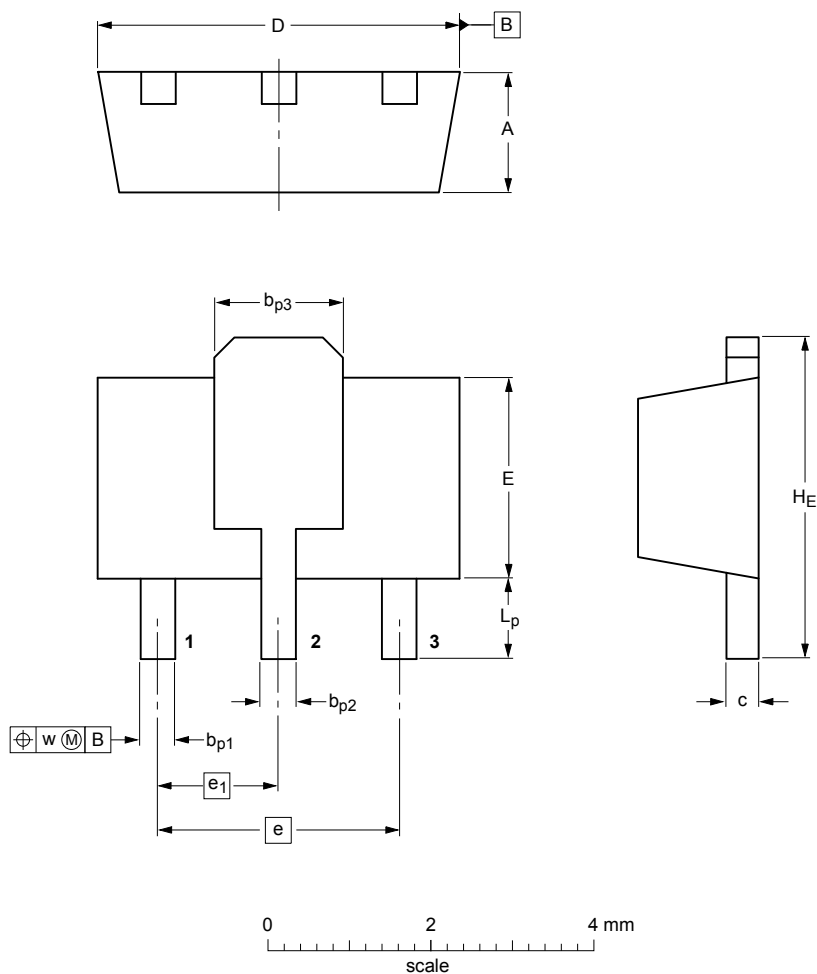
NOISE FIGURE vs.  
COLLECTOR CURRENT



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



■ SOT-89



**DIMENSIONS (mm are the original dimensions)**

UNIT	A	b <sub>p1</sub>	b <sub>p2</sub>	b <sub>p3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	w
mm	1.6	0.48	0.53	1.8	0.44	4.6	2.6	3.0	1.5	4.25	1.2	0.13
	1.4	0.35	0.40	1.4	0.23	4.4	2.4			3.75	0.8	