

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	

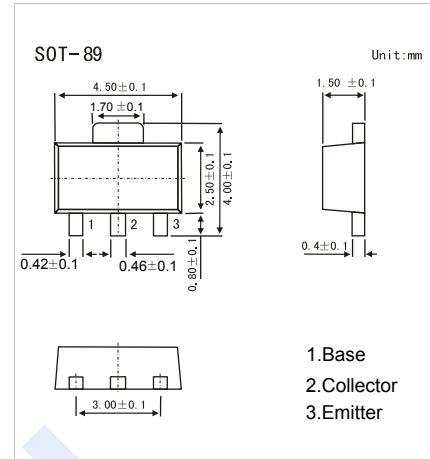
■ Electrical Characteristics $T_a = 25^\circ\text{C}$

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	μA
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}

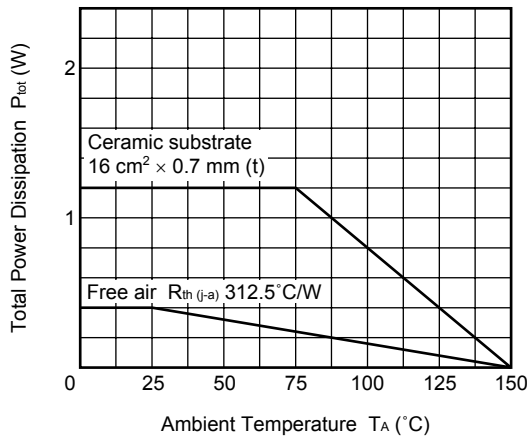
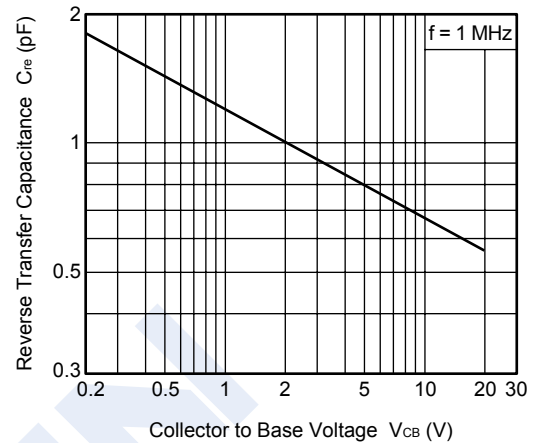
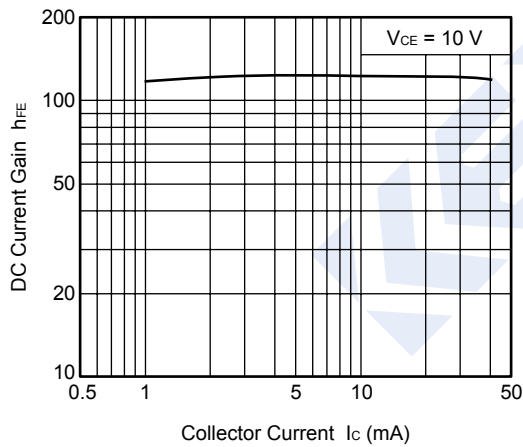
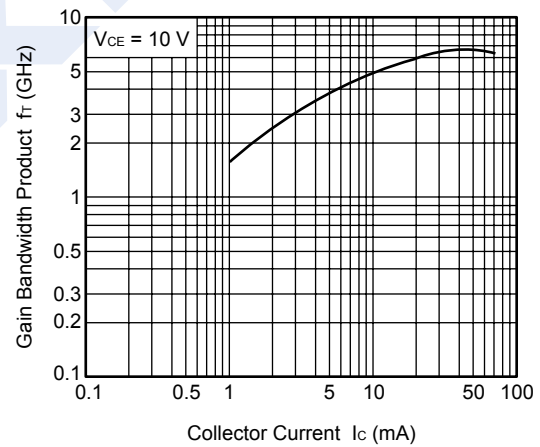
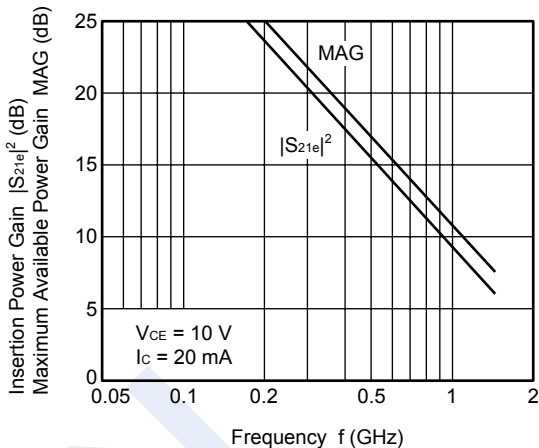
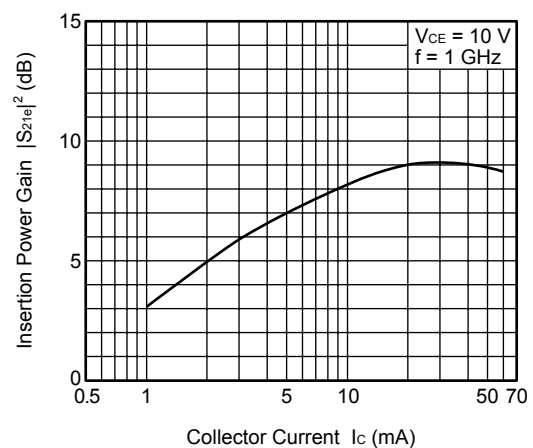
Type	2SC3357-H	2SC3357-F	2SC3357-E
Range	50-100	80-160	125-250
Marking	RH	RF	RE



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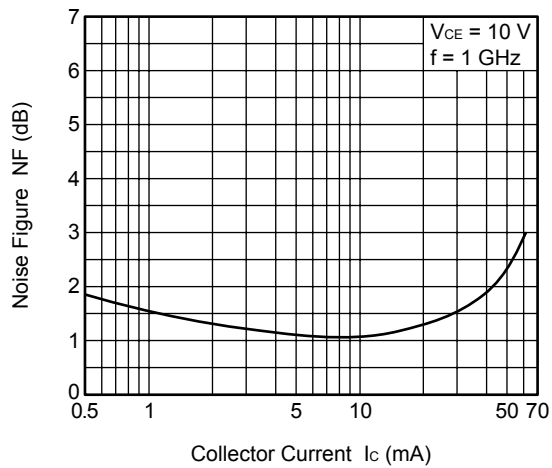
■ Typical Characteristics

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

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■ Typical Characteristics

NOISE FIGURE vs.
COLLECTOR CURRENTIM₂, IM₃ vs. COLLECTOR CURRENT