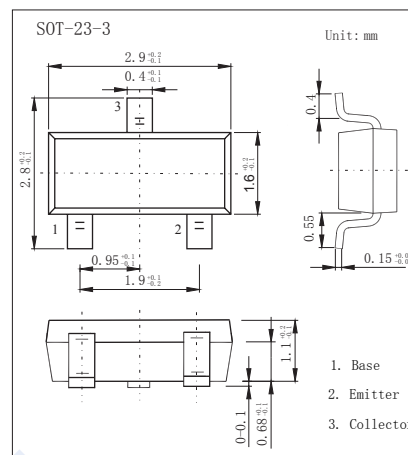


## NPN Transistors

### 2SC3356



#### Features

- Low noise and high gain.

NF = 1.1 dB Typ.,  $G_a = 11$  dB Typ. @ $V_{CE} = 10$  V,  $I_c = 7$  mA,  $f = 1.0$  GHz

- High power gain.

MAG = 13 dB Typ. @ $V_{CE} = 10$  V,  $I_c = 20$  mA,  $f = 1.0$  GHz

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

Parameter	Symbol	Rating	Unit
Collector to base voltage	$V_{CBO}$	20	V
Collector to emitter voltage	$V_{CEO}$	12	V
Emitter to base voltage	$V_{EBO}$	3.0	V
Collector current (DC)	$I_c$	100	mA
Total power dissipation	$P_{tot}$	200	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-65 to +150	$^\circ\text{C}$

#### 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	$V_{CEO}$	$I_c = 1$ 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	$I_{CBO}$	$V_{CB} = 10$ V, $I_E = 0$			1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 3$ V, $I_c = 0$			1	
Collector-emitter saturation voltage *	$V_{CE(sat)}$	$I_c = 50$ mA, $I_B = 5$ mA			0.4	V
Base - emitter saturation voltage *	$V_{BE(sat)}$	$I_c = 50$ mA, $I_B = 5$ mA			1.2	
DC current gain *	$h_{FE}$	$V_{CE} = 10$ V, $I_c = 20$ mA	50		400	
Insertion power gain	$ S_{21e} ^2$	$V_{CE} = 10$ V, $I_c = 20$ mA, $f = 1$ GHz		11.5		dB
Noise figure	NF	$V_{CE} = 10$ V, $I_c = 7$ mA, $f = 1$ GHz		1.1	2	
Reverse transfer capacitance	$C_{re}$	$V_{CB} = 10$ V, $I_E = 0$ , $f = 1$ MHz		0.55	1	pF
Transition frequency	$f_r$	$V_{CE} = 10$ V, $I_c = 20$ mA		7		GHz

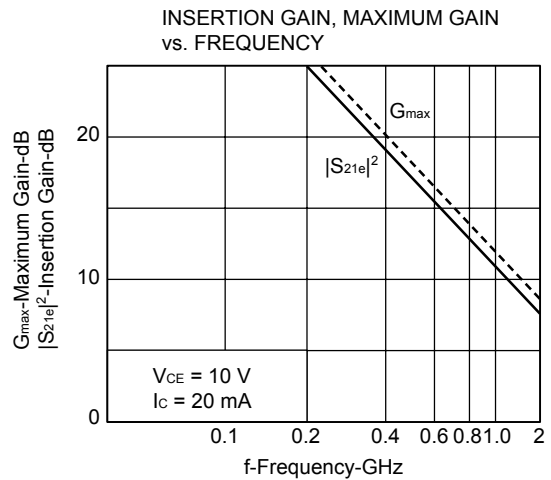
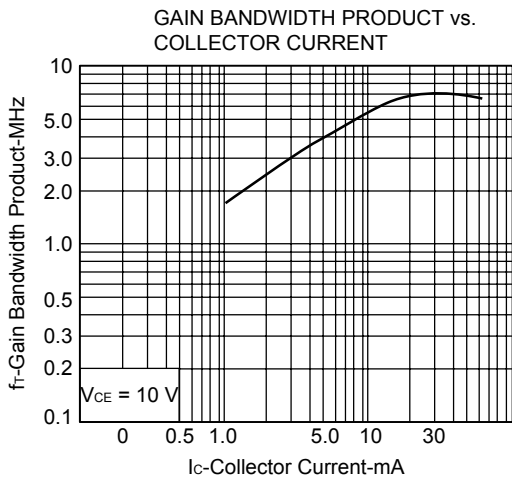
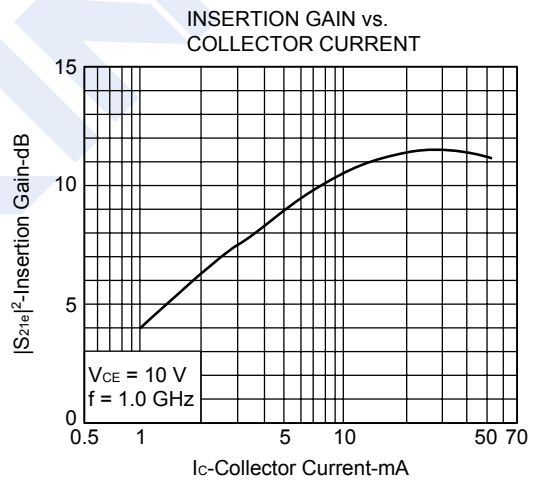
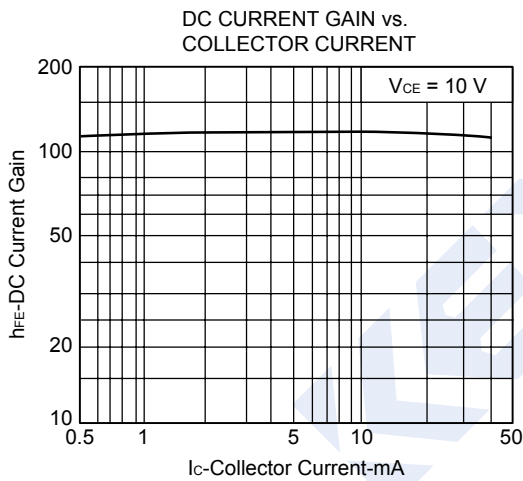
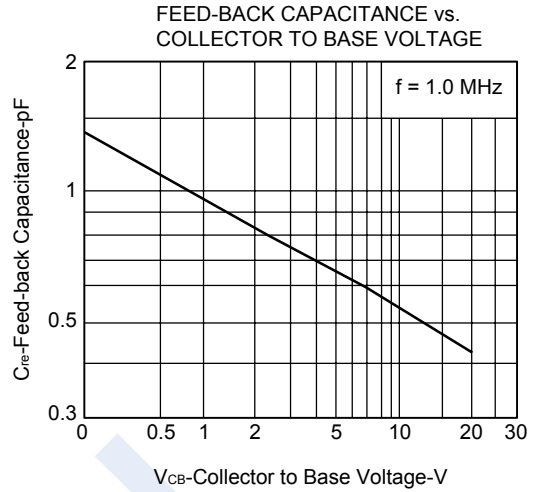
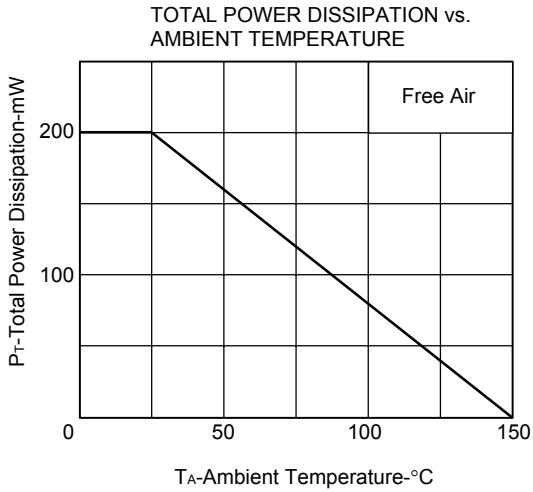
\*. Pulse measurement:  $PW \leq 350 \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

#### hFE Classification

Type	2SC3356-R23	2SC3356-R24	2SC3356-R25	2SC3356-R26
Range	50-100	80-160	125-250	250-400
Marking	R23	R24	R25	R26

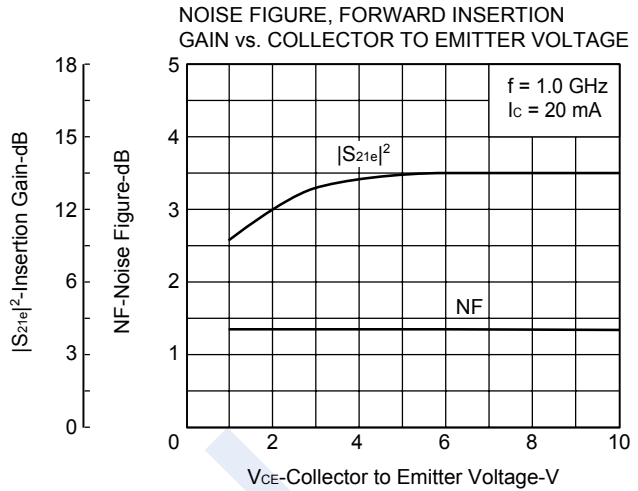
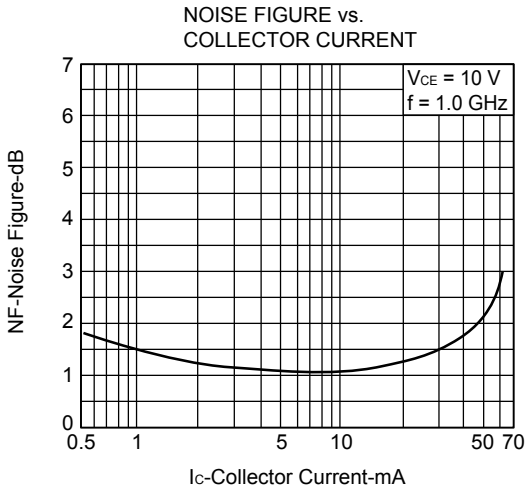
# 2SC3356

## Typical Characteristics

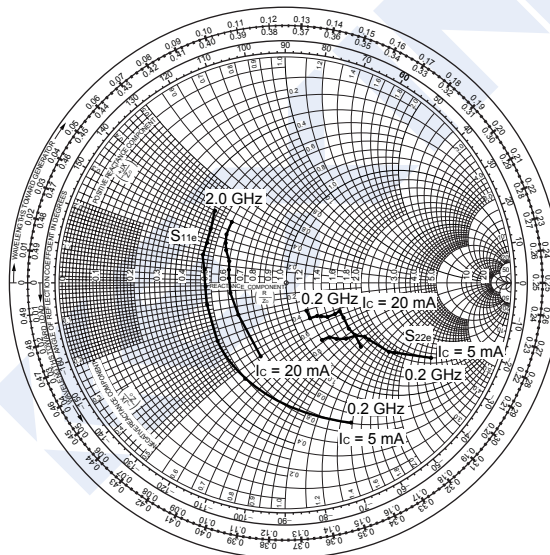


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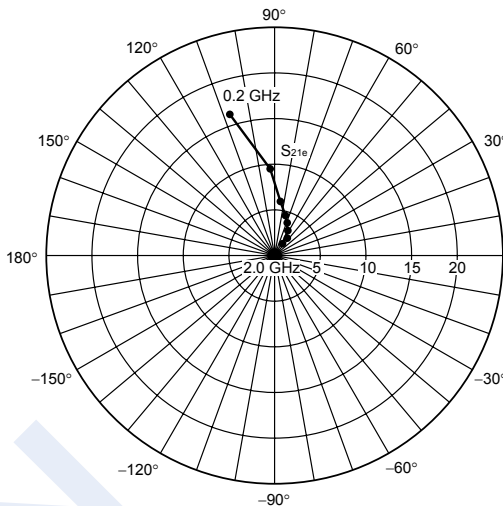
■ Typical Characteristics



S<sub>11e</sub>, S<sub>22e</sub>-FREQUENCY  
CONDITION  $V_{CE} = 10\text{ V}$   
200 MHz Step



S<sub>21e</sub>-FREQUENCY  
CONDITION  $V_{CE} = 10\text{ V}$   
 $I_c = 20\text{ mA}$



S<sub>12e</sub>-FREQUENCY  
CONDITION  $V_{CE} = 10\text{ V}$   
 $I_c = 20\text{ mA}$

