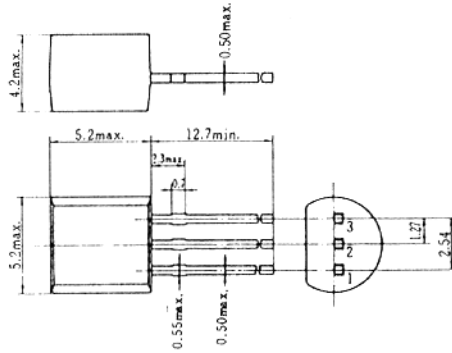


## 2SC454

SILICON NPN EPITAXIAL  
HIGH FREQUENCY AMPLIFIER, MIXER



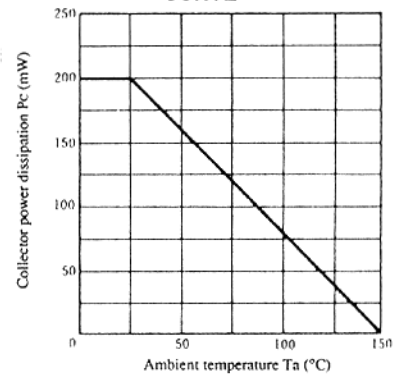
(JEDEC TO-92)

1. Emitter
  2. Collector
  3. Base
- (Dimensions in mm)

### ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Item	Symbol	2SC454	Unit
Collector to base voltage	V <sub>CB0</sub>	30	V
Collector to emitter voltage	V <sub>CEO</sub>	30	V
Emitter to base voltage	V <sub>EBO</sub>	5	V
Collector current	I <sub>C</sub>	100	mA
Collector power dissipation	P <sub>C</sub>	200	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>sig</sub>	-55 to +150	°C

### MAXIMUM COLLECTOR DISSIPATION CURVE



### ■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

Item	Symbol	Test Condition	min.	typ.	max.	Unit
Collector to base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 10μA, I <sub>E</sub> = 0	30	—	—	V
Collector to emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = 1mA, R <sub>BE</sub> = ∞	30	—	—	V
Emitter to base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = 10μA, I <sub>C</sub> = 0	5	—	—	V
Collector cutoff current	I <sub>CBO</sub>	V <sub>CB</sub> = 18V, I <sub>E</sub> = 0	—	—	0.5	μA
Emitter cutoff current	I <sub>EBO</sub>	V <sub>EB</sub> = 2V, I <sub>C</sub> = 0	—	—	0.5	μA
DC current transfer ratio	h <sub>FE</sub> *	V <sub>CE</sub> = 12V, I <sub>C</sub> = 2mA	100	—	500	
Base to emitter voltage	V <sub>BE</sub>	V <sub>CE</sub> = 12V, I <sub>C</sub> = 2mA	—	0.63	0.75	V
Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 10mA, I <sub>B</sub> = 1mA	—	—	0.2	V
Gain bandwidth product	f <sub>T</sub>	V <sub>CE</sub> = 12V, I <sub>C</sub> = 2mA	—	230	—	MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz	—	—	3.5	pF
Noise figure	NF	V <sub>CE</sub> = 6V, I <sub>C</sub> = 0.1mA, f = 1kHz, R <sub>g</sub> = 500Ω	—	—	25	dB
IF power gain	IFG	V <sub>CE</sub> = 12V, I <sub>C</sub> = 1mA, f = 455kHz, R <sub>g</sub> = 1.5kΩ, R <sub>L</sub> = 40kΩ	—	35	—	dB

\* The 2SC454 is grouped by h<sub>FE</sub> as follows.

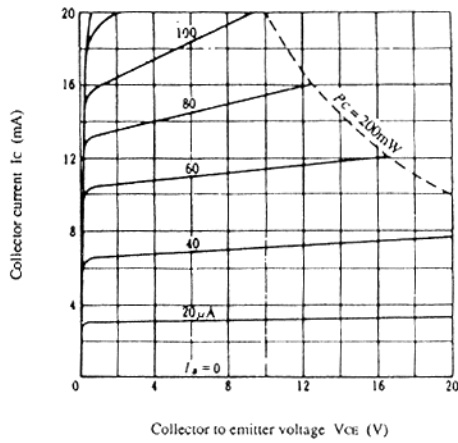
B	C	D
100 to 200	160 to 320	250 to 500

## 2SC454

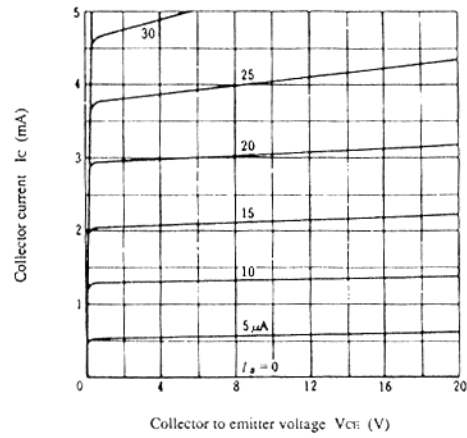
**SMALL SIGNAL y PARAMETERS** ( $V_{CE} = 12\text{ V}$ ,  $I_C = 2\text{ mA}$ , Emitter Common)

Item	Symbol	f	2SC454B	2SC454C	Unit
Input admittance	$y_{ie}$	455kHz	$0.35 + j0.074$	$0.28 + j0.070$	mS
		1MHz	$0.35 + j0.130$	$0.28 + j0.125$	
Reverse transfer admittance	$y_{re}$	455kHz	$-j0.005$	$-j0.005$	mS
		1MHz	$-j0.013$	$-j0.013$	
Forward transfer admittance	$y_{fe}$	455kHz	$66 - j2.43$	$64 - j2.60$	mS
		1MHz	$66 - j4.27$	$64 - j5.7$	
Output admittance	$y_{oe}$	455kHz	$0.006 + j0.02$	$0.007 + j0.022$	mS
		1MHz	$0.006 + j0.047$	$0.007 + j0.049$	

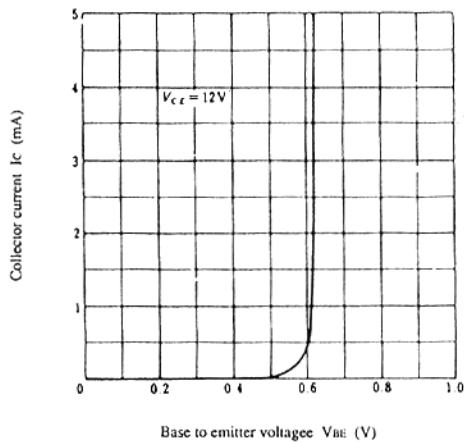
TYPICAL OUTPUT CHARACTERISTICS (1)



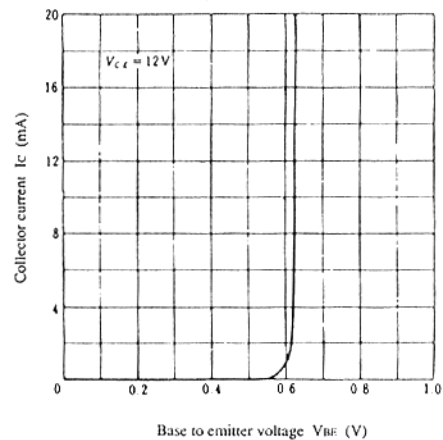
TYPICAL OUTPUT CHARACTERISTICS (2)



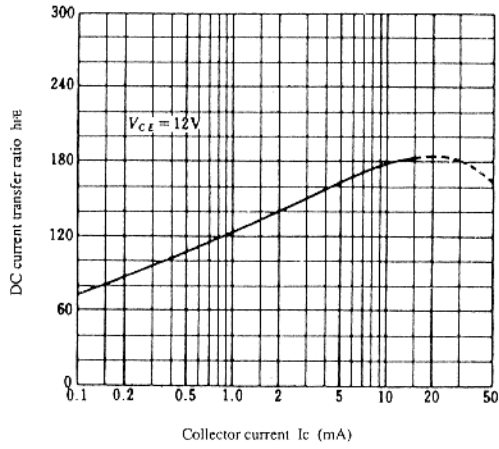
TYPICAL TRANSFER CHARACTERISTICS (1)



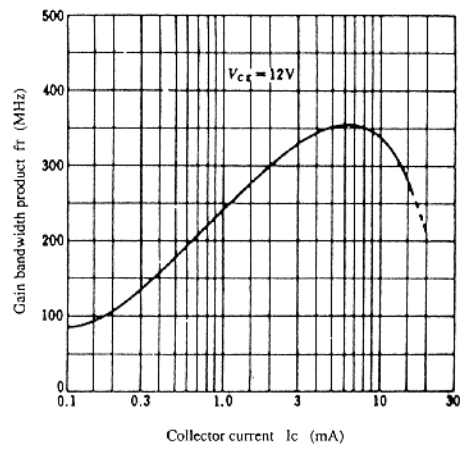
TYPICAL TRANSFER CHARACTERISTICS (2)



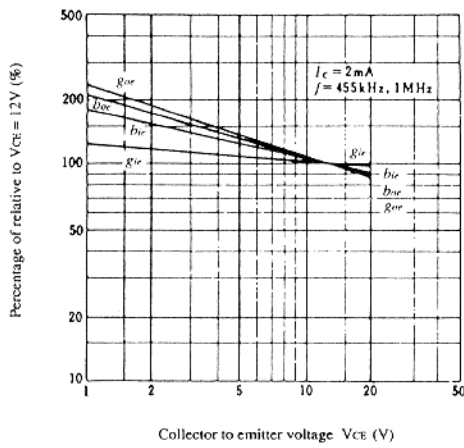
**DC CURRENT TRANSFER RATIO VS. COLLECTOR CURRENT**



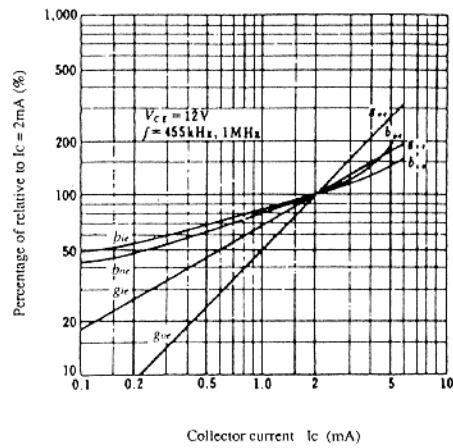
**GAIN BANDWIDTH PRODUCT VS. COLLECTOR CURRENT**



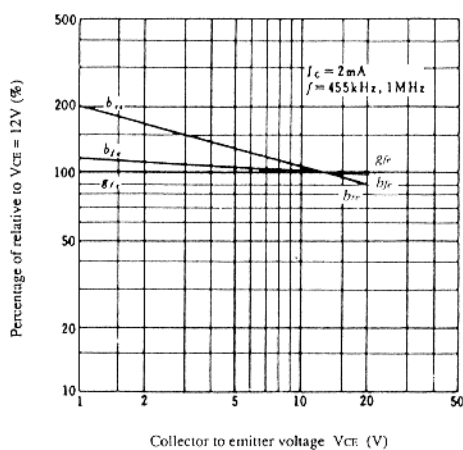
**ADMITTANCE VS. COLLECTOR TO EMITTER VOLTAGE**



**ADMITTANCE VS. COLLECTOR CURRENT**



**TRANSFER ADMITTANCE VS. COLLECTOR TO EMITTER VOLTAGE**



**TRANSFER ADMITTANCE VS. COLLECTOR CURRENT**

