
2SC454

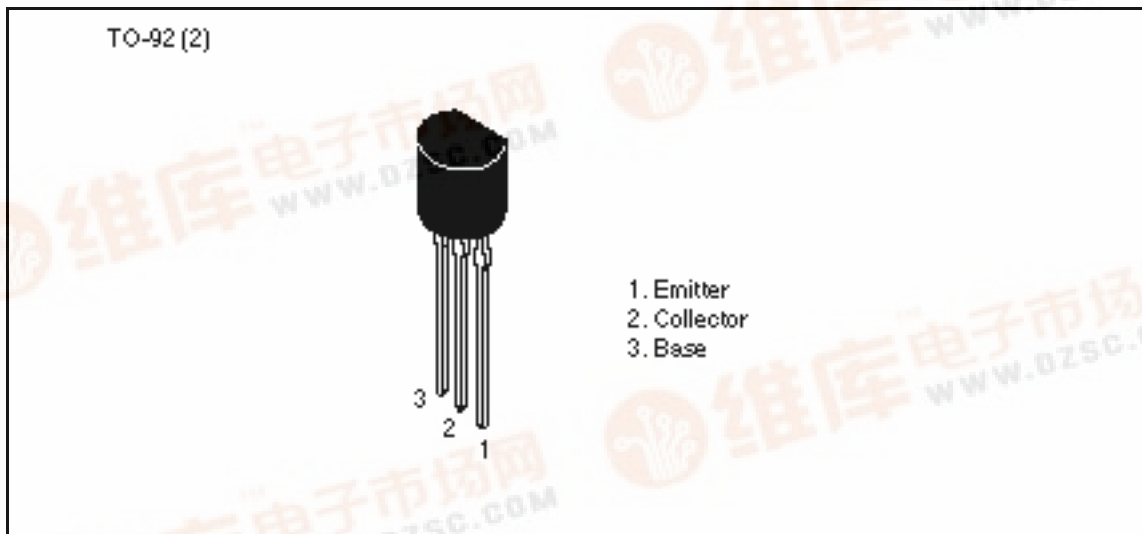
Silicon NPN Epitaxial

HITACHI

Application

High frequency amplifier, mixer

Outline



2SC454

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	30	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA
Collector power dissipation	P_C	200	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

Electrical Characteristics (Ta = 25°C)

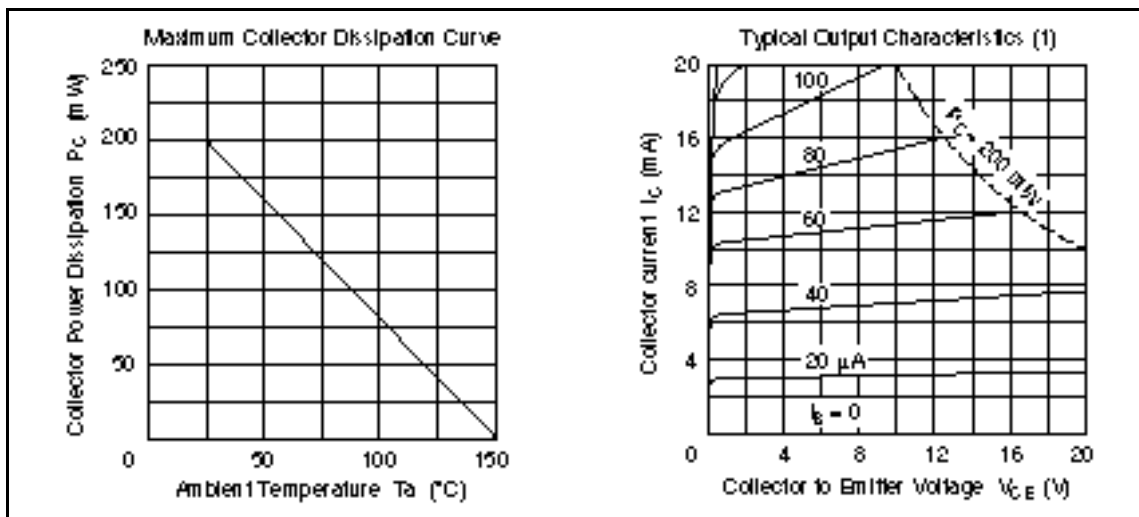
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	30	—	—	V	$I_C = 1 \text{ mA}, R_{BE} =$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 18 \text{ V}, I_E = 0$
Emitter cutoff current	I_{EBO}	—	—	0.5	μA	$V_{EB} = 2 \text{ V}, I_C = 0$
DC current transfer ratio	h_{FE}^{*1}	100	—	500		$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Base to emitter voltage	V_{BE}	—	0.63	0.75	V	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.2	V	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$
Gain bandwidth product	f_T	—	230	—	MHz	$V_{CE} = 12 \text{ V}, I_C = 2 \text{ mA}$
Collector output capacitance	C_{ob}	—	—	3.5	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$
Noise figure	NF	—	—	25	dB	$V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA}, f = 1 \text{ kHz}, R_g = 500$
IF power gain	IFG	—	35	—	dB	$V_{CE} = 12 \text{ V}, I_C = 1 \text{ mA}, f = 455 \text{ kHz}, R_g = 1.5 \text{ k}, R_L = 40 \text{ k}$

Note: 1. The 2SC454 is grouped by h_{FE} as follows.

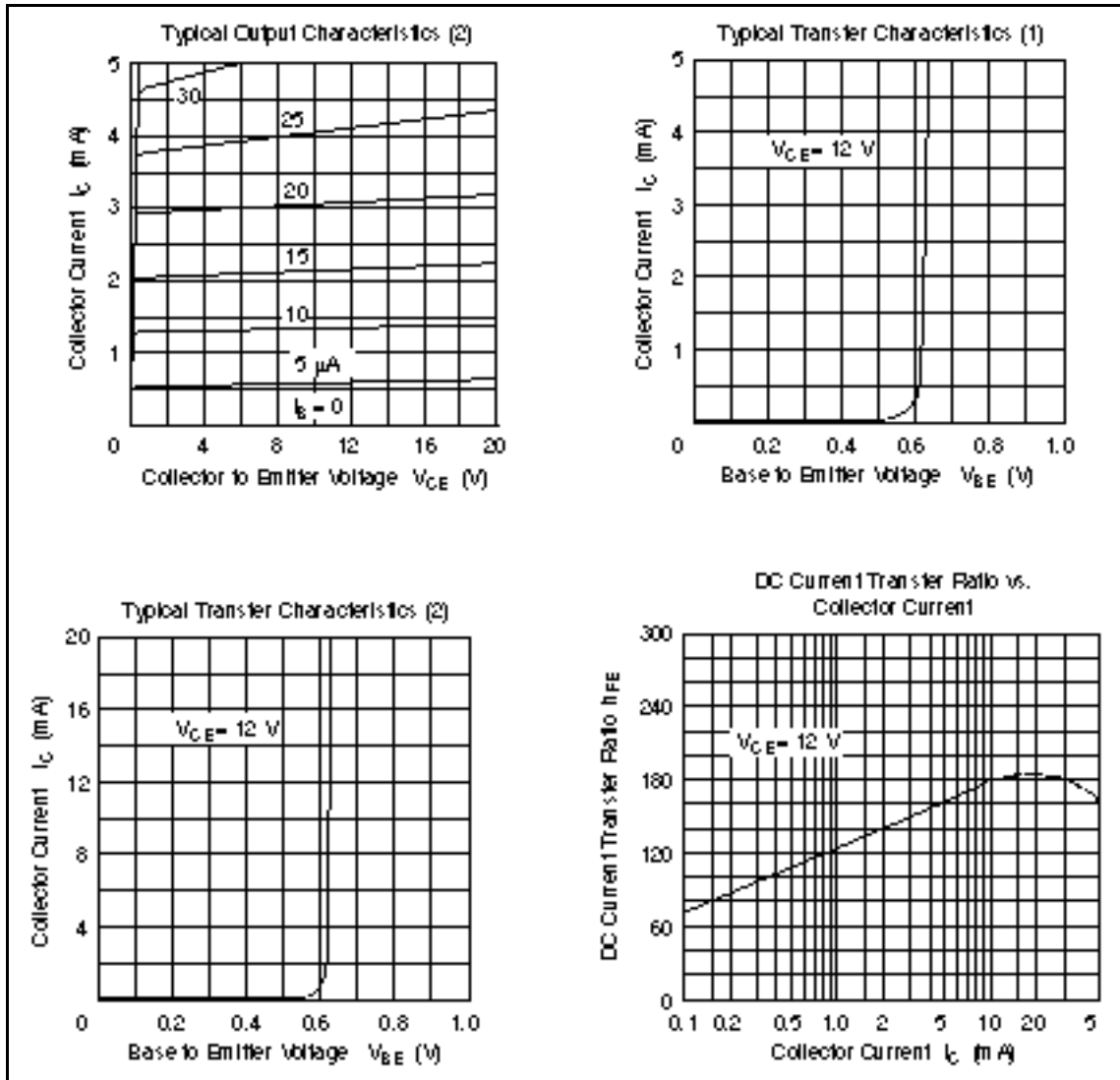
B	C	D
100 to 200	160 to 320	250 to 500

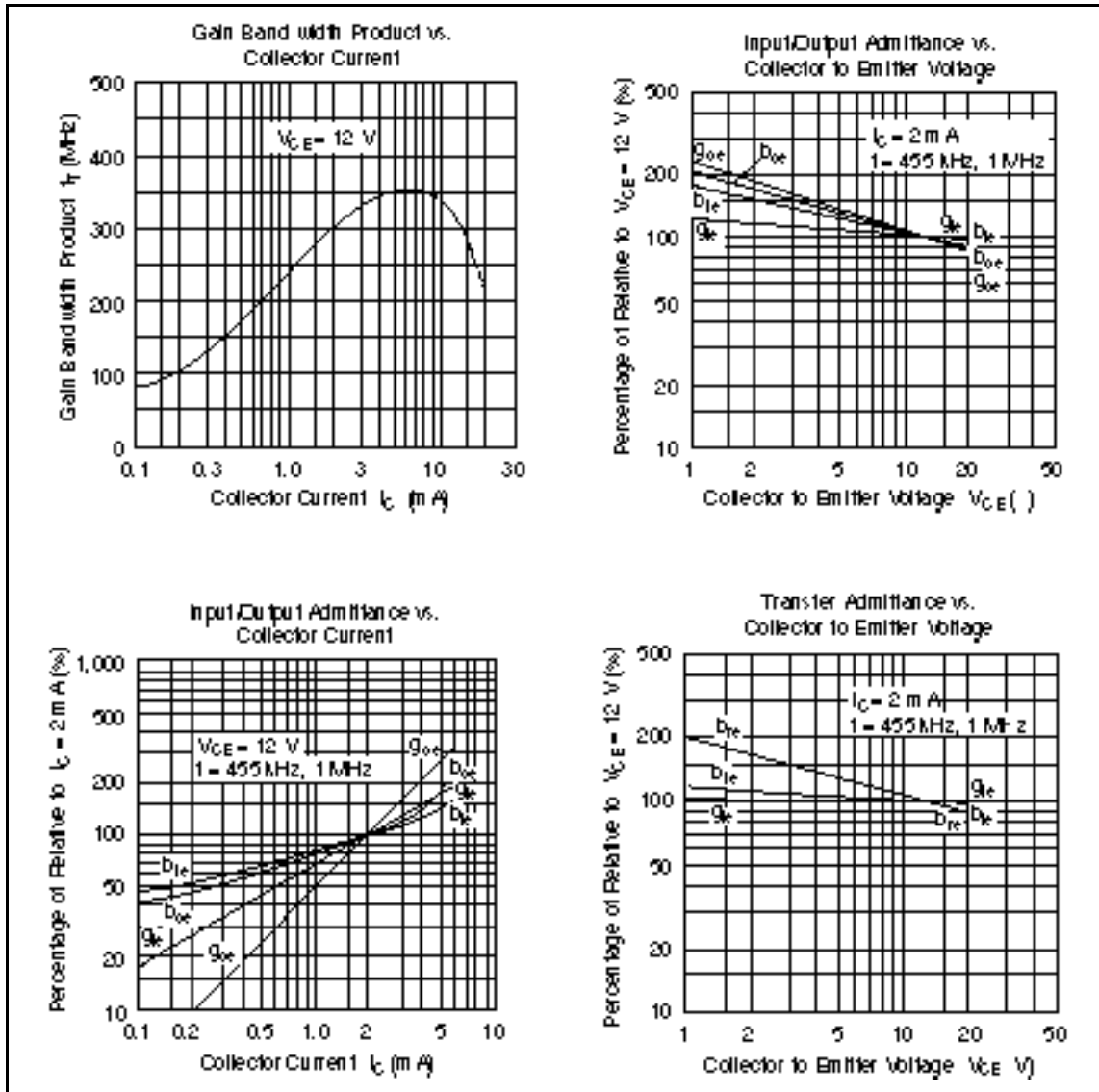
Small Signal y Parameters ($V_{CE} = 12\text{ V}$, $I_C = 2\text{ mA}$, Emitter Common)

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

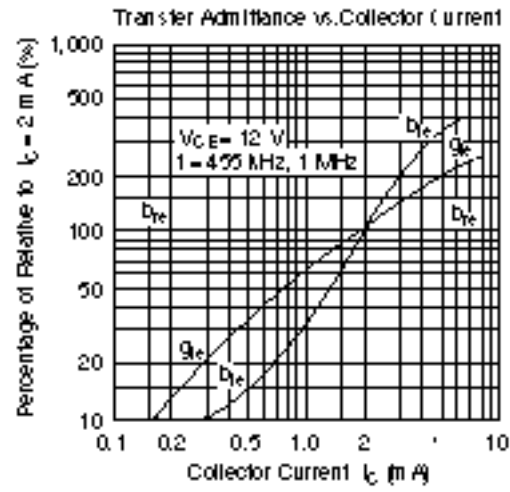


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HITACHI

Hitachi, Ltd.

Semiconductor & IC Div.

Nippon Bldg., 2-6-2, Ohite-machi, Chiyoda-ku, Tokyo 100, Japan

Tel: Tokyo (03) 3270-2111

Fax: (03) 3270-5109

For further information write to:

Hitachi America, Ltd.

Semiconductor & IC Div.

2000 Sierra Point Parkway

Brabens, CA 94005-4835

U.S.A.

Tel: 415-589-8300

Fax: 415-589-4207

Hitachi Europe GmbH

Electronic Components Group

Continental Europe

Dornacher Straße 3

D-85522 Feldkirchen

München

Tel: 089-9 24 80-0

Fax: 089-9 29 30 00

Hitachi Europe Ltd.

Electronic Components Div.

Northern Europe Headquarters

Willisbrook Park

Lower Cookham Road

Maidenhead

Berkshire SL6 6YU

United Kingdom

Tel: 0628-585000

Fax: 0628-778322

Hitachi Asia Pte. Ltd.

45 Collyer Quay #20-00

Hitachi Tower

Singapore 0104

Tel: 535-2100

Fax: 535-1533

Hitachi Asia (Hong Kong) Ltd.

Unit 705, North Tower,

World Finance Centre

Harbour City, Canton Road

Tsim Sha Tsui, Kowloon

Hong Kong

Tel: 27389218

Fax: 27308074