

<Transistor>

2SC5396

For FM • AM Radio High Frequency Amplify Application
Silicon NPN Epitaxial Type Micro(Frame type)

DESCRIPTION

2SC5396 is a silicon NPN epitaxial type transistor. It is designed for high frequency amplify application.

FEATURE

- High f_T at low current range ,small $C_{crb'b}$
 $f_T=470\text{MHz typ (Ic=1mA)}$
 $C_{crb'b}=15\text{pS typ (Ic=1mA)}$
- Low noise figure $NF=2.5\text{dB typ (fT=100MHz)}$

APPLICATION

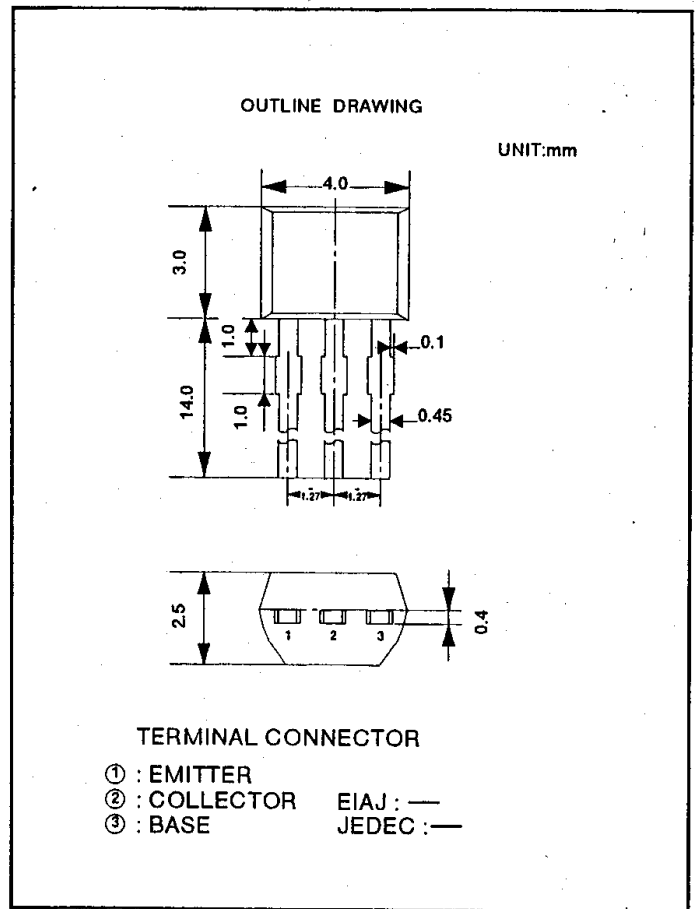
FM radio tuner ,VHF band amplify.

MAXIMUM RATINGS (Ta=25°C)

SYMBOL	PARAMETER	RATINGS	UNIT
Vcbo	Collector to Base voltage	25	V
Vebo	Emitter to Base voltage	3	V
Vceo	Collector to Emitter voltage	12	V
Ic	Collector current	20	mA
Pc	Collector dissipation (Ta=25°C)	240	mW
Tj	Junction temperature	+125	°C
Tstg	Storage temperature	-55to+125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

SYMBOL	PARAMETER	TESTCONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
Icbo	Collector cut off current	Vcb=12V, Ie=0			0.5	μA
Iebo	Emitter cut off current	Veb=2V, Ic=0			1.0	μA
hFE *	DC forward current gain	Vce=6V, Ic=1mA	35		180	—
fT	Gain band width product	Vce=6V, Ie=-1mA	400	470		MHz
Cob	Collector output capacitance	Vcb=6V, Ie=0, f=1MHz		1.4	2.0	pF
Ccrb'b	Base time constant	Vcb=6V, Ie=-1mA, f=31.8MHz		15	25	pS
NF	Noise figure	Vce=6V, Ie=-1mA, f=100MHz, Rg=50Ω		2.5		dB
MAG	Max effective power gain	Vce=6V, Ie=-1mA, f=100MHz		37		dB



ITEM	B	C	D
hFE	35~70	55~110	90~180

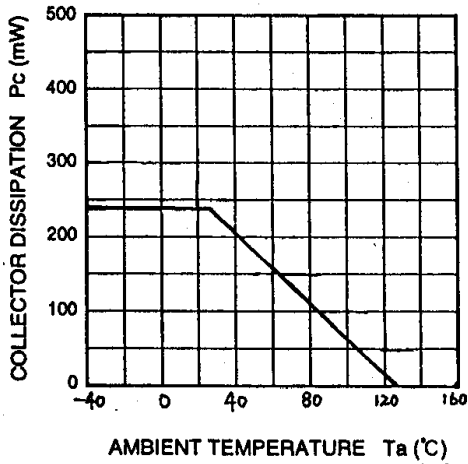
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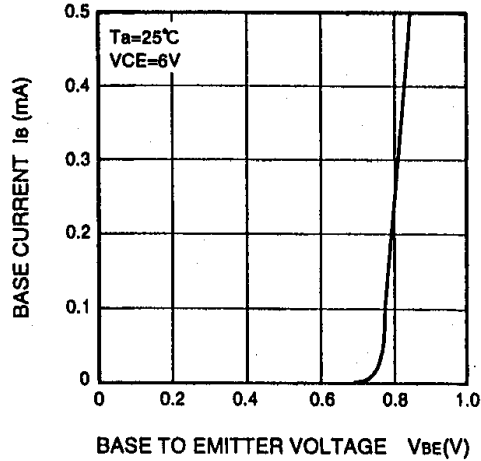
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TYPICAL CHARACTERISTICS

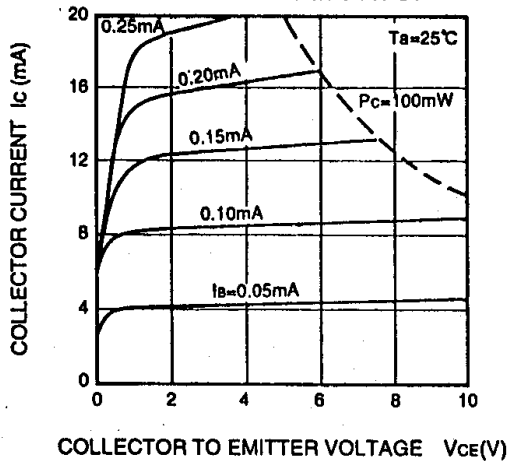
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



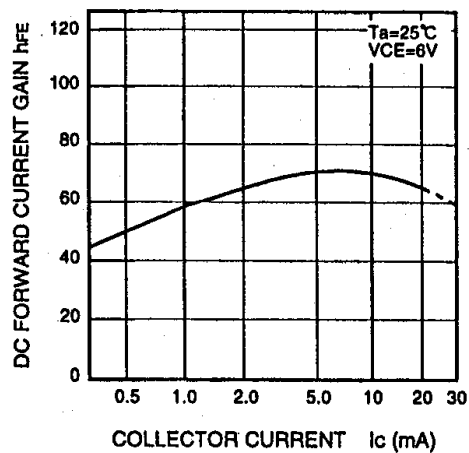
COMMON EMITTER INPUT



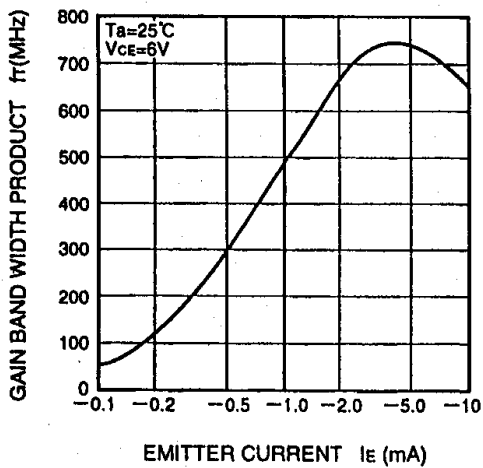
COMMON EMITTER OUTPUT



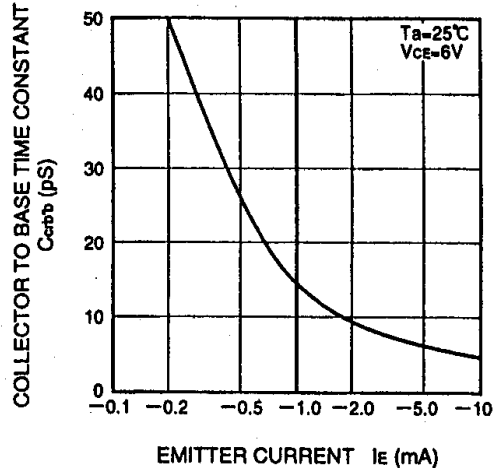
DC FORWARD CURRENT GAIN VS. COLLECTOR CURRENT



GAIN BAND WIDTH PRODUCT VS. EMITTER CURRENT



COLLECTOR TO BASE TIME CONSTANT VS. EMITTER CURRENT



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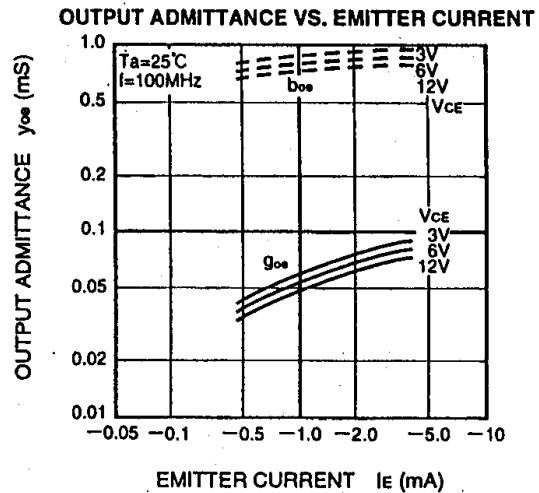
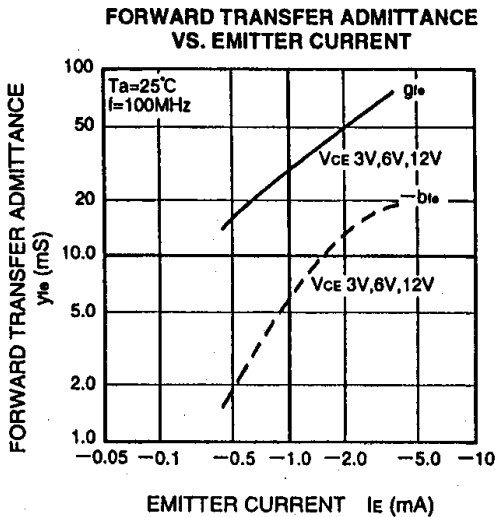
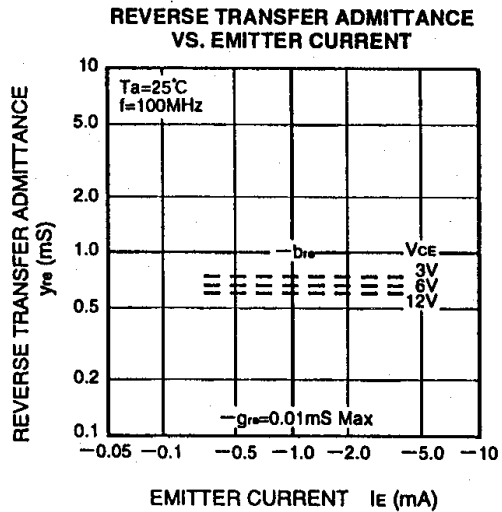
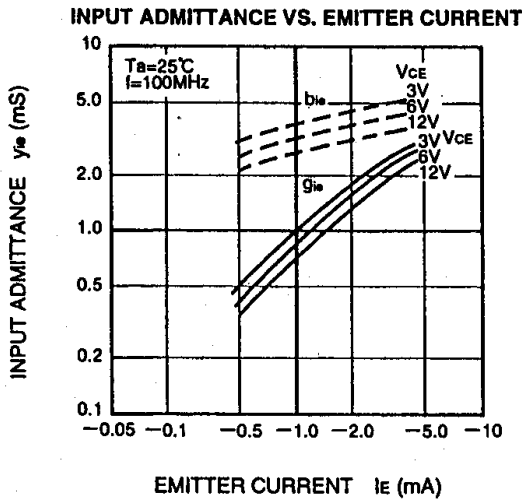
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COMMON EMITTER, 100MHz, y PARAMETER (TYPICAL VALUE)

Symbol	Test conditions	Limits	Unit
y_{ie}	g_{ie}	0.9	mS
	b_{ie}	3.3	
y_{re}	$-g_{re}$	0.01 Max	mS
	$-b_{re}$	0.7	
y_{fe}	g_{fe}	30	mS
	$-b_{fe}$	6.0	
y_{oe}	g_{oe}	0.05	mS
	b_{oe}	0.9	

Test conditions: $T_a=25^\circ\text{C}$, $V_{CE}=6\text{V}$, $I_E=-1\text{mA}$, $f=100\text{MHz}$

COMMON EMITTER, 100MHz y PARAMETER



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