

**FOR HIGH FREQUENCY AMPLIFY, MEDIUM FREQUENCY AMPLIFY APPLICATION
SILICON NPN EPITAXIAL TYPE**

DESCRIPTION

2SC3053 is a super mini silicon NPN epitaxial type transistor designed for high frequency amplify, oscillating, frequency exchange, medium frequency amplify application.

FEATURE

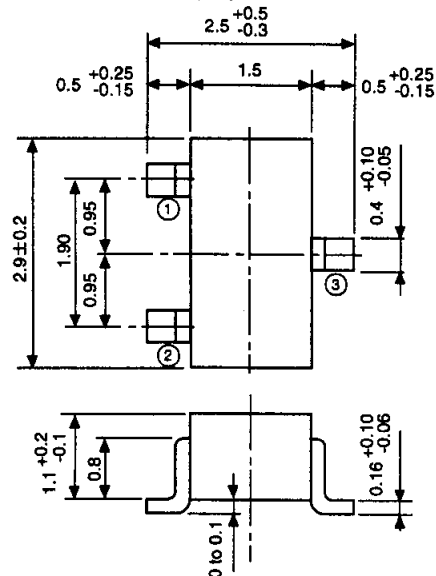
- High gain (@10.7MHz), MAG=45dB typ
- Low noise (@10.7MHz), NF=3.0dB typ
- Low yre (@10.7MHz), yre=-j0.11mS typ
- Super mini package for easy mounting

APPLICATION

High frequency amplify, oscillating, frequency exchange, medium frequency amplify for small communication machine, FM/AM radio.

OUTLINE DRAWING

Unit:mm



TERMINAL CONNECTOR

- ① : BASE
- ② : EMITTER
- ③ : COLLECTOR

EIAJ : SC-59

JEDEC : TO-236 resemblance

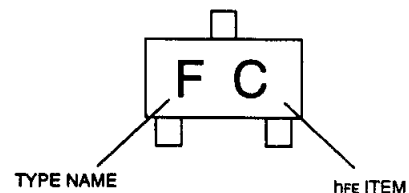
Note)

The dimension without tolerance represent central value.

MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V _{CB0}	Collector to Base voltage	30	V
V _{EB0}	Emitter to Base voltage	4	V
V _{CE0}	Collector to Emitter voltage	25	V
I _C	Collector current	30	mA
P _C	Collector dissipation(Ta=25°C)	150	mW
T _J	Junction temperature	+125	°C
T _{stg}	Storage temperature	-55 to +125	°C

MARKING



ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I _{CB0}	Collector cut off current	V _{CB} =25V, I _E =0			1	μA
I _{EB0}	Emitter cut off current	V _{EB} =4V, I _C =0			1	μA
h _{FE} *	DC forward current gain	V _{CE} =6V, I _C =1mA	35		180	—
V _{CE(sat)}	C to E saturation voltage	I _C =10mA, I _B =1mA		0.1	0.3	V
f _T	Gain band width product	V _{CE} =6V, I _E =-1mA	150	200		MHz
C _{ob}	Collector output capacitance	V _{CB} =6V, I _E =0, f=1MHz		2.0	2.7	pF
C _{eb'}	Base time constant	V _{CB} =6V, I _E =-1mA, f=31.8MHz		20	60	μs
NF	Noise figure	V _{CE} =6V, I _E =-1mA, f=10.7MHz, R _G =500Ω		3.0		dB

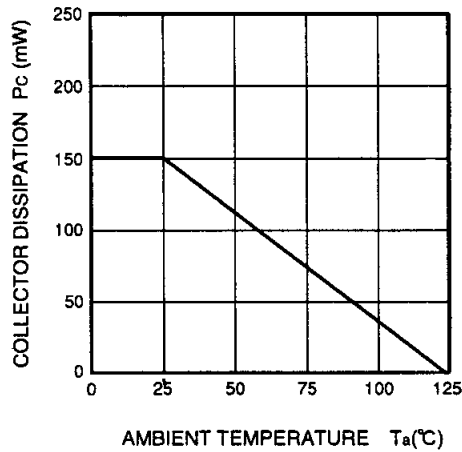
* : It shows h_{FE} classification in right table.

Item	B	C	D
h _{FE}	35 to 70	55 to 110	90 to 180
Marking	FB	FC	FD

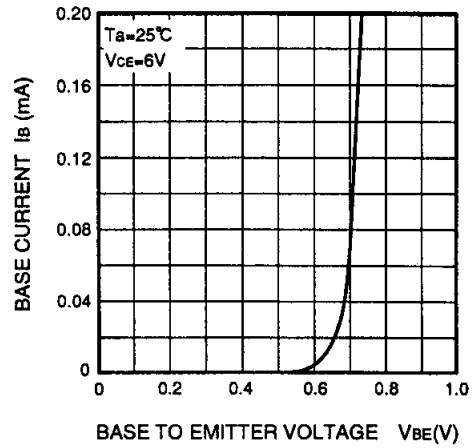
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TYPICAL CHARACTERISTICS

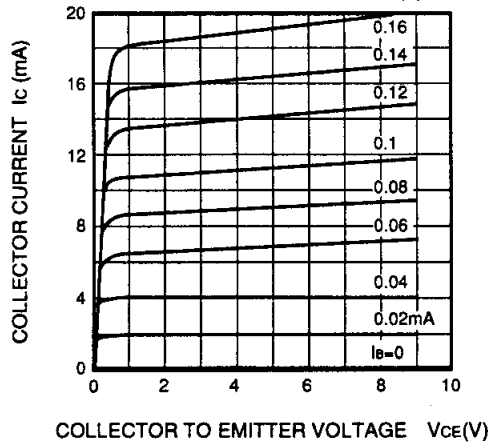
**COLLECTOR DISSIPATION VS.
AMBIENT TEMPERATURE**



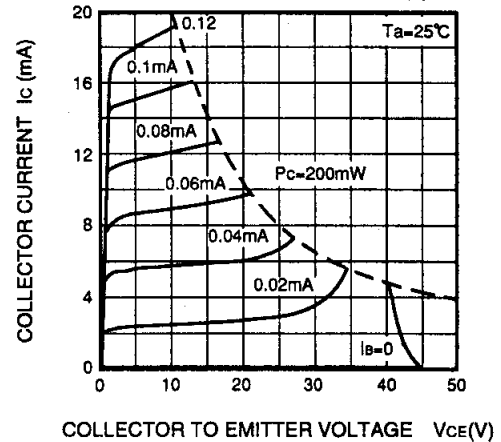
COMMON EMITTER INPUT



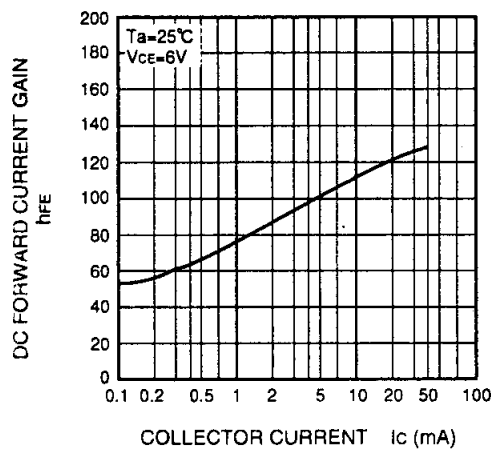
COMMON EMITTER OUTPUT (1)



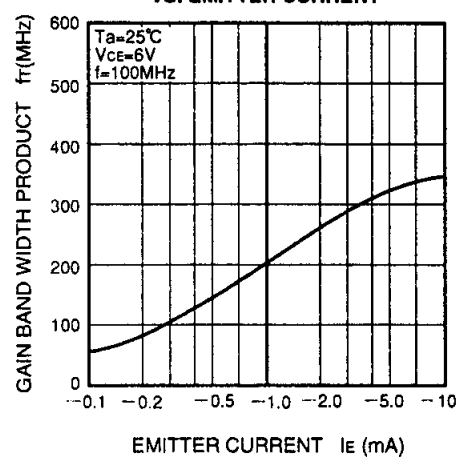
COMMON EMITTER OUTPUT (2)



**DC FORWARD CURRENT GAIN
VS. COLLECTOR CURRENT**



**GAIN BAND WIDTH PRODUCT
VS. EMITTER CURRENT**



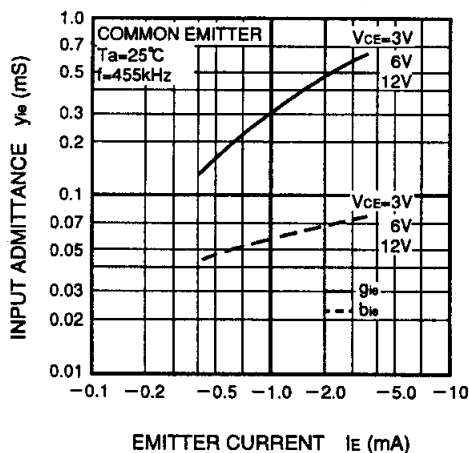
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COMMON EMITTER, y PARAMETER (TYPICAL VALUE)

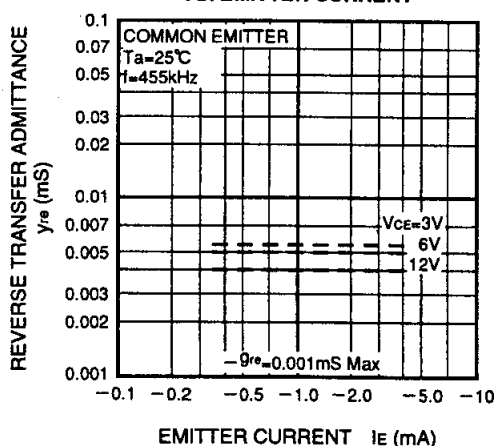
Test conditions		f=455kHz VCE=6V IE=-1mA	f=1MHz VCE=6V IE=-1mA	f=10.7MHz VCE=6V IE=-1mA	f=100MHz VCE=6V IE=-1mA
y Parameter	gie	0.30	0.30	0.38	4.4
	bie	0.06	0.12	1.40	11.0
yre	-gre	0.001Max	0.001Max	0.005Max	0.05Max
	-bre	0.005	0.010	0.11	1.0
yfe	gfe	50	46	37	25
	-bfe	1.0Max	1.0Max	2.8	16
yoe	goe	0.010	0.012	0.03	0.32
	boe	0.011	0.022	0.18	1.3

COMMON EMITTER, 455kHz y PARAMETER

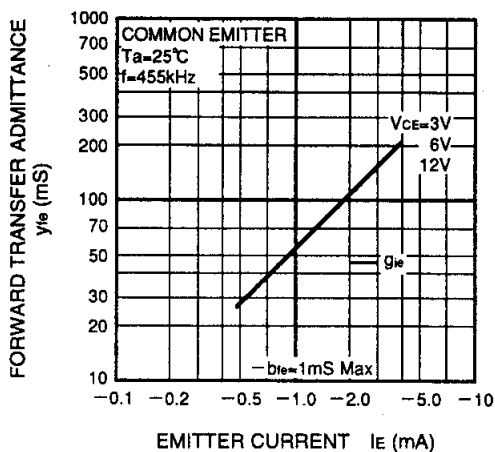
INPUT ADMITTANCE VS.
EMITTER CURRENT



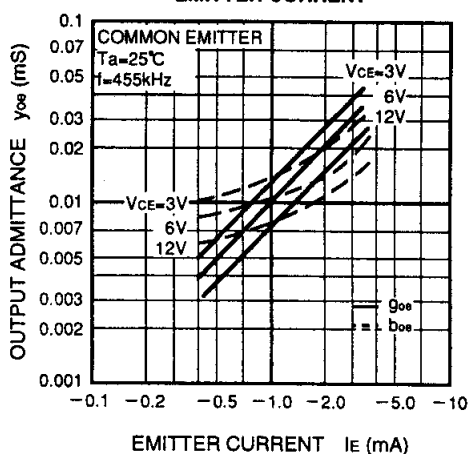
REVERSE TRANSFER ADMITTANCE
VS. EMITTER CURRENT



FORWARD TRANSFER ADMITTANCE
VS. EMITTER CURRENT

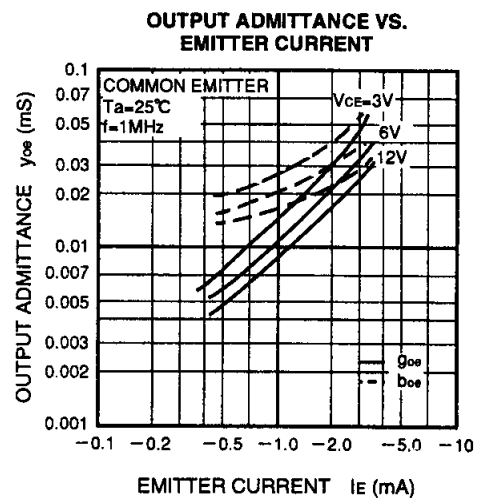
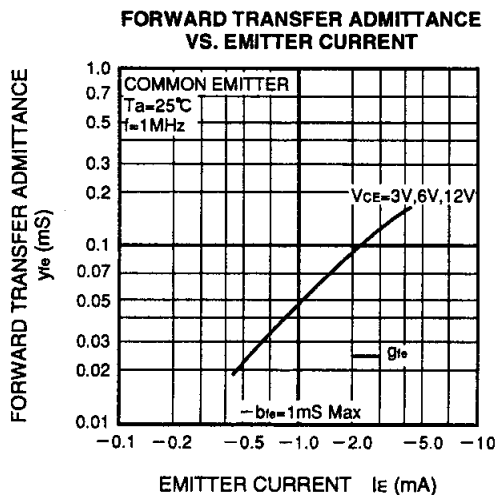
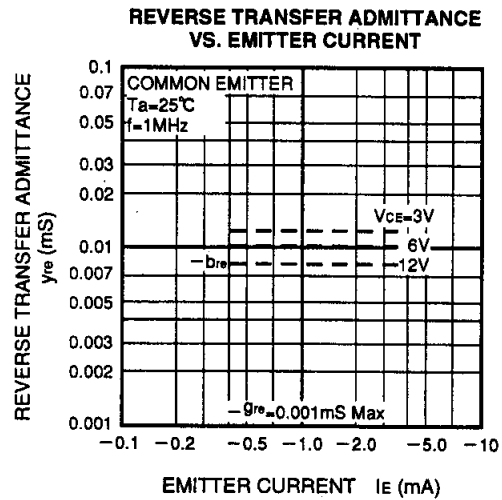
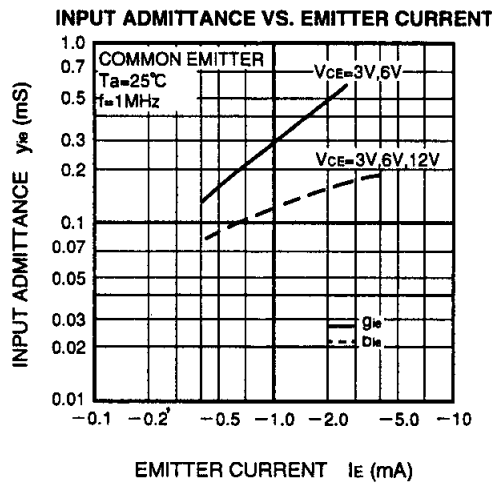


OUTPUT ADMITTANCE VS.
EMITTER CURRENT

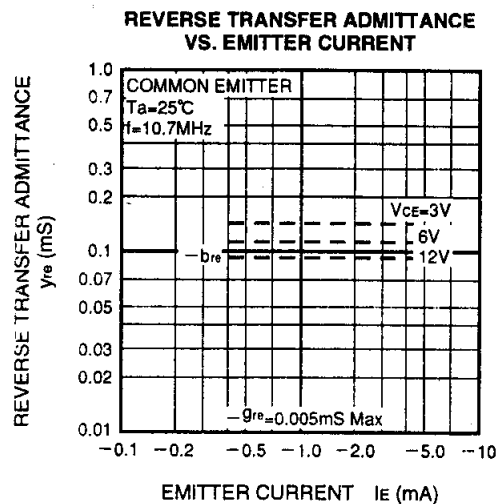
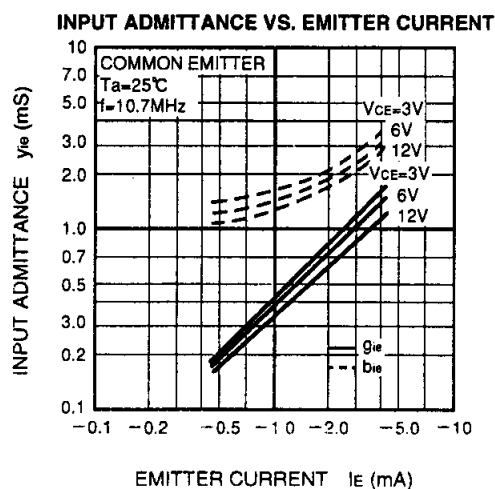


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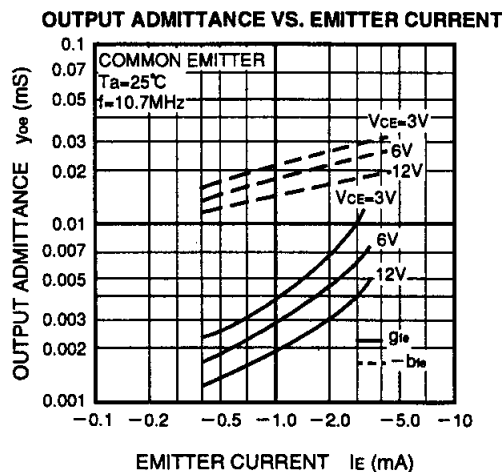
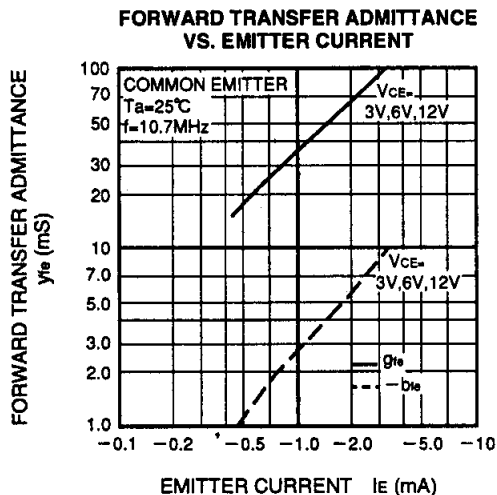
COMMON EMITTER, 1MHz y PARAMETER



COMMON EMITTER, 10.7MHz y PARAMETER



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COMMON Emitter, 100MHz y PARAMETER

