# SILICON TRANSISTOR 2SC3355

# HIGH FREQUENCY LOW NOISE AMPLIFIER NPN SILICON EPITAXIAL TRANSISTOR

## DESCRIPTION

NEC

The 2SC3355 is an NPN silicon epitaxial transistor designed for low noise amplifier at VHF, UHF and CATV band.

It has lange dynamic range and good current characteristic.

#### FEATURES

Low Noise and High Gain

NF = 1.1 dB TYP., Ga = 8.0 dB TYP. @VcE = 10 V, Ic = 7 mA, f = 1.0 GHz NF = 1.1 dB TYP., Ga = 9.0 dB TYP. @Vce = 10 V, Ic = 40 mA, f = 1.0 GHz

High Power Gain

MAG = 11 dB TYP. @Vce = 10 V, Ic = 20 mA, f = 1.0 GHz

#### ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

Collector to Base Voltage	Vсво	20	V
Collector to Emitter Voltage	VCEO	12	V
Emitter to Base Voltage	Vebo	3.0	V
Collector Current	lc	100	mA
Total Power Dissipation	Р⊤	600	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-65 to +150	°C





## ELECTRICAL CHARACTERISTICS (TA = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	Ісво			1.0	μA	$V_{CB} = 10 V, I_E = 0$
Emitter Cutoff Current	Іево			1.0	μA	V <sub>EB</sub> = 1.0 V, Ic = 0
DC Current Gain	hfe	50	120	300		Vce = 10 V, Ic = 20 mA
Gain Bandwidth Product	f⊤		6.5		GHz	Vce = 10 V, Ic = 20 mA
Output Capacitance	Cob		0.65	1.0	pF	Vсв = 10 V, IE = 0, f = 1.0 MHz
Insertion Power Gain	S21e 2		9.5		dB	Vce = 10 V, lc = 20 mA, f = 1.0 GHz
Noise Figure	NF		1.1		dB	Vce = 10 V, lc = 7 mA, f = 1.0 GHz
Noise Figure	NF		1.8	3.0	dB	$V_{CE} = 10 V$ , Ic = 40 mA, f = 1.0 GHz

#### **hFE Classification**

Class	К
Marking	к
hfe	50 to 300



# TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)







INSERTION GAIN vs. COLLECTOR CURRENT









#### **S-PARAMETER**

$V_{CE} = 10 V, I_{CE}$	c = 20 mA,	Zo = 50 Ω
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f (MHz)	S11	∠ <b>S</b> 11	<b>S</b> 21	∠ <b>S</b> 21	<b>S</b> 12	∠ <b>S</b> 12	<b>S</b> 22	∠ <b>S</b> 22
200	0.173	-80.3	13.652	103.4	0.041	73.8	0.453	-21.8
400	0.054	-77.0	7.217	85.1	0.066	71.2	0.427	-26.0
600	0.013	-57.9	4.936	74.0	0.113	69.3	0.428	-30.8
800	0.028	81.8	3.761	62.3	0.144	67.0	0.414	-37.2
1000	0.062	82.2	3.094	58.3	0.183	64.7	0.392	-43.2
1200	0.091	80.7	2.728	52.9	0.215	61.7	0.377	-51.4
1400	0.121	80.2	2.321	44.9	0.240	58.7	0.359	-58.3
1600	0.148	80.1	2.183	36.4	0.288	50.7	0.354	-67.2
1800	0.171	80.0	1.892	30.2	0.305	46.8	0.345	-80.0
2000	0.207	79.9	1.814	21.4	0.344	39.1	0.344	-90.4

$$V_{CE} = 10 \text{ V}, \text{ Ic} = 40 \text{ mA}, \text{ Zo} = 50 \Omega$$

f (MHz)	S11	∠ <b>S</b> 11	<b>S</b> <sub>21</sub>	$\angle$ S <sub>21</sub>	<b>S</b> 12	$\angle$ S12	<b>S</b> 22	∠ <b>S</b> 22
200	0.011	-60.1	13.76	105.4	0.040	-73.3	0.421	-17.5
400	0.028	-42.9	7.338	82.9	0.069	66.7	0.416	-22.8
600	0.027	25.1	4.996	72.7	0.114	69.4	0.414	-28.7
800	0.043	65.7	3.801	61.9	0.144	67.8	0.406	-35.7
1000	0.074	75.1	3.134	57.6	0.183	63.4	0.386	-41.8
1200	0.098	75.6	2.759	52.4	0.221	62.1	0.373	-49.8
1400	0.120	74.1	2.351	44.4	0.247	55.7	0.356	-56.3
1600	0.146	75.8	2.203	36.0	0.291	49.6	0.347	-66.6
1800	0.171	77.2	1.910	29.9	0.299	46.0	0.342	-78.8
2000	0.205	78.0	1.825	21.3	0.344	39.4	0.335	-89.6

# NEC

# S-PARAMETER



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Anti-radioactive design is not implemented in this product.

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