

HIGH FREQUENCY LOW NOISE AMPLIFIER  
NPN SILICON EPITAXIAL TRANSISTOR  
MINI MOLD

FEATURES

- Low Noise, High Gain
- Low Voltage Operation
- Low Feedback Capacitance  
Cre = 0.4 pF TYP.

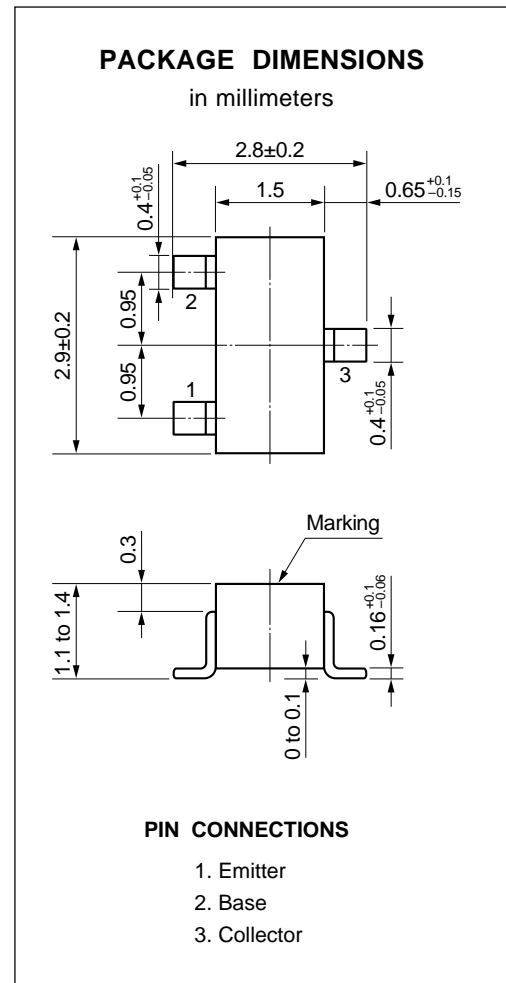
ORDERING INFORMATION

PART NUMBER	QUANTITY	PACKING STYLE
2SC4955-T1	3 Kpcs/Reel.	Embossed tape 8 mm wide. Pin3 (Collector) face to perforation side of the tape.
2SC4955-T2	3 Kpcs/Reel.	Embossed tape 8 mm wide. Pin1 (Emitter), Pin2 (Base) face to perforation side of the tape.

\* Please contact with responsible NEC person, if you evaluation sample. Unit sample quantity shall be 50 pcs.  
(Part No.: 2SC4955)

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

Collector to Base Voltage	V <sub>CB0</sub>	9	V
Collector to Emitter Voltage	V <sub>CE0</sub>	6	V
Emitter to Base Voltage	V <sub>EB0</sub>	2	V
Collector Current	I <sub>c</sub>	30	mA
Total Power Dissipation	P <sub>T</sub>	180	mW
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-64 to +150	°C



**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)**

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I <sub>CB0</sub>			0.1	μA	V <sub>CB</sub> = 5 V, I <sub>E</sub> = 0
Emitter Cutoff Current	I <sub>EB0</sub>			0.1	μA	V <sub>EB</sub> = 1 V, I <sub>C</sub> = 0
DC Current Gain	h <sub>FE</sub>	75		150		V <sub>CB</sub> = 3 V, I <sub>C</sub> = 10 mA* <sup>1</sup>
Gain Bandwidth Product	f <sub>T</sub>		12		GHz	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 10 mA
Feed-back Capacitance	C <sub>re</sub>		0.4	0.7	pF	V <sub>CB</sub> = 3 V, I <sub>E</sub> = 0, f = 1 MHz* <sup>2</sup>
Insertion Gain	S <sub>21e</sub>   <sup>2</sup>	7	8.5		dB	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 10 mA, f = 2.0 GHz
Noise Figure	NF		1.5	2.5	dB	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 3 mA, f = 2.0 GHz

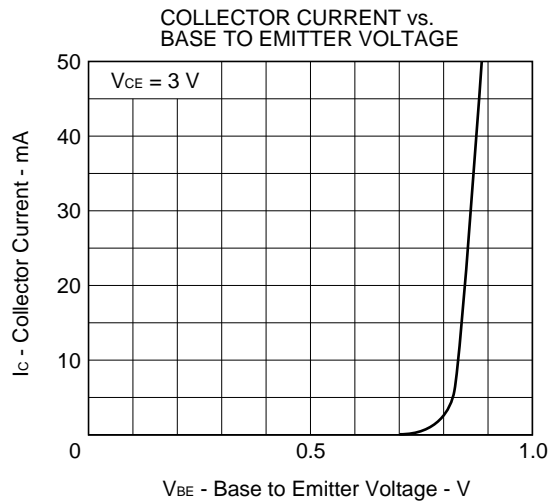
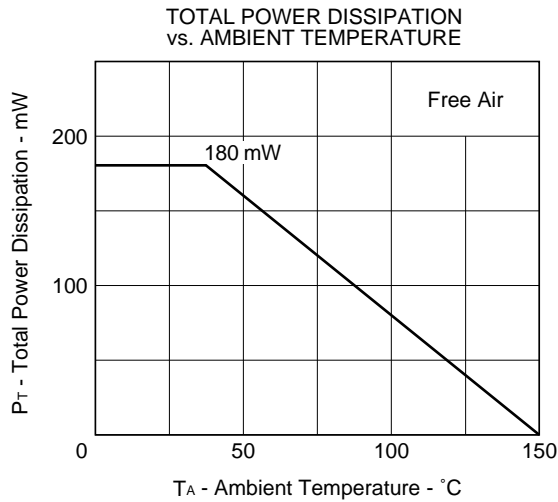
\*1 Pulse Measurement; PW ≤ 350 μs, Duty Cycle ≤ 2 % Pulsed.

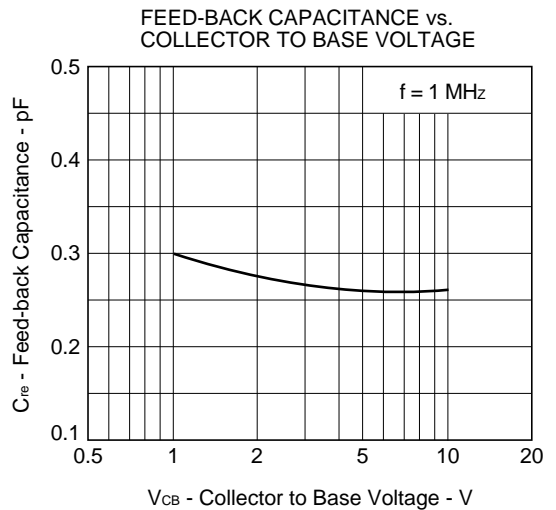
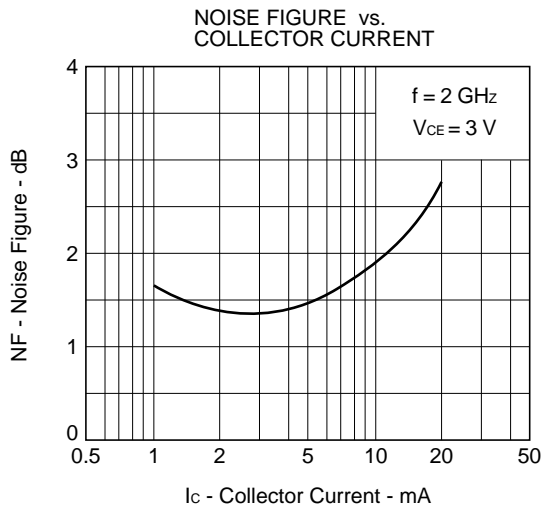
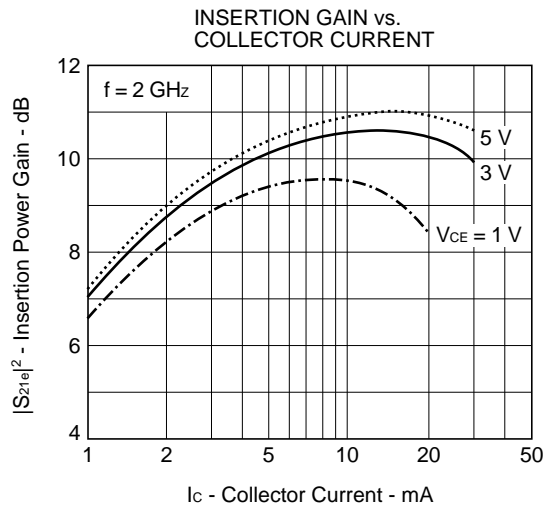
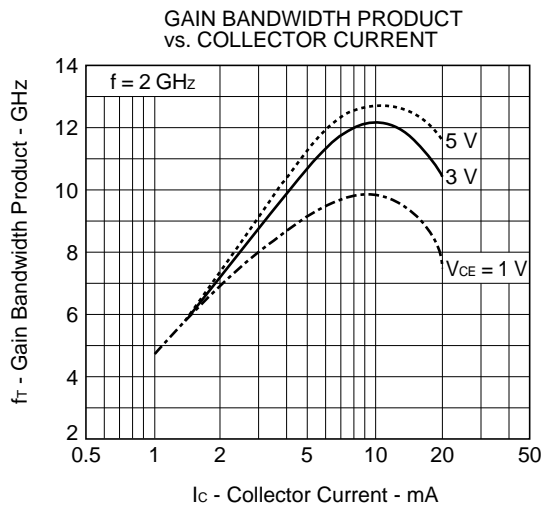
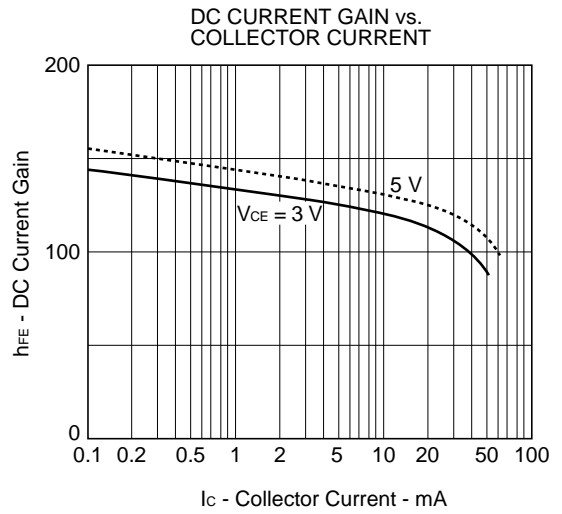
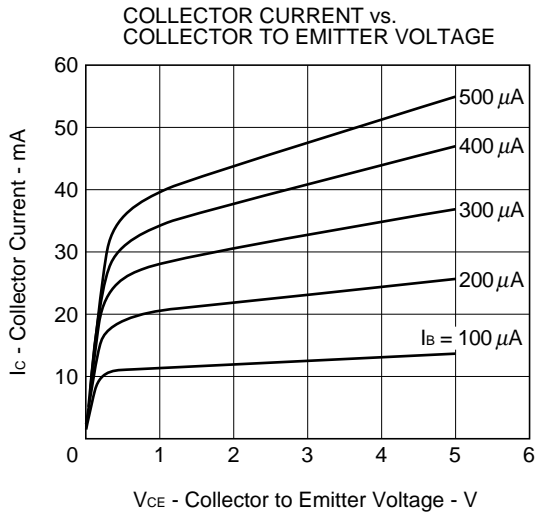
\*2 Measured with 3 terminals bridge, Emitter and Case should be grounded.

**h<sub>FE</sub> Classification**

Rank	T83
Marking	T83
h <sub>FE</sub>	75 to 150

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





**S-PARAMETER**

(V<sub>CE</sub> = 3 V, I<sub>c</sub> = 1 mA, Z<sub>o</sub> = 50 Ω)

FREQUENCY (GHz)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.200	0.9400	-15.3	3.4560	165.0	0.0420	76.0	0.9780	-8.7
0.400	0.8770	-29.0	3.1870	149.2	0.0800	71.7	0.9490	-16.0
0.600	0.8020	-43.6	3.0390	136.4	0.1140	63.8	0.8910	-23.4
0.800	0.7030	-55.3	2.8000	123.9	0.1340	56.7	0.8280	-29.1
1.000	0.6240	-67.2	2.5890	113.1	0.1520	52.2	0.7630	-33.7
1.200	0.5570	-79.0	2.4320	102.9	0.1690	49.0	0.7170	-37.9
1.400	0.4670	-89.9	2.2140	94.7	0.1810	45.6	0.6940	-41.8
1.600	0.4130	-99.8	2.0430	86.9	0.1880	45.2	0.6450	-43.9
1.800	0.3680	-108.1	1.8790	79.0	0.1910	43.0	0.6050	-46.2
2.000	0.3140	-120.9	1.7720	73.0	0.1990	44.3	0.5860	-50.5
2.200	0.2690	-137.1	1.7010	66.9	0.2140	45.9	0.5600	-53.7
2.400	0.2740	-147.6	1.6030	61.4	0.2170	44.2	0.5520	-54.5
2.600	0.2530	-157.0	1.5010	57.1	0.2270	46.9	0.5260	-58.3
2.800	0.2200	-175.7	1.4330	51.6	0.2460	46.7	0.5160	-61.4
3.000	0.2130	173.7	1.3860	47.5	0.2500	48.9	0.4870	-64.7

(V<sub>CE</sub> = 3 V, I<sub>c</sub> = 3 mA, Z<sub>o</sub> = 50 Ω)

FREQUENCY (GHz)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.200	0.8160	-24.9	8.5180	154.3	0.0410	77.4	0.9240	-14.9
0.400	0.6610	-42.6	6.9310	133.1	0.0680	67.4	0.8190	-24.8
0.600	0.5300	-58.7	5.7770	118.4	0.0900	64.1	0.7120	-31.7
0.800	0.4090	-69.1	4.8150	106.7	0.1070	61.2	0.6430	-34.3
1.000	0.3280	-79.6	4.1130	97.3	0.1250	62.3	0.5820	-36.7
1.200	0.2670	-88.9	3.6270	89.7	0.1440	58.4	0.5300	-38.1
1.400	0.2080	-98.5	3.1680	83.4	0.1570	57.1	0.5100	-40.9
1.600	0.1800	-108.0	2.8600	77.1	0.1680	58.4	0.4870	-41.6
1.800	0.1300	-112.7	2.5690	71.9	0.1870	57.7	0.4550	-42.6
2.000	0.0970	-132.3	2.3660	66.9	0.2030	56.7	0.4490	-45.7
2.200	0.0830	-156.8	2.2340	62.7	0.2230	55.3	0.4250	-50.3
2.400	0.1010	-167.1	2.0840	57.4	0.2450	56.3	0.4270	-48.0
2.600	0.0840	169.7	1.9230	54.3	0.2540	56.5	0.4120	-55.0
2.800	0.0950	156.3	1.8400	49.5	0.2760	54.9	0.3850	-58.0
3.000	0.1010	126.6	1.7450	46.5	0.2930	52.0	0.3650	-59.7

**S-PARAMETER**

(V<sub>CE</sub> = 3 V, I<sub>c</sub> = 5 mA, Z<sub>o</sub> = 50 Ω)

FREQUENCY (GHz)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.200	0.7170	-30.9	11.5670	147.4	0.0340	77.4	0.8840	-18.6
0.400	0.5230	-48.6	8.6210	124.7	0.0630	68.1	0.7490	-28.2
0.600	0.4020	-64.1	6.7610	110.7	0.0840	67.1	0.6190	-32.6
0.800	0.2860	-71.9	5.4360	100.2	0.0970	62.7	0.5560	-34.2
1.000	0.2270	-77.9	4.5550	91.8	0.1110	65.0	0.5030	-35.0
1.200	0.1830	-85.3	3.9560	85.3	0.1380	63.9	0.4750	-36.8
1.400	0.1280	-95.6	3.4140	79.5	0.1600	62.8	0.4630	-38.5
1.600	0.1080	-105.1	3.0630	74.3	0.1800	62.2	0.4440	-38.5
1.800	0.0680	-113.1	2.7510	69.4	0.1920	61.5	0.4240	-38.5
2.000	0.0370	-131.4	2.5150	64.9	0.2190	60.4	0.4100	-44.3
2.200	0.0410	171.2	2.3620	60.5	0.2310	59.8	0.3850	-49.2
2.400	0.0480	170.0	2.2000	56.8	0.2460	57.9	0.3960	-45.0
2.600	0.0540	146.9	2.0470	53.7	0.2700	56.4	0.3650	-54.6
2.800	0.0760	127.6	1.9320	49.2	0.2980	56.3	0.3790	-55.9
3.000	0.0900	111.8	1.8520	45.8	0.3190	52.5	0.3160	-61.2

(V<sub>CE</sub> = 3 V, I<sub>c</sub> = 10 mA, Z<sub>o</sub> = 50 Ω)

FREQUENCY (GHz)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.200	0.542	-38.9	15.738	136.5	0.035	73.8	0.789	-22.9
0.400	0.348	-53.6	10.350	114.2	0.058	66.8	0.626	-29.9
0.600	0.247	-62.6	7.604	102.2	0.075	70.8	0.529	-31.7
0.800	0.168	-70.7	5.939	93.4	0.094	69.1	0.474	-30.9
1.000	0.120	-73.9	4.899	86.4	0.106	69.3	0.457	-31.3
1.200	0.091	-79.6	4.218	81.0	0.138	68.3	0.427	-33.1
1.400	0.060	-85.7	3.615	76.0	0.160	66.9	0.407	-34.6
1.600	0.041	-97.8	3.244	71.5	0.179	65.2	0.408	-35.2
1.800	0.016	-68.1	2.884	66.9	0.200	66.8	0.383	-38.5
2.000	0.017	54.7	2.625	63.0	0.217	62.8	0.375	-39.4
2.200	0.040	109.0	2.480	59.0	0.238	62.1	0.361	-45.8
2.400	0.053	114.8	2.291	55.5	0.262	58.2	0.356	-42.6
2.600	0.054	97.4	2.139	52.6	0.289	59.3	0.337	-51.4
2.800	0.084	99.5	1.995	47.9	0.292	54.8	0.326	-49.9
3.000	0.108	87.6	1.917	45.4	0.331	54.4	0.274	-58.4

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