

# 2SC5619

FOR HIGH FREQUENCY AMPLIFY APPLICATION  
SILICON NPN EPITAXIAL TYPE

## DESCRIPTION

2SC5619 is a super mini package resin sealed silicon NPN epitaxial transistor. It is designed for high frequency application.

## FEATURE

- High gain bandwidth product.  
 $f_T=4.5\text{GHz}$
- High gain, low noise.
- Can operate at low voltage.
- Super mini package for easy mounting.

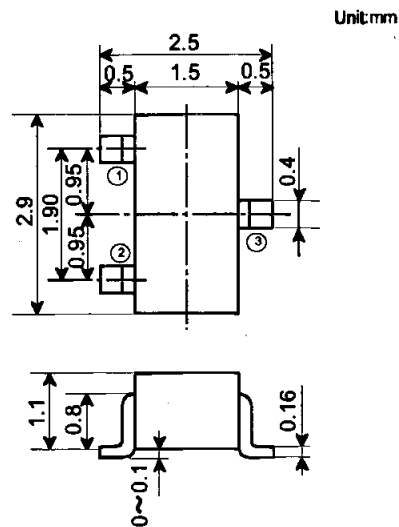
## APPLICATION

For TV tuners, high frequency amplifier, cellular phone system.

## MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V <sub>CB0</sub>	Collector to Base voltage	20	V
V <sub>CE0</sub>	Collector to Emitter voltage	12	V
V <sub>EB0</sub>	Emitter to Base voltage	3	V
I <sub>C</sub>	Collector current	50	mA
P <sub>C</sub>	Collector dissipation	150	mW
T <sub>J</sub>	Junction temperature	+125	°C
T <sub>stg</sub>	Storage temperature	-55~+125	°C

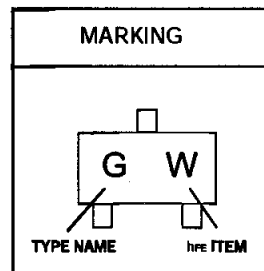
## OUTLINE DRAWING



## TERMINAL CONNECTOR

- ① : BASE  
② : EMITTER  
③ : COLLECTOR
- EIJA:SC-59

## MARKING

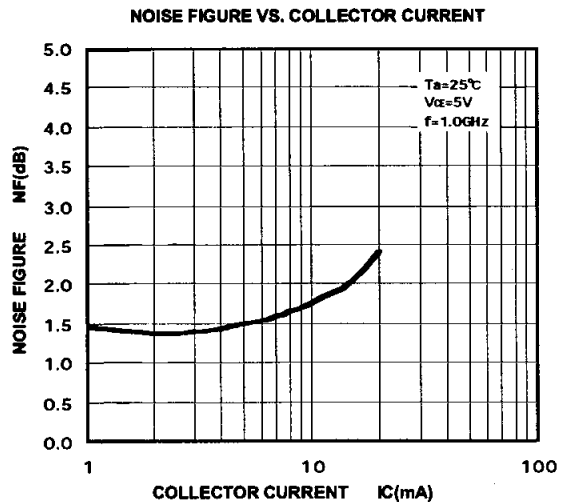
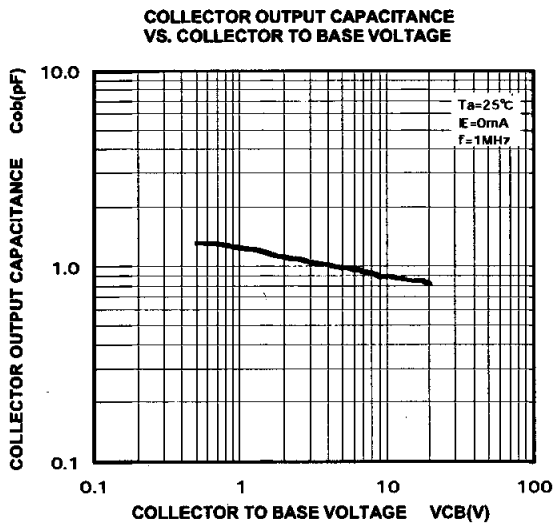
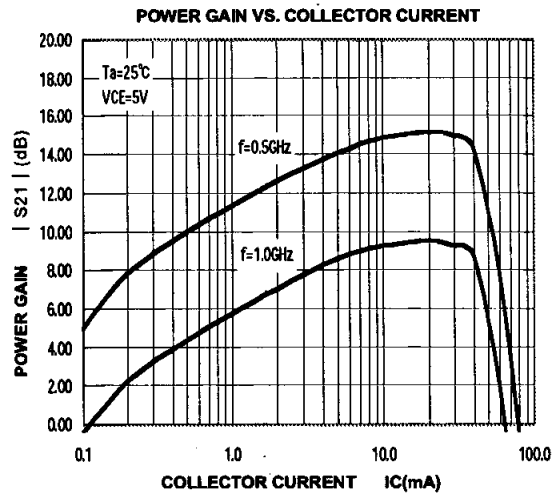
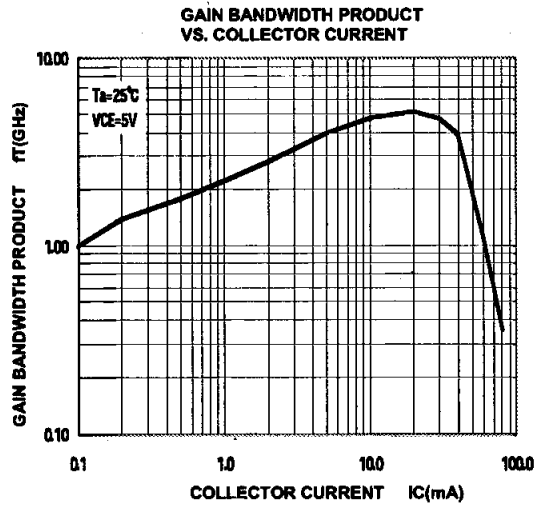
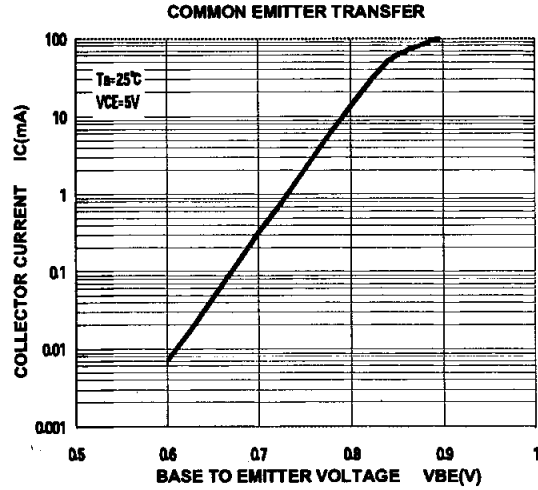
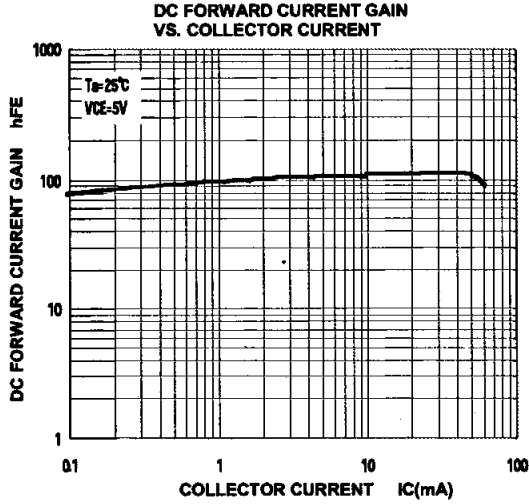


## ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I <sub>CB0</sub>	Collector cut off current	V <sub>CB</sub> =10V, I <sub>E</sub> =0mA			1.0	μA
I <sub>EB0</sub>	Emitter cut off current	V <sub>EB</sub> =1V, I <sub>C</sub> =0mA			1.0	μA
h <sub>FE</sub>	DC forward current gain	V <sub>CE</sub> =5V, I <sub>C</sub> =20mA	50		250	
f <sub>T</sub>	Gain bandwidth product	V <sub>CE</sub> =5V, I <sub>E</sub> =20mA		4.5		GHz
C <sub>ob</sub>	Collector output capacitance	V <sub>CB</sub> =5V, I <sub>E</sub> =0mA, f=1MHz		1.0		pF
S <sub>21</sub>   <sup>2</sup>	Insertion power gain	V <sub>CE</sub> =5V, I <sub>C</sub> =20mA, f=1GHz	7.5	9.0		dB
NF	Noise figure	V <sub>CE</sub> =5V, I <sub>C</sub> =5mA, f=1GHz		1.5		dB

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## S PARAMETER

VCE=5V,IC=10mA

FREQUENCY (MHZ)	S11		S12		S21		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500.00	0.297	-155.6	0.085	63.2	5.895	86.2	0.310	-43.6
600.00	0.292	-165.3	0.100	63.9	4.977	81.4	0.308	-45.0
700.00	0.294	-172.9	0.114	65.1	4.308	77.1	0.292	-45.0
800.00	0.287	179.5	0.128	65.1	3.791	73.0	0.291	-45.7
900.00	0.285	174.2	0.143	64.7	3.413	69.3	0.290	-48.2
1000.00	0.284	168.6	0.155	64.5	3.098	65.6	0.294	-50.4
1100.00	0.285	163.2	0.169	63.7	2.833	62.5	0.294	-51.9
1200.00	0.283	158.8	0.182	63.2	2.631	59.2	0.302	-54.4
1300.00	0.287	154.2	0.197	61.9	2.440	55.9	0.303	-56.7
1400.00	0.282	150.7	0.211	61.4	2.282	53.2	0.306	-58.9
1500.00	0.278	146.5	0.222	60.8	2.142	50.2	0.307	-61.3
1600.00	0.285	142.4	0.236	59.2	2.030	47.4	0.310	-63.3
1700.00	0.286	138.8	0.249	57.9	1.923	44.7	0.321	-65.5
1800.00	0.286	135.1	0.263	56.8	1.832	42.0	0.322	-67.8
1900.00	0.288	131.4	0.274	55.8	1.751	39.5	0.325	-69.8
2000.00	0.287	128.8	0.288	55.0	1.677	37.0	0.330	-72.4

VCE=5V,IC=8mA

FREQUENCY (MHZ)	S11		S12		S21		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500.00	0.310	-148.5	0.089	60.1	5.733	87.8	0.337	-44.9
600.00	0.305	-159.2	0.101	61.7	4.852	82.8	0.331	-46.8
700.00	0.303	-167.6	0.114	63.2	4.205	78.2	0.312	-46.4
800.00	0.294	-175.0	0.127	62.7	3.701	74.0	0.310	-47.2
900.00	0.294	178.8	0.140	63.0	3.338	70.2	0.308	-49.6
1000.00	0.290	172.6	0.154	62.8	3.028	66.4	0.310	-51.5
1100.00	0.291	167.4	0.166	61.9	2.773	63.0	0.311	-53.0
1200.00	0.290	162.3	0.181	62.0	2.572	59.6	0.318	-55.4
1300.00	0.291	157.4	0.194	60.6	2.392	56.3	0.318	-57.7
1400.00	0.286	153.5	0.206	59.9	2.232	53.5	0.317	-60.7
1500.00	0.284	149.1	0.219	59.7	2.097	50.6	0.322	-62.2
1600.00	0.289	145.3	0.233	58.6	1.989	47.7	0.323	-64.1
1700.00	0.289	141.3	0.247	57.8	1.883	44.8	0.332	-66.3
1800.00	0.292	137.4	0.258	56.8	1.797	42.2	0.335	-68.4
1900.00	0.292	133.9	0.271	55.6	1.719	39.5	0.338	-70.4
2000.00	0.292	130.5	0.284	54.6	1.642	37.0	0.342	-72.7

VCE=5V,IC=6mA

FREQUENCY (MHZ)	S11		S12		S21		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500.00	0.343	-139.3	0.091	56.5	5.461	90.3	0.382	-46.1
600.00	0.328	-150.5	0.104	57.6	4.641	84.9	0.369	-47.9
700.00	0.323	-159.4	0.115	58.7	4.036	79.9	0.347	-47.8
800.00	0.311	-167.9	0.127	59.0	3.565	75.4	0.340	-48.4
900.00	0.309	-174.4	0.139	59.9	3.218	71.2	0.335	-50.5
1000.00	0.303	178.8	0.153	59.7	2.919	67.3	0.336	-52.7
1100.00	0.302	172.7	0.163	59.8	2.675	63.8	0.335	-54.0
1200.00	0.303	167.4	0.176	59.1	2.486	60.3	0.342	-56.5
1300.00	0.302	162.1	0.190	59.1	2.306	56.8	0.341	-58.3
1400.00	0.297	158.1	0.201	59.1	2.162	54.0	0.341	-60.2
1500.00	0.294	153.7	0.214	58.3	2.029	50.8	0.345	-62.9
1600.00	0.299	148.7	0.225	57.5	1.924	47.8	0.344	-65.1
1700.00	0.300	144.7	0.238	56.5	1.824	44.9	0.353	-66.9
1800.00	0.301	140.6	0.250	56.0	1.739	42.2	0.356	-68.9
1900.00	0.302	136.8	0.263	55.1	1.666	39.5	0.360	-70.8
2000.00	0.299	133.3	0.276	54.3	1.592	36.9	0.363	-73.1

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## S PARAMETER

VCE=5V, IC=4mA

FREQUENCY (MHZ)	S11		S12		S21		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500.00	0.399	-126.4	0.099	51.8	4.984	94.1	0.455	-45.8
600.00	0.375	-137.6	0.110	50.9	4.260	88.1	0.439	-48.2
700.00	0.364	-148.1	0.118	52.4	3.729	82.7	0.408	-48.4
800.00	0.348	-156.9	0.127	53.4	3.306	77.7	0.397	-49.7
900.00	0.341	-164.5	0.137	53.7	2.994	73.0	0.387	-52.0
1000.00	0.332	-171.8	0.149	55.0	2.723	68.9	0.387	-54.0
1100.00	0.329	-178.6	0.159	55.1	2.502	65.0	0.383	-55.2
1200.00	0.327	-175.5	0.170	55.8	2.326	61.3	0.387	-57.3
1300.00	0.325	-169.3	0.180	55.1	2.162	57.5	0.383	-59.7
1400.00	0.321	-165.0	0.193	56.1	2.027	54.5	0.382	-61.8
1500.00	0.318	-159.9	0.203	55.7	1.905	51.2	0.385	-63.7
1600.00	0.320	-154.5	0.215	55.7	1.807	48.1	0.385	-65.4
1700.00	0.322	-150.2	0.226	55.4	1.715	45.0	0.393	-67.6
1800.00	0.324	-145.7	0.238	54.9	1.635	42.1	0.395	-69.5
1900.00	0.324	-141.4	0.250	54.8	1.564	39.4	0.397	-71.7
2000.00	0.323	-137.7	0.262	54.0	1.498	36.7	0.401	-73.9

VCE=5V, IC=2mA

FREQUENCY (MHZ)	S11		S12		S21		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500.00	0.506	-106.9	0.120	44.1	4.062	100.4	0.593	-42.3
600.00	0.480	-118.6	0.128	42.3	3.503	94.0	0.005	-46.3
700.00	0.453	-130.6	0.133	42.1	3.115	87.7	0.004	-47.5
800.00	0.434	-139.7	0.139	42.3	2.767	82.0	0.003	-49.2
900.00	0.421	-148.4	0.144	42.3	2.519	76.7	0.003	-51.6
1000.00	0.408	-156.6	0.149	43.7	2.316	71.9	0.002	-54.1
1100.00	0.398	-164.1	0.154	44.6	2.129	67.4	0.002	-55.8
1200.00	0.391	-171.0	0.161	46.5	1.992	63.1	0.001	-58.2
1300.00	0.388	-177.9	0.168	47.2	1.857	58.9	0.001	-60.2
1400.00	0.381	-176.7	0.174	48.6	1.744	55.4	0.001	-62.4
1500.00	0.377	-171.4	0.183	50.1	1.643	51.8	0.001	-64.5
1600.00	0.379	-165.0	0.191	50.7	1.562	48.3	0.000	-66.6
1700.00	0.380	-160.0	0.202	51.9	1.481	44.9	0.000	-68.7
1800.00	0.377	-154.6	0.212	52.6	1.416	41.9	0.000	-70.5
1900.00	0.380	-149.2	0.223	52.9	1.357	39.0	0.000	-72.5
2000.00	0.379	-145.1	0.233	53.5	1.294	36.0	0.000	-75.0

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