

**2SC5636**FOR HIGH FREQUENCY AMPLIFY APPLICATION  
SILICON NPN EPITAXIAL TYPE

## DESCRIPTION

Mitsubishi 2SC5636 is a super mini package resin sealed silicon NPN epitaxial transistor. It is designed for high frequency application.

## FEATURE

- High gain bandwidth product.  
f<sub>T</sub>=8.0GHz
- 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)

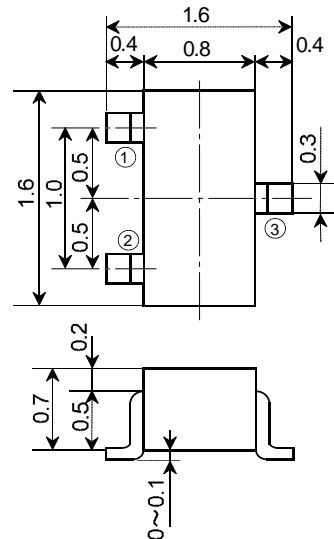
Symbol	Parameter	Ratings	Unit
V <sub>CB0</sub>	Collector to Base voltage	15	V
V <sub>CE0</sub>	Collector to Emitter voltage	6	V
V <sub>EB0</sub>	Emitter to Base voltage	1.5	V
I <sub>C</sub>	Collector current	50	mA
P <sub>C</sub>	Collector dissipation	100	mW
T <sub>j</sub>	Junction temperature	+125	
T <sub>stg</sub>	Storage temperature	-55~+125	

## ELECTRICAL CHARACTERISTICS (Ta=25 °C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I <sub>CBO</sub>	Collector cut off current	V <sub>CB</sub> =10V, I <sub>E</sub> =0mA			1.0	μA
I <sub>EBO</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> =10mA	50		250	
f <sub>T</sub>	Gain bandwidth product	V <sub>CE</sub> =5V, I <sub>E</sub> =10mA	5.0	8.0		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> =10mA, f=1GHz	9.0	12.0		dB
NF	Noise figure	V <sub>CE</sub> =5V, I <sub>C</sub> =5mA, f=1GHz		1.4		dB

## OUTLINE DRAWING

Unit:mm



## TERMINAL CONNECTOR

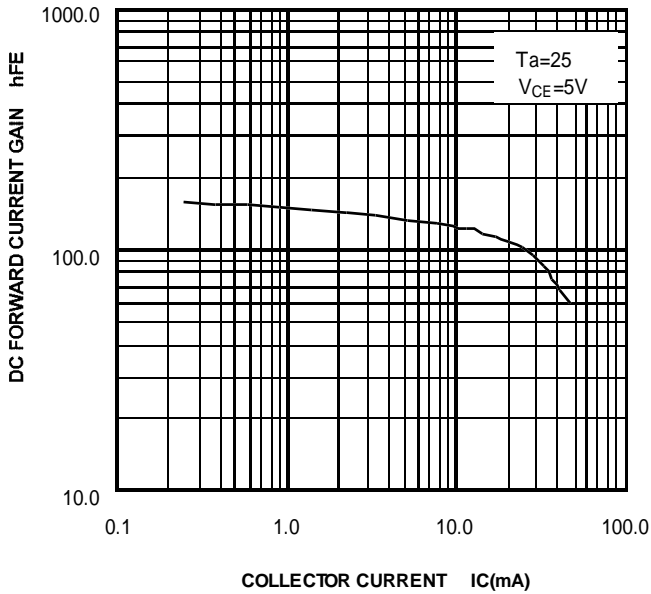
- ① : BASE  
② : EMITTER  
③ : COLLECTOR

JEITA:SC-90

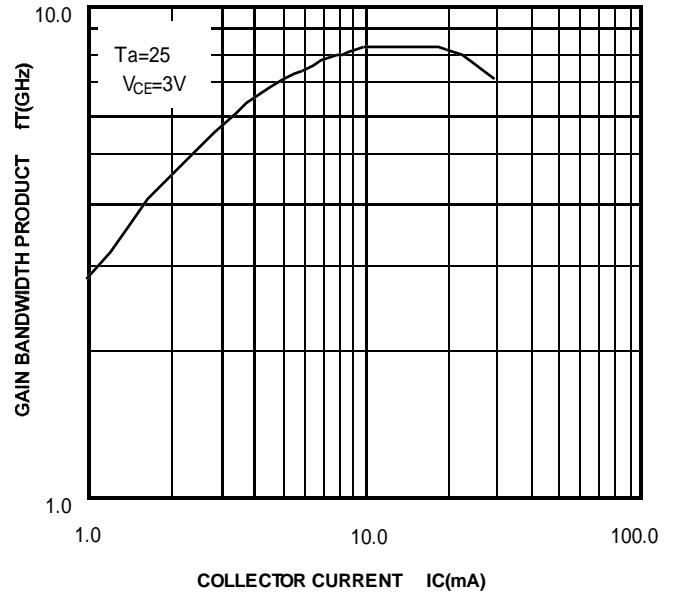
# 2SC5636

FOR HIGH FREQUENCY AMPLIFY APPLICATION  
SILICON NPN EPITAXIAL TYPE

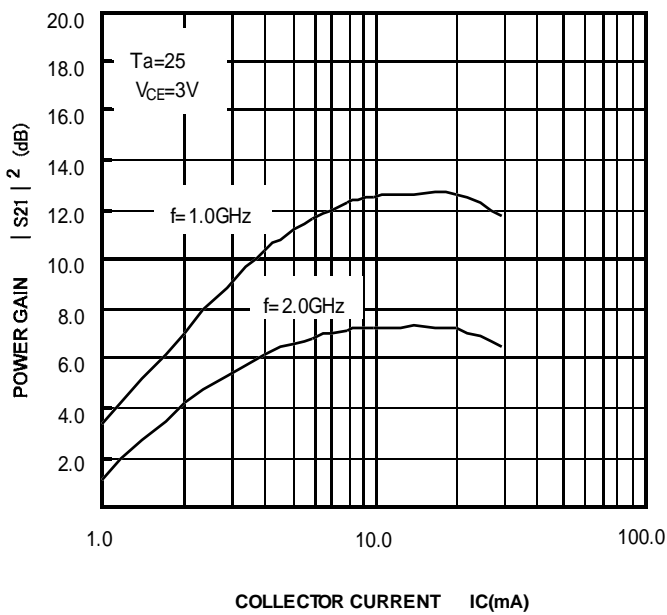
DC FORWARD CURRENT GAIN  
VS. COLLECTOR CURRENT



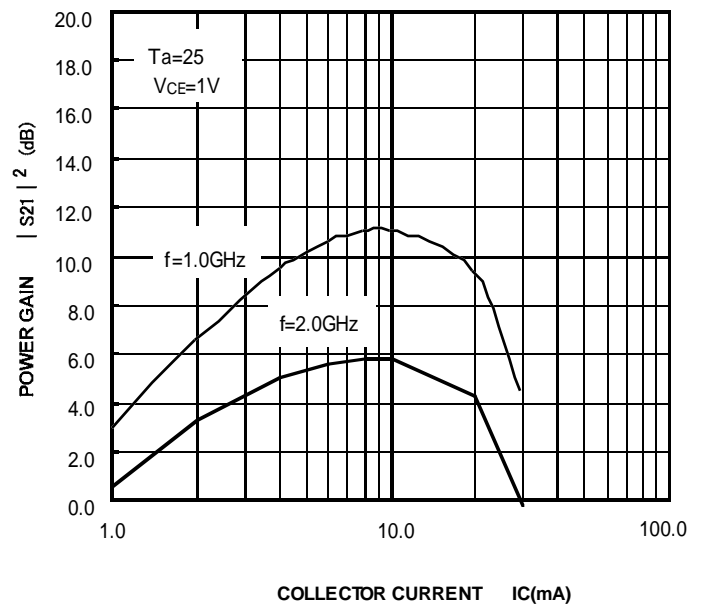
GAIN BANDWIDTH PRODUCT  
VS. COLLECTOR CURRENT



POWER GAIN VS. COLLECTOR CURRENT



POWER GAIN VS. COLLECTOR CURRENT



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## S PARAMETER

$V_{CE}=1V, I_C=10mA$

FREQUENCY MHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	0.462	-121.3	6.597	102.5	0.087	48.1	0.352	-84.5
600	0.440	-131.7	5.854	97.0	0.094	48.9	0.320	-87.7
700	0.434	-143.9	5.029	91.8	0.102	48.7	0.278	-100.6
800	0.423	-149.9	4.569	88.0	0.109	49.7	0.254	-101.8
900	0.413	-155.5	4.031	84.1	0.117	51.0	0.233	-107.1
1000	0.407	-159.7	3.685	82.1	0.124	51.3	0.220	-109.7
1100	0.407	-164.6	3.367	78.5	0.133	51.8	0.211	-114.9
1200	0.397	-167.5	3.141	76.4	0.140	52.3	0.201	-116.5
1300	0.395	-171.3	2.880	73.7	0.150	52.8	0.192	-120.3
1400	0.393	-173.3	2.712	72.2	0.157	53.0	0.187	-122.0
1500	0.389	-175.7	2.574	69.9	0.164	53.2	0.181	-122.4
1600	0.392	-179.0	2.435	67.0	0.173	53.2	0.176	-124.9
1700	0.384	179.1	2.307	65.3	0.180	53.0	0.178	-126.3
1800	0.386	177.0	2.178	63.8	0.189	52.8	0.174	-128.4
1900	0.383	174.5	2.089	61.8	0.197	52.8	0.175	-130.4
2000	0.379	173.1	2.011	60.4	0.204	52.4	0.177	-131.1

$V_{CE}=3V, I_C=10mA$

FREQUENCY MHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	0.473	-102.1	7.745	108.2	0.076	52.4	0.420	-60.1
600	0.434	-113.7	6.955	102.1	0.082	53.1	0.389	-62.1
700	0.410	-127.8	6.038	95.9	0.089	52.5	0.325	-69.8
800	0.391	-134.7	5.488	92.5	0.096	53.4	0.302	-69.2
900	0.375	-141.5	4.872	87.9	0.104	54.4	0.273	-71.5
1000	0.365	-146.5	4.457	85.6	0.110	54.7	0.258	-71.7
1100	0.361	-152.6	4.073	82.1	0.118	55.1	0.242	-74.8
1200	0.350	-155.8	3.805	79.7	0.125	55.7	0.232	-74.9
1300	0.345	-160.2	3.486	77.1	0.133	56.0	0.219	-76.7
1400	0.342	-162.7	3.279	75.5	0.140	56.1	0.213	-77.0
1500	0.337	-165.4	3.106	73.8	0.147	56.4	0.211	-77.1
1600	0.337	-169.4	2.928	70.3	0.155	56.2	0.205	-78.4
1700	0.330	-171.3	2.772	69.2	0.161	56.2	0.205	-79.9
1800	0.332	-174.0	2.617	67.0	0.170	56.3	0.198	-80.6
1900	0.328	-176.5	2.511	65.2	0.176	56.0	0.197	-82.2
2000	0.325	-178.4	2.413	63.4	0.184	55.6	0.200	-84.2

$V_{CE}=5V, I_C=10mA$

FREQUENCY MHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	0.483	-94.6	8.003	110.1	0.071	54.4	0.458	-52.0
600	0.436	-106.1	7.231	104.2	0.077	54.8	0.428	-52.8
700	0.405	-120.3	6.321	97.7	0.085	54.0	0.360	-59.2
800	0.381	-127.6	5.738	94.0	0.091	54.8	0.340	-58.2
900	0.361	-134.6	5.103	89.6	0.099	55.8	0.312	-59.8
1000	0.349	-139.9	4.683	87.0	0.104	56.3	0.297	-59.2
1100	0.342	-146.3	4.290	83.4	0.112	56.5	0.280	-61.4
1200	0.330	-149.6	3.990	81.2	0.119	57.0	0.270	-61.6
1300	0.323	-154.5	3.669	78.4	0.126	57.5	0.256	-61.7
1400	0.321	-157.2	3.455	76.2	0.133	57.4	0.254	-62.9
1500	0.314	-160.0	3.273	74.3	0.140	57.6	0.252	-62.7
1600	0.313	-164.3	3.086	71.2	0.147	57.8	0.245	-63.3
1700	0.305	-166.2	2.915	70.4	0.153	57.4	0.244	-65.4
1800	0.308	-169.1	2.765	67.9	0.162	57.4	0.240	-66.2
1900	0.304	-171.9	2.648	65.9	0.169	57.3	0.237	-67.3
2000	0.299	-173.6	2.538	64.7	0.175	57.0	0.239	-69.1



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