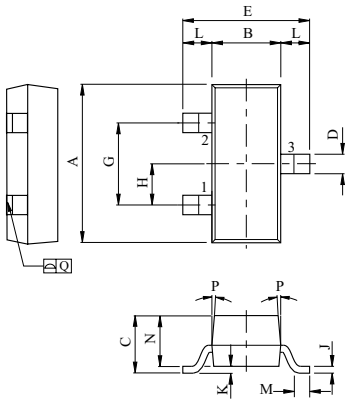
KTC3620S

EPITAXIAL PLANAR NPN TRANSISTOR

VHF/UHF/WIDE BAND AMPLIFIER APPLICATON.

FEATURES

- Low Noise Figure.
- High Gain.



DIM	MILLIMETER
A	2.93±0.20
B	1.30+0.20/-0.15
C	1.30 MAX
D	0.40+0.15/-0.05
E	2.40+0.30/-0.20
G	1.90
H	0.95
J	0.13+0.10/-0.05
K	0.00 ~ 0.10
L	0.55
M	0.20 MIN
N	1.00+0.20/-0.10
P	7°
Q	0.1 MAX

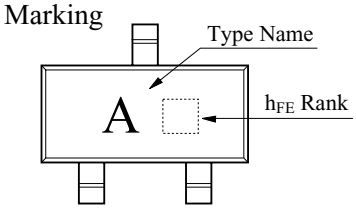
1. EMITTER
2. BASE
3. COLLECTOR

SOT-23

MAXIMUM RATING (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	9	V
Collector-Emitter Voltage	V_{CEO}	6	V
Emitter-Base Voltage	V_{EBO}	2	V
Collector Current	I_C	30	mA
Collector Power Dissipation	P_C	100	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55 150	℃

Marking



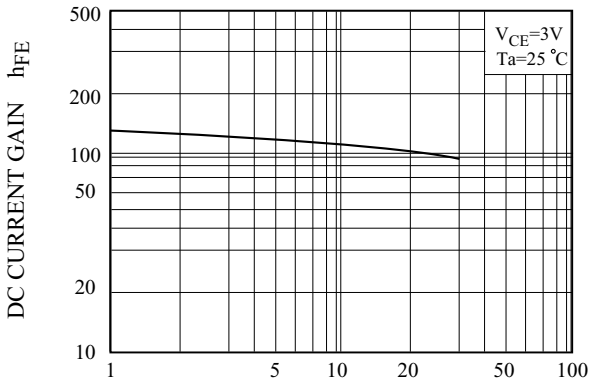
ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB}=5V, I_E=0	-	-	100	nA
Emitter Cut-off Current	I_{EBO}	V_{EB}=1V, I_C=0	-	-	100	nA
DC Current Gain	h_{FE} (Note1)	V_{CE}=3V, I_C=10mA	75	-	140	
Reverse Transfer Capacitance	Cre (Note2)	V_{CB}=3V, I_E=0, f=1MHz	-	0.4	0.7	pF
Transition Frequency	f_T	V_{CE}=3V, I_C=10mA, f=2GHz	-	12.0	-	GHz
Insertion Gain	$\|S_{21e}\|^2$	V_{CE}=3V, I_C=10mA, f=2GHz	6.5	8	-	dB
Noise Figure	NF	V_{CE}=3V, I_C=3mA, f=2GHz	-	1.5	2.5	dB

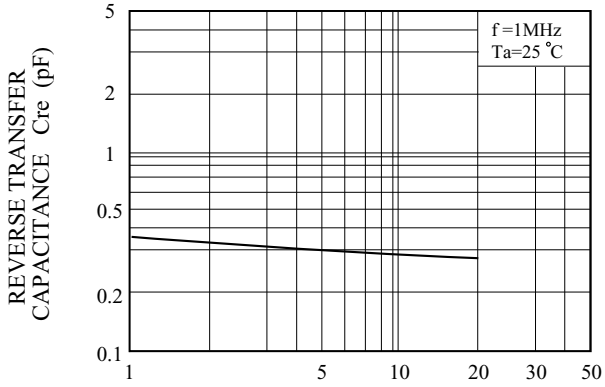
Note 1) h_{FE} Classification 1(01):75~110, 2(02):95~140.

Note 2) C_{re} is measured by 3 terminal method with capacitance bridge.

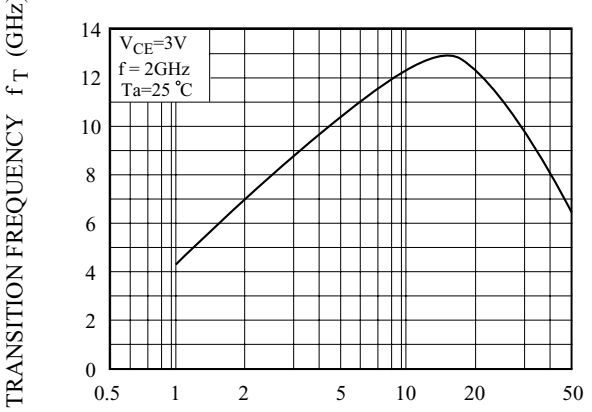
h_{FE} - I_C



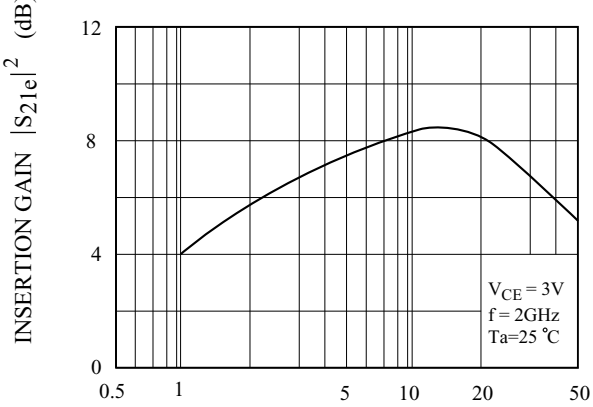
Cre - V_{CB}



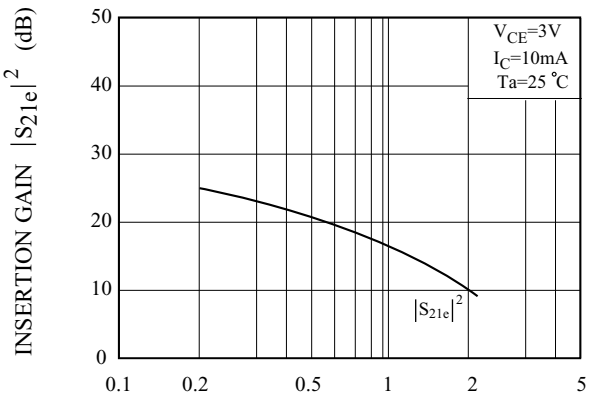
f_T - I_C



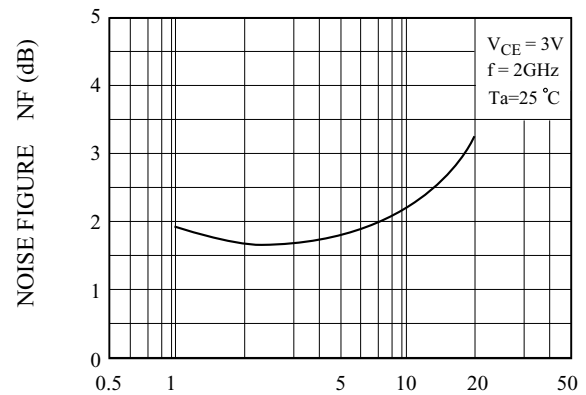
$|S_{21e}|^2$ - I_C

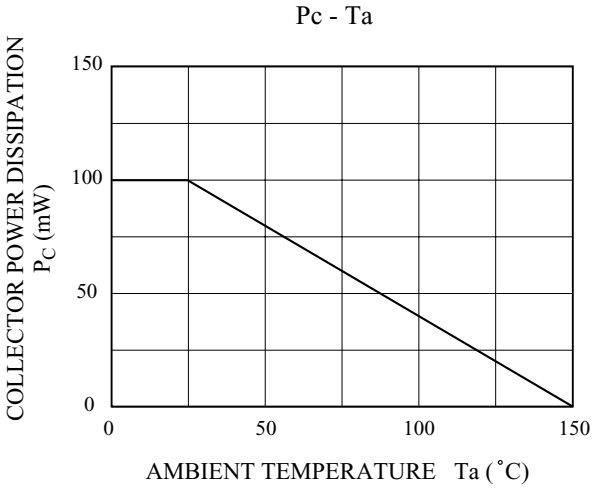


$|S_{21e}|^2$ - f



NF - I_C





S-PARAMETER (V_{CE}=3V, I_C=10mA, Z_O=50Ω, Ta=25℃)

FREQUENCY	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.598	-41.6	18.159	140.3	0.031	70.0	0.812	-26.3
400	0.414	-79.4	12.683	117.6	0.048	62.5	0.575	-38.7
600	0.330	-103.3	9.464	103.5	0.062	61.7	0.447	-45.3
800	0.278	-120.6	7.552	95.5	0.074	62.2	0.385	-48.1
1000	0.246	-136.4	6.295	90.1	0.087	61.8	0.345	-48.2
1200	0.237	-150.5	5.402	84.8	0.101	62.0	0.310	-47.3
1400	0.239	-160.6	4.670	79.1	0.116	62.0	0.277	-48.3
1600	0.235	-170.5	4.065	74.9	0.131	62.4	0.247	-50.7
1800	0.239	179.4	3.597	71.5	0.143	63.2	0.225	-54.1
2000	0.257	170.1	3.246	68.0	0.154	61.8	0.206	-57.7
2200	0.280	164.1	2.987	63.2	0.167	60.3	0.184	-6.1
2400	0.299	160.0	2.780	59.2	0.181	58.6	0.165	-69.6
2600	0.315	155.6	2.609	57.0	0.199	57.9	0.153	-77.7
2800	0.334	151.5	2.465	54.8	0.210	58.1	0.146	-85.0
3000	0.350	148.7	2.272	51.0	0.217	56.6	0.136	-92.0

S-PARAMETER (V_{CE} = 3 V, I_C = 7 mA, Z_O = 50 Ω, Ta=25℃)

FREQUENCY	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.688	-38.7	15.412	145.5	0.034	70.5	0.863	-22.7
400	0.498	-69.0	11.461	123.2	0.053	61.6	0.645	-36.0
600	0.400	-92.5	8.826	108.0	0.067	58.4	0.509	-44.4
800	0.332	-109.1	7.158	99.1	0.079	58.4	0.439	-48.5
1000	0.286	-124.4	6.055	93.0	0.091	58.1	0.391	-49.2
1200	0.263	-139.1	5.221	87.3	0.104	57.9	0.349	-48.9
1400	0.257	-150.4	4.513	81.1	0.118	58.4	0.311	-50.2
1600	0.249	-161.0	3.957	76.6	0.133	59.0	0.277	-52.6
1800	0.248	-172.1	3.495	72.8	0.143	60.3	0.253	-55.9
2000	0.262	177.1	3.158	69.1	0.153	59.1	0.232	-59.2
2200	0.283	169.9	2.903	64.2	0.166	57.6	0.209	-63.3
2400	0.302	164.9	2.712	59.9	0.180	56.4	0.189	-70.0
2600	0.317	159.9	2.547	57.5	0.197	55.8	0.177	-77.7
2800	0.333	155.3	2.408	55.3	0.206	56.2	0.169	-83.9
3000	0.350	151.9	2.221	51.5	0.213	55.2	0.158	-89.8

S-PARAMETER (V_{CE}=3V, I_C=5mA, Z_O= 50Ω, Ta=25℃)

FREQUENCY	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.773	-31.6	12.320	150.7	0.036	72.7	0.910	-18.8
400	0.595	-58.3	9.846	129.7	0.060	62.0	0.725	-31.8
600	0.491	-81.2	7.923	114.1	0.075	56.6	0.587	-41.7
800	0.412	-97.4	6.600	103.8	0.087	55.2	0.512	-47.3
1000	0.350	-111.8	5.638	96.9	0.098	54.0	0.457	-49.1
1200	0.310	-126.2	4.908	90.8	0.110	53.7	0.406	-49.4
1400	0.293	-138.4	4.286	83.9	0.124	53.8	0.362	-51.0
1600	0.278	-149.6	3.766	78.8	0.136	55.2	0.323	-53.6
1800	0.267	-161.4	3.388	74.5	0.145	56.1	0.296	-56.8
2000	0.274	-173.7	3.018	70.5	0.154	55.1	0.272	-60.1
2200	0.293	177.6	2.786	65.3	0.165	54.0	0.247	-63.9
2400	0.310	171.5	2.600	60.9	0.179	53.0	0.225	-69.8
2600	0.323	165.9	2.492	58.1	0.194	53.1	0.212	-76.5
2800	0.337	160.4	2.314	55.6	0.203	53.5	0.204	-82.2
3000	0.354	156.2	2.138	51.7	0.208	52.4	0.191	-86.9

S-PARAMETER (V_{CE} = 3 V, I_C = 3 mA, Z_O = 50 Ω, Ta=25℃)

FREQUENCY	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.858	-24.0	8.684	157.0	0.038	74.9	0.951	-14.1
400	0.716	-45.8	7.442	138.3	0.067	63.9	0.818	-25.7
600	0.617	-67.2	6.355	122.7	0.088	56.7	0.693	-36.4
800	0.538	-82.8	5.529	111.3	0.101	52.6	0.621	-43.8
1000	0.460	-96.4	4.885	103.3	0.112	49.4	0.564	-47.0
1200	0.399	-109.7	4.332	96.5	0.124	47.3	0.504	-48.4
1400	0.365	-122.4	3.819	88.6	0.136	47.6	0.449	-50.6
1600	0.338	-133.9	3.390	82.5	0.145	48.7	0.403	-53.5
1800	0.314	-145.6	3.039	77.6	0.151	49.4	0.370	-56.9
2000	0.304	-159.0	2.758	73.0	0.157	48.2	0.341	-60.0
2200	0.316	-170.1	2.549	67.1	0.167	47.7	0.314	-63.5
2400	0.331	-177.4	2.402	62.6	0.178	47.3	0.289	-69.1
2600	0.340	175.8	2.289	59.2	0.191	47.6	0.275	-74.9
2800	0.349	169.4	2.133	56.4	0.197	48.6	0.268	-79.6
3000	0.364	163.8	1.977	52.1	0.201	47.9	0.252	-83.3

S-PARAMETER (V_{CE} = 3 V, I_C = 1 mA, Z_O = 50 Ω, Ta=25℃)

FREQUENCY	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.954	-13.7	3.491	165.5	0.040	79.6	0.989	-7.4
400	0.886	-27.2	3.221	152.2	0.078	71.1	0.935	-14.5
600	0.817	-43.2	2.976	139.2	0.110	62.2	0.864	-23.4
800	0.782	-57.0	2.826	127.6	0.134	55.5	0.828	-31.9
1000	0.725	-68.5	2.750	118.6	0.154	48.9	0.803	-36.9
1200	0.654	-79.3	2.528	111.1	0.171	43.2	0.751	-40.0
1400	0.594	-90.9	2.298	101.8	0.186	39.7	0.690	-43.5
1600	0.545	-102.6	2.186	93.2	0.191	38.2	0.632	-47.4
1800	0.502	-112.9	2.053	86.4	0.193	36.2	0.592	-51.8
2000	0.452	-125.6	1.892	80.3	0.191	32.5	0.558	-55.7
2200	0.434	-138.7	1.770	73.0	0.196	30.6	0.523	-59.2
2400	0.440	-149.2	1.689	66.6	0.199	29.6	0.491	-64.5
2600	0.436	-157.2	1.632	61.9	0.202	29.8	0.477	-69.9
2800	0.427	-165.3	1.536	57.9	0.197	30.6	0.472	-74.1
3000	0.427	-173.5	1.438	52.9	0.193	30.3	0.453	-77.3

S-PARAMETER (V_{CE} = 1 V, I_C = 5 mA, Z_O = 50 Ω, Ta=25℃)

FREQUENCY	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.750	-36.8	12.139	148.1	0.043	69.6	0.883	-23.4
400	0.570	-67.3	9.418	126.2	0.070	58.2	0.669	-39.8
600	0.476	-92.0	7.424	110.4	0.087	53.3	0.526	-51.9
800	0.404	-109.5	6.104	100.4	0.098	51.4	0.444	-58.7
1000	0.354	-125.4	5.191	93.7	0.111	50.3	0.380	-61.7
1200	0.330	-140.0	4.491	87.3	0.124	49.8	0.326	-63.7
1400	0.323	-151.1	3.905	80.4	0.139	50.3	0.281	-67.3
1600	0.312	-161.5	3.422	75.5	0.151	51.5	0.245	-71.8
1800	0.308	-172.4	3.031	71.2	0.161	52.3	0.219	-76.5
2000	0.320	177.0	2.732	67.1	0.170	51.2	0.194	-82.0
2200	0.342	169.8	2.517	61.9	0.183	49.8	0.169	-90.3
2400	0.360	164.6	2.361	57.6	0.197	48.9	0.157	-100.8
2600	0.373	159.6	2.243	54.8	0.212	48.9	0.154	-110.5
2800	0.389	154.8	2.075	52.4	0.220	49.0	0.150	-118.5
3000	0.405	151.2	1.914	48.2	0.226	47.8	0.147	-126.7

S-PARAMETER (V_{CE}=1V, I_C=3mA, Z_O= 50Ω, Ta=25℃)

FREQUENCY	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.845	-27.5	8.623	154.9	0.048	72.9	0.936	-17.5
400	0.692	-52.2	7.239	135.2	0.080	60.6	0.777	-31.9
600	0.596	-75.4	6.076	119.0	0.103	53.2	0.643	-44.6
800	0.516	-92.2	5.213	107.7	0.116	48.5	0.561	-53.0
1000	0.447	-107.1	4.559	99.7	0.129	45.3	0.492	-57.2
1200	0.398	-121.7	4.018	92.7	0.141	43.5	0.429	-59.9
1400	0.375	-134.1	3.526	84.8	0.154	43.6	0.373	-63.5
1600	0.355	-145.5	3.117	78.8	0.163	44.7	0.328	-67.9
1800	0.336	-157.2	2.779	73.8	0.169	45.0	0.295	-72.2
2000	0.336	-169.7	2.520	69.4	0.175	44.1	0.266	-76.7
2200	0.354	-179.1	2.330	63.9	0.185	43.1	0.235	-83.0
2400	0.370	174.4	2.187	58.8	0.196	42.6	0.217	-91.3
2600	0.380	168.5	2.083	55.6	0.209	43.0	0.210	-99.1
2800	0.391	162.7	1.931	52.8	0.214	43.5	0.203	-105.2
3000	0.406	158.0	1.785	48.3	0.218	42.8	0.194	-111.2

S-PARAMETER (V_{CE}=1V, I_C= 1mA, Z_O= 50Ω, Ta=25℃)

FREQUENCY	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.950	-15.4	3.449	164.3	0.050	80.0	0.985	-9.0
400	0.874	-30.3	3.205	149.9	0.094	68.3	0.921	-17.6
600	0.804	-47.6	2.937	136.1	0.132	59.3	0.840	-28.0
800	0.764	-62.1	2.773	123.9	0.160	51.8	0.796	-37.4
1000	0.700	-74.5	2.666	114.7	0.181	44.6	0.758	-43.0
1200	0.628	-86.3	2.427	106.6	0.200	38.8	0.697	-46.8
1400	0.574	-98.6	2.200	96.9	0.216	35.6	0.630	-51.1
1600	0.529	-110.5	2.080	88.4	0.220	33.5	0.570	-55.7
1800	0.487	-121.4	1.938	81.7	0.220	31.1	0.530	-60.5
2000	0.447	-134.5	1.779	75.6	0.218	27.3	0.493	-64.9
2200	0.438	-147.4	1.660	68.2	0.222	25.2	0.453	-69.4
2400	0.446	-157.1	1.581	61.7	0.224	24.4	0.424	-75.7
2600	0.445	-164.9	1.523	57.4	0.225	24.1	0.412	-81.8
2800	0.440	-172.6	1.425	53.3	0.220	24.1	0.406	-86.3
3000	0.444	179.8	1.332	48.0	0.216	23.5	0.387	-90.2