

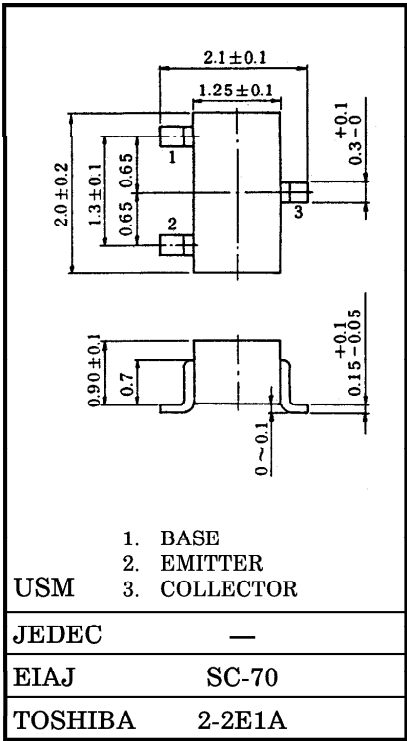
2SC5110

FOR VCO APPLICATION

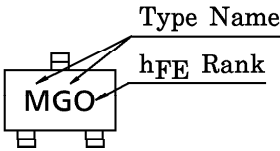
Unit in mm

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V _{CB0}	20	V
Collector-Emitter Voltage	V _{CEO}	10	V
Emitter-Base Voltage	V _{EB0}	3	V
Base Current	I _B	30	mA
Collector Current	I _C	60	mA
Collector Power Dissipation	P _C	100	mW
Junction Temperature	T _j	125	°C
Storage Temperature Range	T _{stg}	-55~125	°C



MARKING



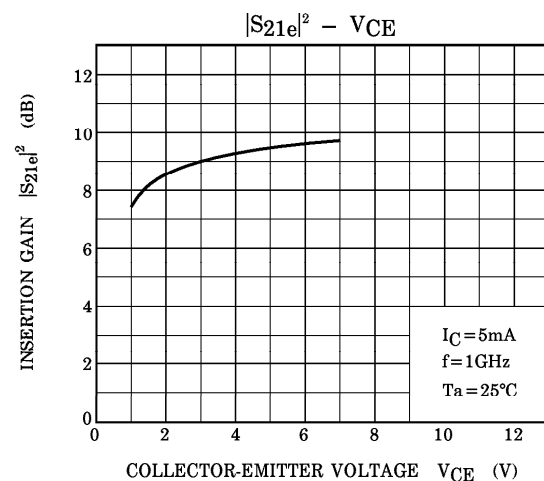
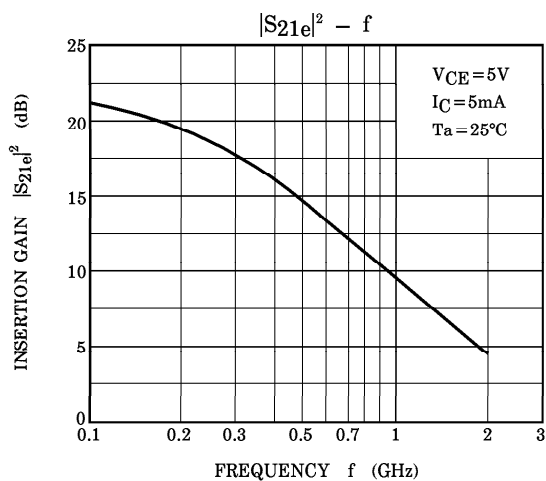
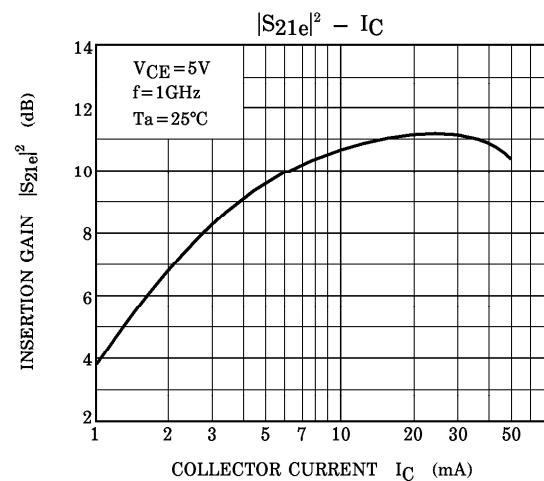
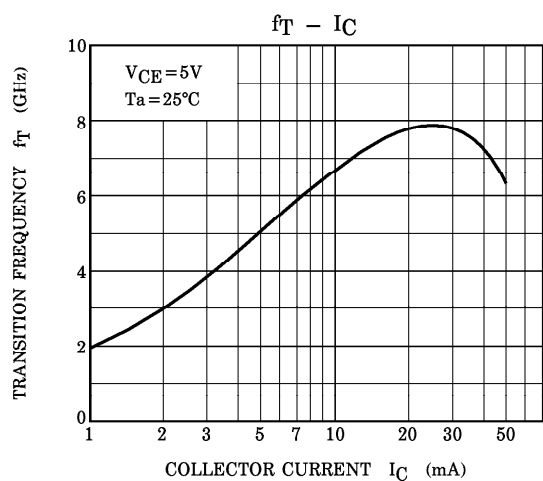
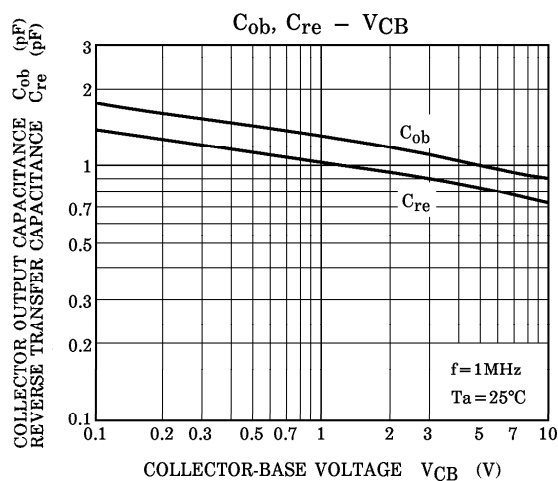
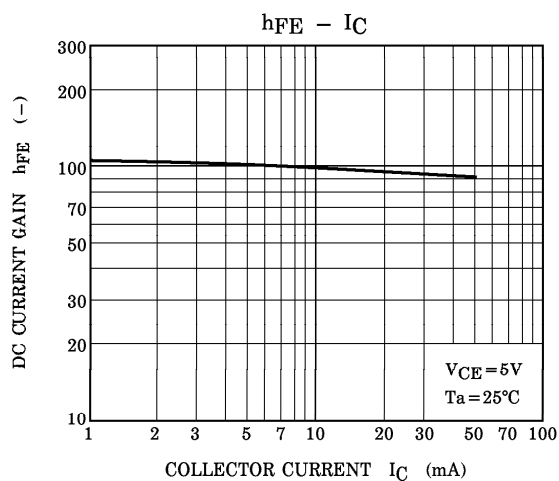
Weight : 0.006g

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I _{CBO}	V _{CB} =10V, I _E =0	—	—	0.1	μA
Emitter Cut-off Current	I _{EBO}	V _{EB} =1V, I _C =0	—	—	0.1	μA
DC Current Gain	h _{FE} (Note 1)	V _{CE} =5V, I _C =5mA	80	—	240	—
Transition Frequency	f _T	V _{CE} =5V, I _C =5mA	4	6	—	GHz
Insertion Gain	S _{21e} ²	V _{CE} =5V, I _C =5mA, f=1GHz	7	11	—	dB
Output Capacitance	C _{ob}	V _{CB} =5V, I _E =0, f=1MHz (Note 2)	—	0.7	—	pF
Reverse Transfer Capacitance	C _{re}		—	0.5	0.9	pF
Collector-Base Time Constant	C _c ·r _{bb} '	V _{CB} =5V, I _C =3mA, f=30MHz	—	5.5	10	ps

(Note 1) : h_{FE} Classification O : 80~160, Y : 120~240
(Note 2) : C_{re} is measured by 3 terminal method with capacitance bridge.

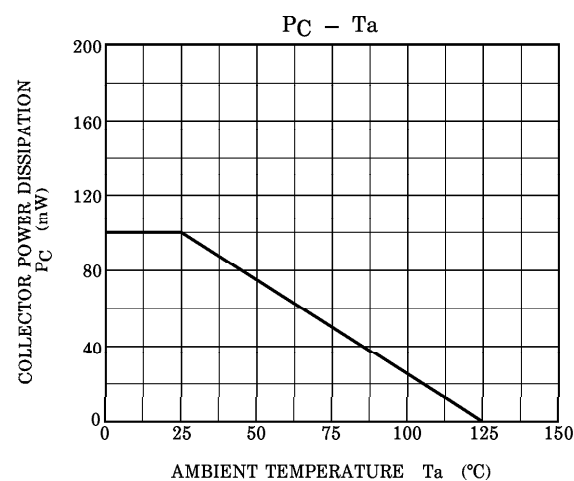
961001EAA2

● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.



961001EAA2'

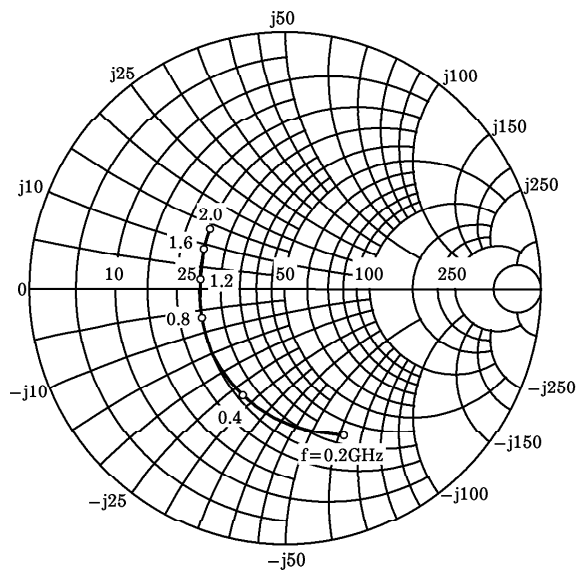
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.



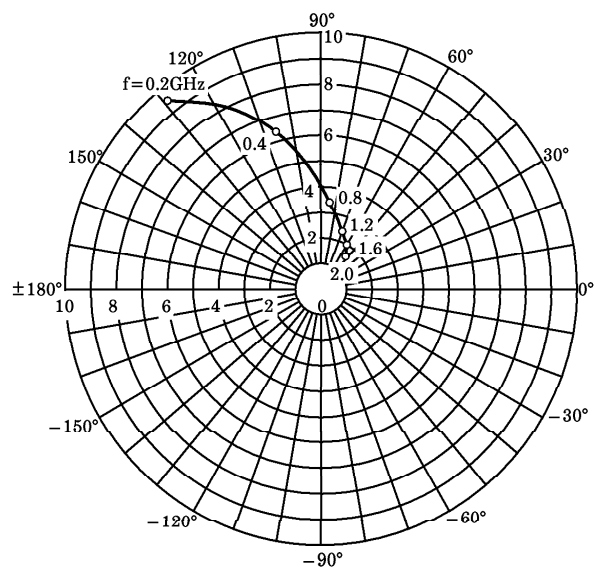
S-Parameter $Z_O = 50\Omega$, $T_a = 25^\circ\text{C}$
 $V_{CE} = 5\text{V}$, $I_C = 5\text{mA}$

frequency (MHz)	S11		S21		S12		S22	
	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
200	0.631	-67.7	9.526	129.8	0.062	55.9	0.687	-38.7
400	0.441	-111.7	6.393	106.3	0.084	49.5	0.459	-48.5
600	0.363	-139.8	4.611	93.6	0.100	50.6	0.360	-50.6
800	0.338	-159.8	3.599	84.6	0.117	52.9	0.312	-51.1
1000	0.331	-175.0	2.990	77.5	0.134	55.1	0.286	-51.6
1200	0.337	171.9	2.556	71.2	0.152	57.2	0.271	-53.0
1400	0.344	161.7	2.252	65.3	0.174	58.6	0.265	-55.7
1600	0.359	152.1	2.011	60.3	0.196	58.5	0.259	-59.5
1800	0.373	144.6	1.845	55.4	0.217	57.9	0.254	-63.6
2000	0.391	138.5	1.691	50.8	0.238	58.3	0.249	-68.8

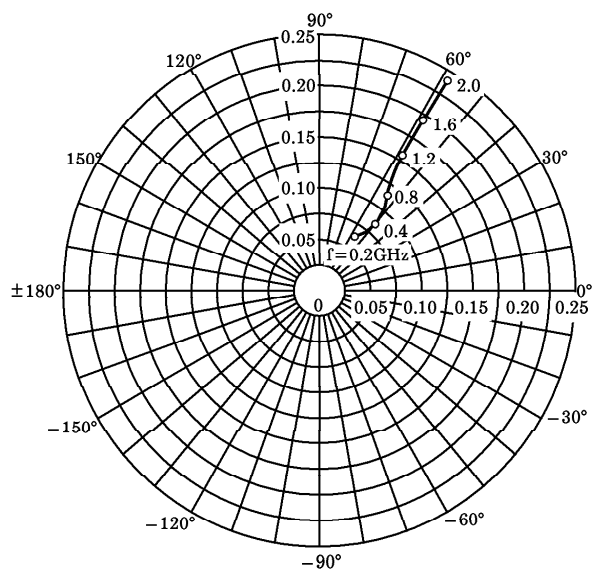
S_{11e}
 $V_{CE}=5V$
 $I_C=5mA$
 $T_a=25^\circ C$
 (UNIT : Ω)



S_{21e}
 $V_{CE}=5V$
 $I_C=5mA$
 $T_a=25^\circ C$



S_{12e}
 $V_{CE}=5V$
 $I_C=5mA$
 $T_a=25^\circ C$



S_{22e}
 $V_{CE}=5V$
 $I_C=5mA$
 $T_a=25^\circ C$
 (UNIT : Ω)

