

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

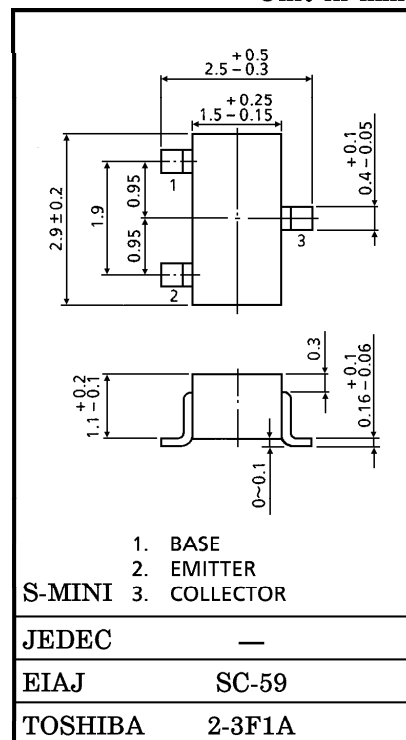
2SC5106

FOR VCO APPLICATION

Unit in mm

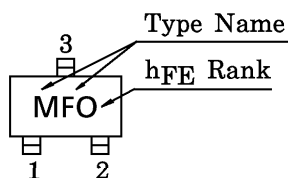
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V _{CB0}	20	V
Collector-Emitter Voltage	V _{CEO}	10	V
Emitter-Base Voltage	V _{EBO}	3	V
Base Current	I _B	15	mA
Collector Current	I _C	30	mA
Collector Power Dissipation	P _C	150	mW
Junction Temperature	T _j	125	°C
Storage Temperature Range	T _{stg}	-55~125	°C



Weight : 0.012g

MARKING



ELECTRICAL CHARACTERISTICS (Ta = 25°C)

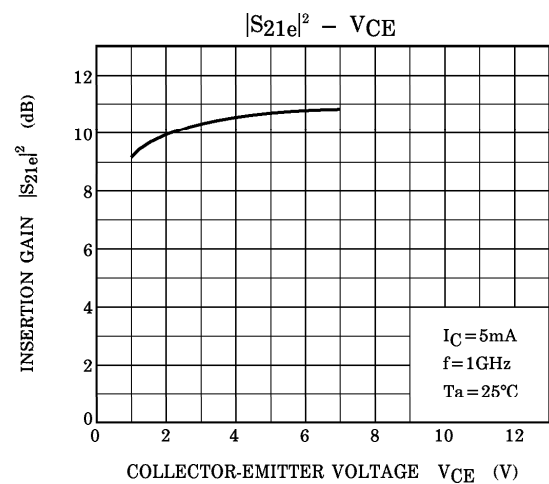
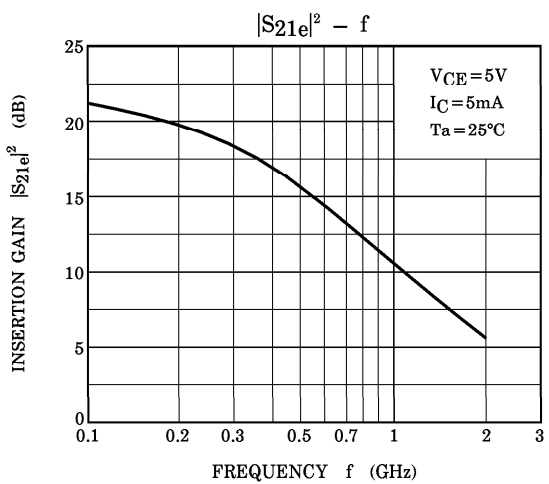
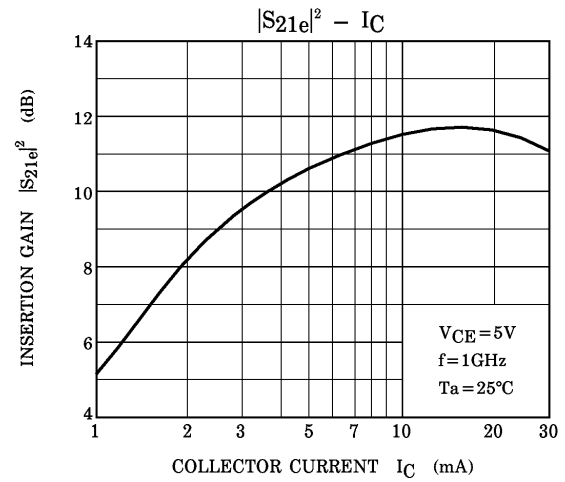
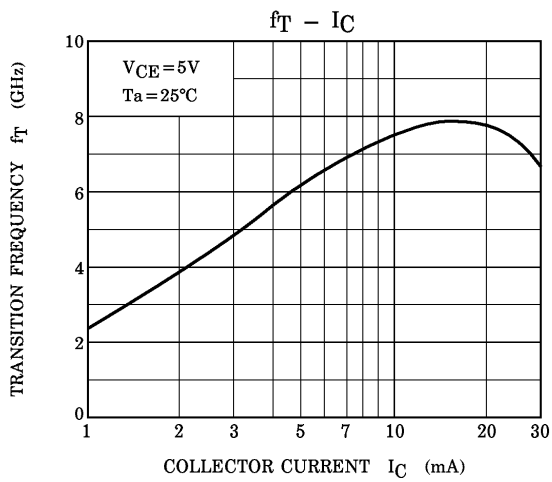
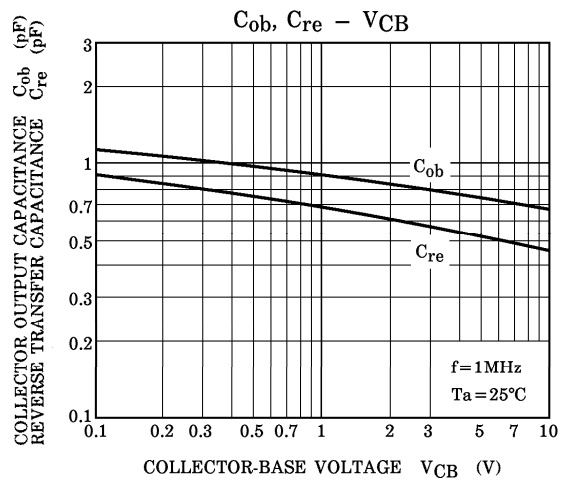
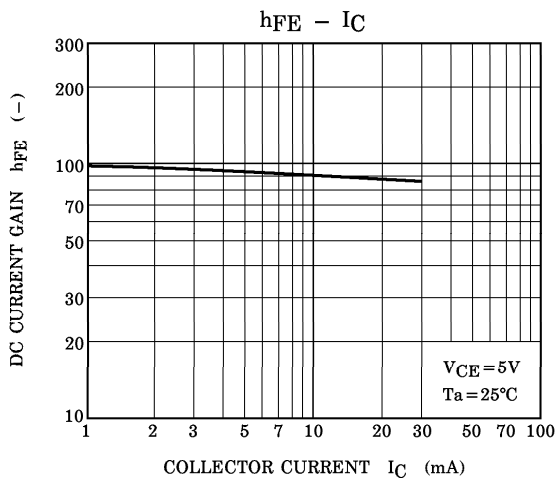
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I _{CB0}	V _{CB} = 10V, I _E = 0	—	—	0.1	μA
Emitter Cut-off Current	I _{EBO}	V _{EB} = 1V, I _C = 0	—	—	0.1	μA
DC Current Gain	h _{FE} (Note 1)	V _{CE} = 5V, I _C = 5mA	80	—	240	—
Transition Frequency	f _T	V _{CE} = 5V, 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,rb} '	V _{CB} = 15V, I _C = 3mA, f = 30MHz	—	5.5	10	ps

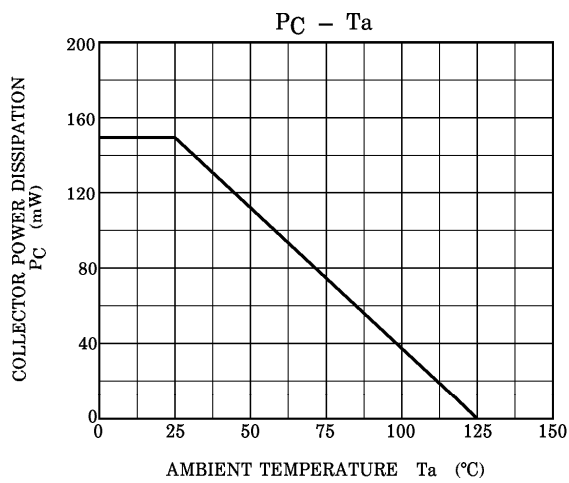
(Note 1) h_{FE} Classification O : 80~160, Y : 120~240

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

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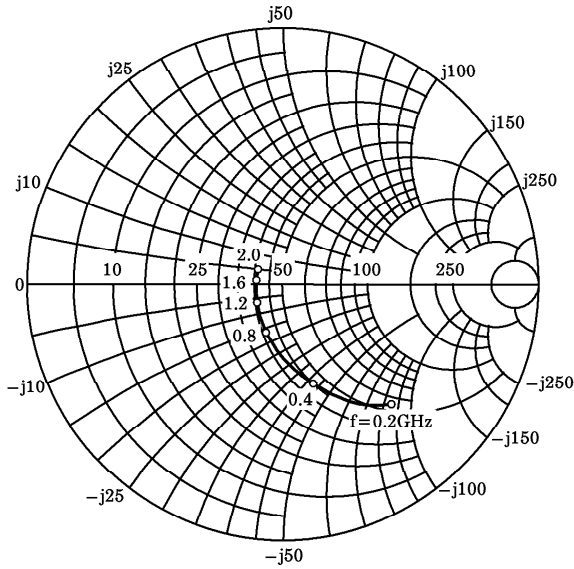




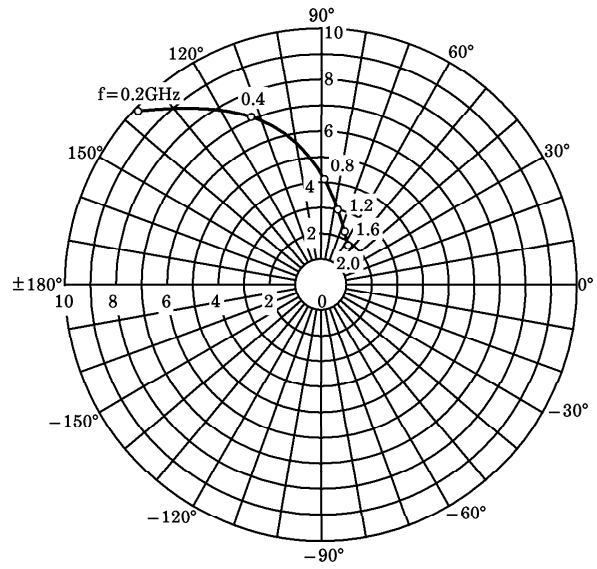
S-Parameter $Z_0 = 50\Omega$, $T_a = 25^\circ\text{C}$
 $V_{CE} = 5\text{V}$, $I_C = 5\text{mA}$

frequency (MHz)	S11		S21		S12		S22	
	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
200	0.654	-45.3	9.794	136.6	0.047	64.8	0.775	-27.8
400	0.414	-75.6	7.062	112.6	0.071	58.7	0.570	-35.0
600	0.273	-94.9	5.232	98.7	0.090	58.5	0.472	-35.8
800	0.193	-111.7	4.118	89.4	0.108	59.5	0.424	-35.5
1000	0.146	-128.1	3.412	82.0	0.127	60.4	0.398	-35.5
1200	0.116	-147.4	2.927	75.5	0.147	61.0	0.381	-36.2
1400	0.101	-169.6	2.571	69.8	0.169	60.7	0.373	-37.9
1600	0.098	171.6	2.299	64.4	0.189	59.5	0.363	-40.4
1800	0.105	155.8	2.079	59.8	0.208	58.6	0.351	-43.5
2000	0.118	142.1	1.928	55.4	0.230	58.4	0.338	-46.1

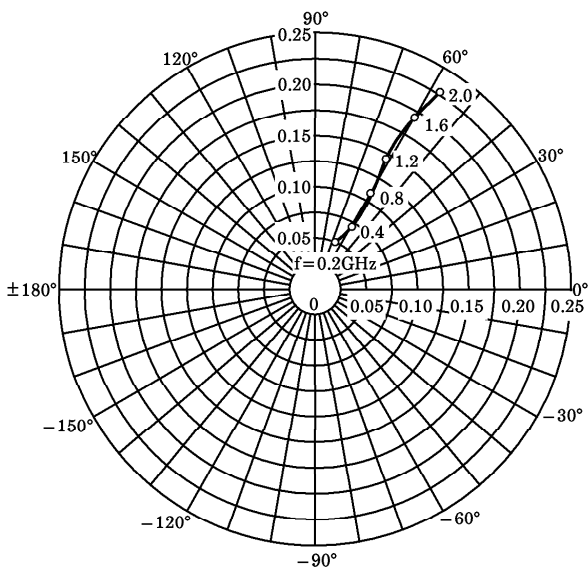
S_{11e}
 V_{CE}=5V
 I_C=5mA
 T_a=25°C
 (UNIT : Ω)



S_{21e}
 V_{CE}=5V
 I_C=5mA
 T_a=25°C



S_{12e}
 V_{CE}=5V
 I_C=5mA
 T_a=25°C



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

