

2SC3745

SILICON NPN EPITAXIAL PLANAR TYPE TRANSISTOR

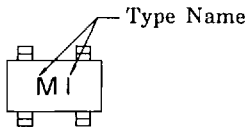
UHF~C BAND LOW NOISE AMPLIFIER APPLICATIONS.

- High Gain : $|S_{21e}|^2 = 12\text{dB (Typ.)}$
- Low Noise Figure : $NF = 2.0\text{dB (Typ.)}$
- High f_T : $f_T = 6.5\text{GHz (Typ.)}$

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CB0}	20	V
Collector-Emitter Voltage	V_{CEO}	7	V
Emitter-Base Voltage	V_{EB0}	3	V
Base Current	I_B	10	mA
Collector Current	I_C	30	mA
Collector Power Dissipation	P_C	150	mW
Junction Temperature	T_j	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~125	$^\circ\text{C}$

Marking



MICROWAVE CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

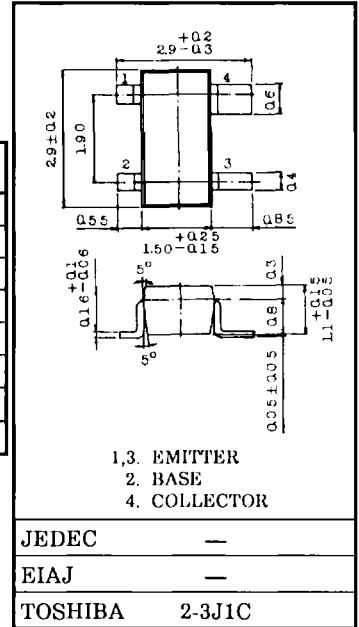
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Transition Frequency	f_T	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$	—	6.5	—	GHz
Insertion Gain	$ S_{21e} ^2$	$V_{CE} = 5\text{V}, I_C = 10\text{mA}, f = 1\text{GHz}$	—	12	—	dB
Noise Figure	NF	$V_{CE} = 5\text{V}, I_C = 5\text{mA}, f = 1\text{GHz}$	—	2.0	—	dB

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

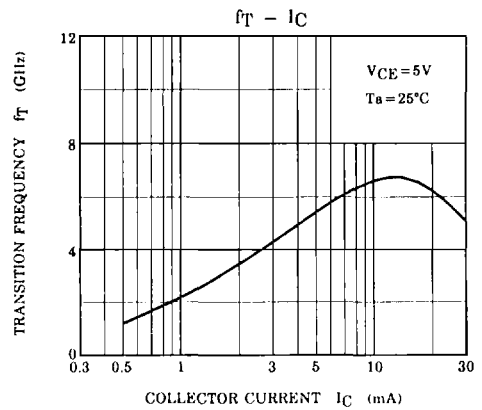
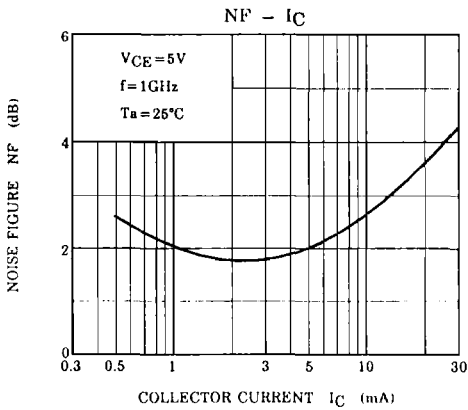
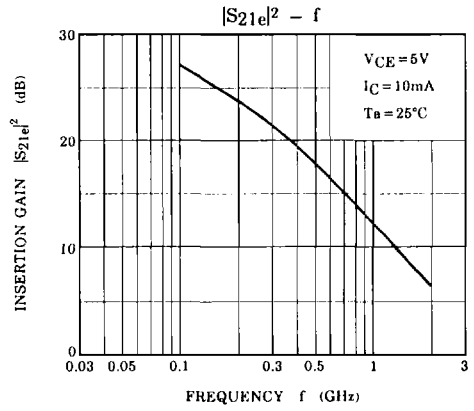
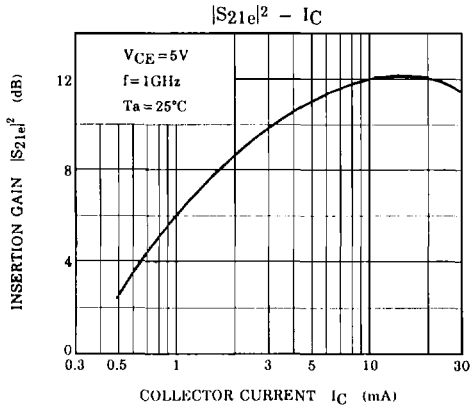
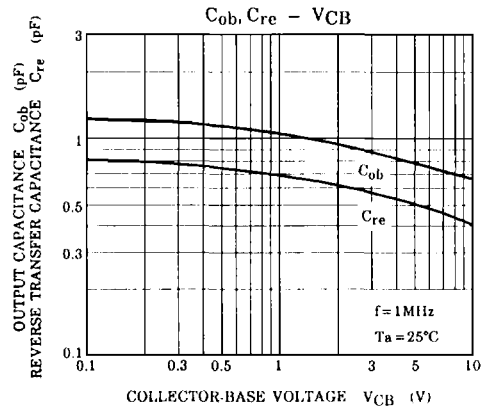
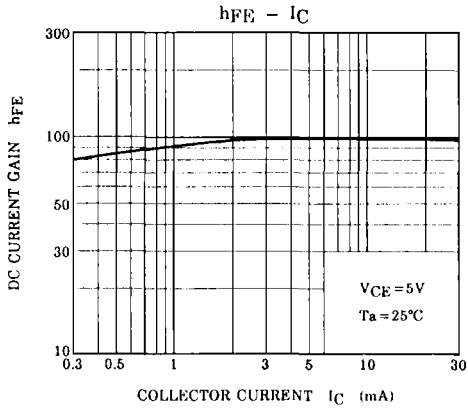
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CB0}	$V_{CB} = 10\text{V}, I_E = 0$	—	—	0.1	μA
Emitter Cut-off Current	I_{EB0}	$V_{EB} = 1\text{V}, I_C = 0$	—	—	1.0	μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 0.5\text{mA}, I_B = 0$	7	—	—	V
DC Current Gain	h_{FE}	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$	30	—	200	—
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	—	0.1	—	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	—	0.87	—	V
Output Capacitance	C_{ob}	$V_{CB} = 5\text{V}, I_E = 0$	—	0.8	—	pF
Reverse Transfer Capacitance	C_{re}	$f = 1\text{MHz}$ (Note)	—	0.5	0.8	pF

Note : C_{re} is measured by 3-terminal method with Capacitance Bridge.

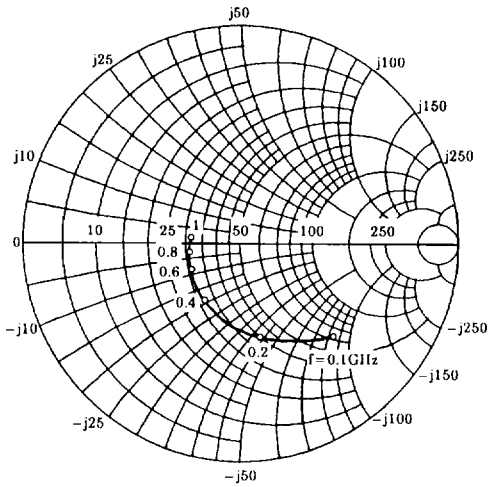
Unit in mm



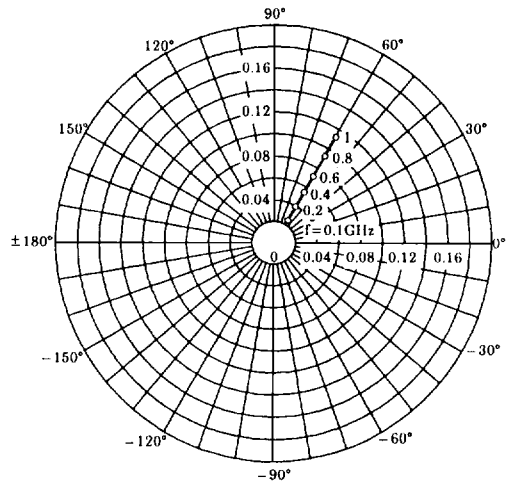
Weight : 0.012g



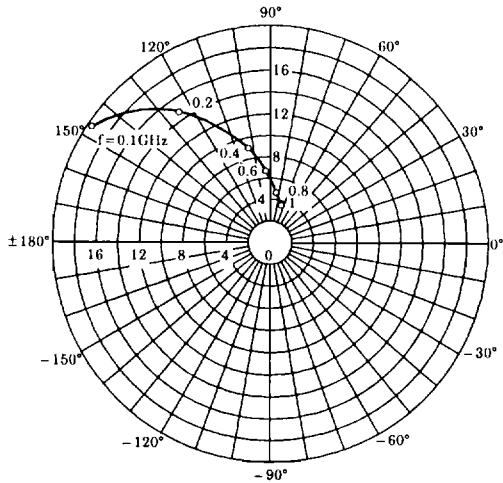
S_{11e}
 V_{CE} = 5V
 I_C = 10mA
 T_a = 25°C
 (UNIT : Ω)



S_{12e}
 V_{CE} = 5V
 I_C = 10mA
 T_a = 25°C



S_{21e}
 V_{CE} = 5V
 I_C = 10mA
 T_a = 25°C



S_{22e}
 V_{CE} = 5V
 I_C = 10mA
 T_a = 25°C
 (UNIT : Ω)

