

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANER TYPE

MT3S45T

VCO OSCILLETOR STAGE

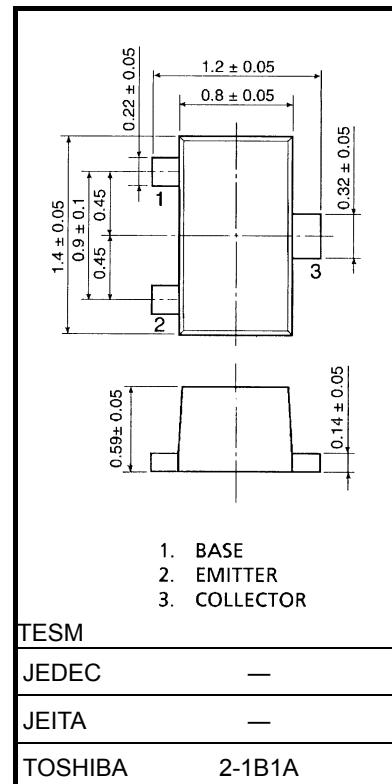
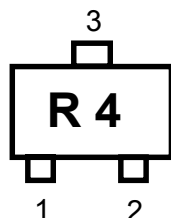
UHF LOW NOISE AMPLIFIER APPLICATION

Unit: mm

FEATURES

- Low Noise Figure :NF=1.1dB (@f=2GHz)
- High Gain:|S_{21e}|²=12.0dB (@f=2GHz)

Marking



Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-Base voltage	V _{CBO}	8	V
Collector-Emitter voltage	V _{CEO}	4.5	V
Emitter-Base voltage	V _{EBO}	1.5	V
Collector-Current	I _C	30	mA
Base-Current	I _B	15	mA
Collector Power dissipation	P _C	100	mW
Junction temperature	T _j	150	°C
Storage temperature Range	T _{stg}	-55~150	°C

Weight:0.0022g (typ.)

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition Frequency	fT	V _{CE} =3V, I _C =20mA, f=2GHz	13.5	18	-	GHz
Insertion Gain	S _{21e} ² (1)	V _{CE} =3V, I _C =20mA, f=1GHz	-	17.5	-	dB
	S _{21e} ² (2)	V _{CE} =3V, I _C =20mA, f=2GHz	9.5	12	-	dB
Noise Figure	NF(1)	V _{CE} =3V, I _C =6mA, f=1GHz	-	0.9	-	dB
	NF(2)	V _{CE} =3V, I _C =6mA, f=2GHz	-	1.1	1.6	dB

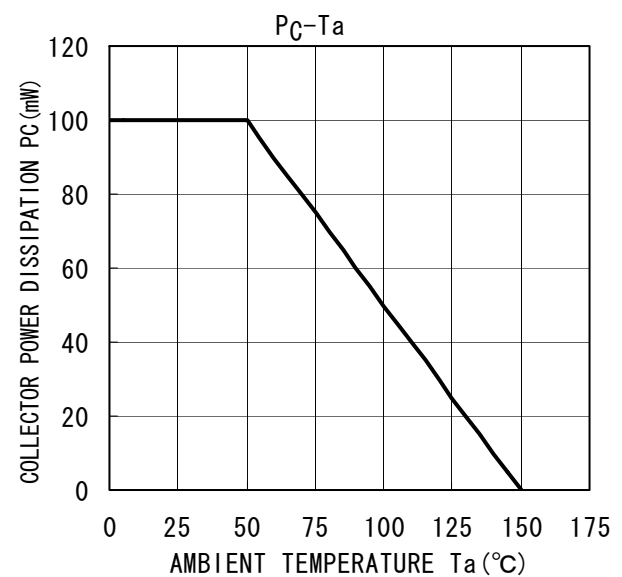
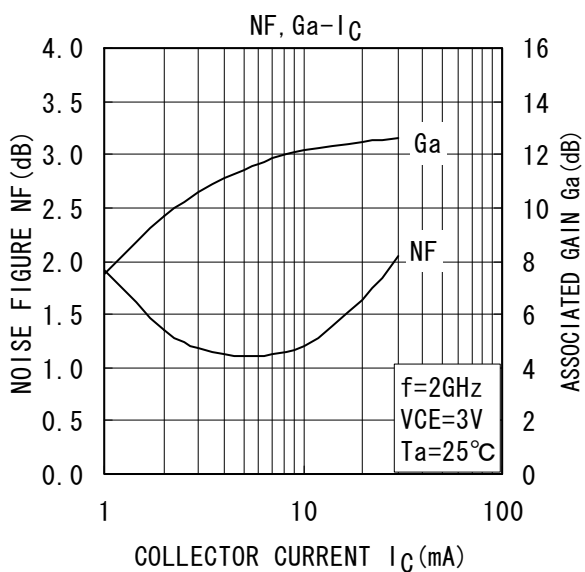
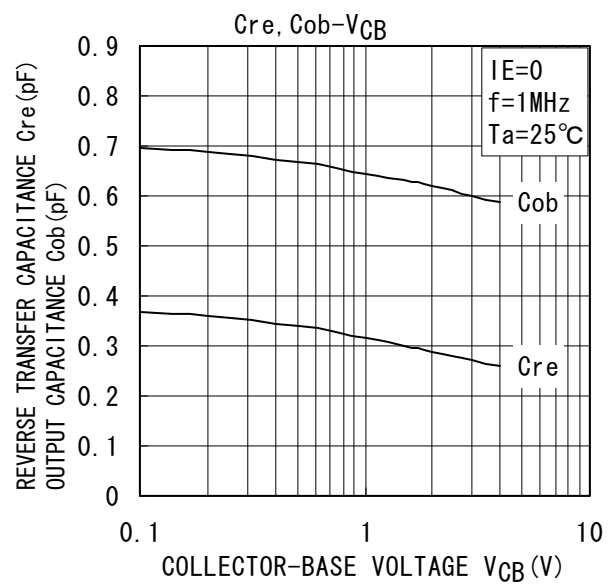
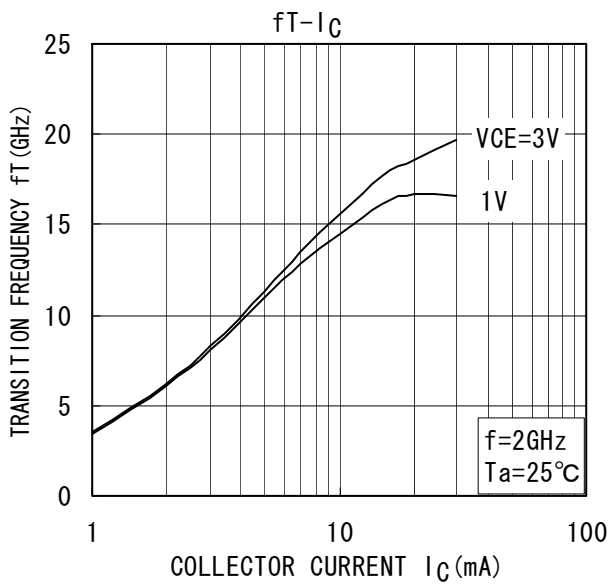
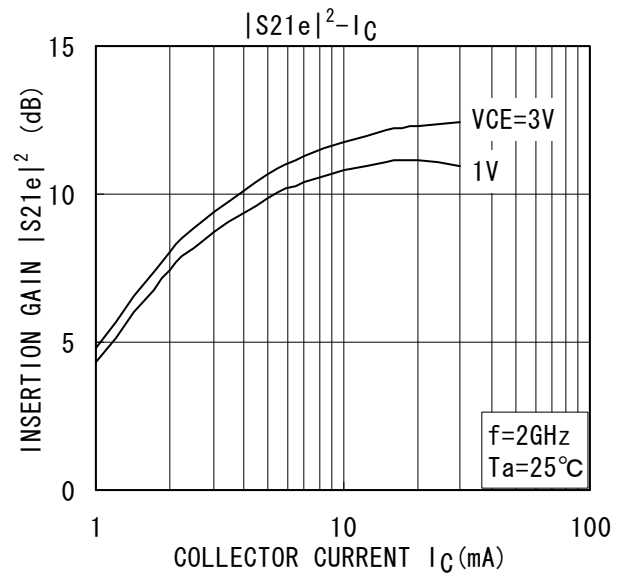
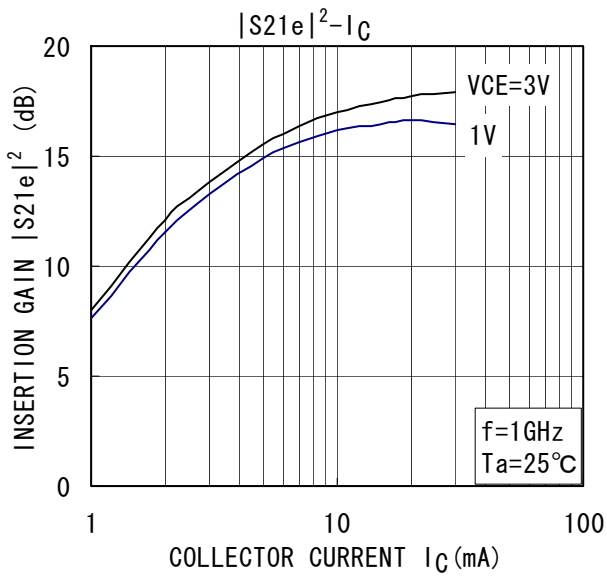
Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector Cut-off Current	I _{CBO}	V _{CB} =8V, I _E =0	-	-	1	μA
Emitter Cut-off Current	I _{EBO}	V _{EB} =1V, I _C =0	-	-	1	μA
DC Current Gain	hFE	V _{CE} =3V, I _C =10mA	70	-	140	-
Output Capacitance	C _{ob}	V _{CB} =1V, I _E =0, f=1MHz	-	0.66	1.10	pF
Reverse Transistor Capacitance	C _{re}	V _{CB} =1V, I _E =0, f=1MHz (Note 1)	-	0.33	0.55	pF

Note 1: C_{re} is measured by 3 terminal method with capacitance bridge.

Caution: This device is sensitive to electrostatic discharge.

Please make enough tool and equipment earthed when you handle.



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20070701-EN GENERAL

- The information contained herein is subject to change without notice.
- TOSHIBA is continually working to improve the quality and 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 comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
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