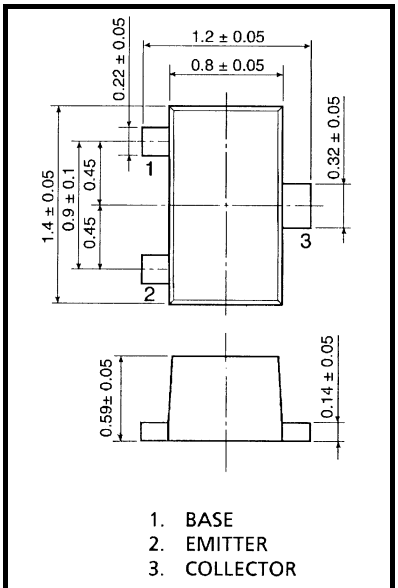
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANER TYPE

MT3S41T

VCO Oscillator Stage

UHF Low Noise Amplifier Application

Unit: mm



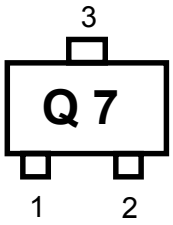
TESM	
JEDEC	—
JEITA	—
TOSHIBA	2-1B1A

Weight:0.0022g (typ.)

Features

- Low Noise Figure :NF=1.2dB (@f=2GHz)
- High Gain:$|S21e|^2$=10dB (@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	80	mA
Base-Current	I_B	40	mA
Collector Power dissipation	P_C	100	mW
Junction temperature	T_j	150	°C
Storage temperature Range	T_{stg}	−55~150	°C

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	11	15	-	GHz
Insertion Gain	$\|S21e\|^2$(1)	V_{CE}=3V, I_C=20mA, f=1GHz	13.5	15.5	-	dB
	$\|S21e\|^2$(2)	V_{CE}=3V, I_C=20mA, f=2GHz	8	10	-	dB
Noise Figure	NF(1)	V_{CE}=3V, I_C=5mA, f=1GHz	-	0.8	-	dB
	NF(2)	V_{CE}=3V, I_C=5mA, f=2GHz	-	1.2	1.8	dB

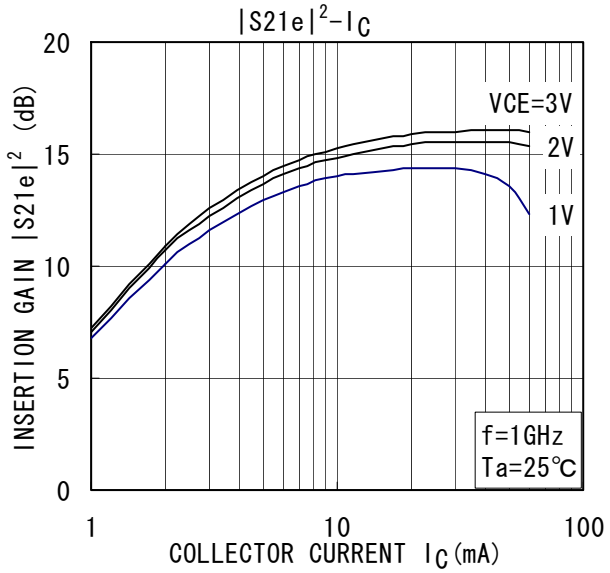
Electrical Characteristics (Ta = 25°C)

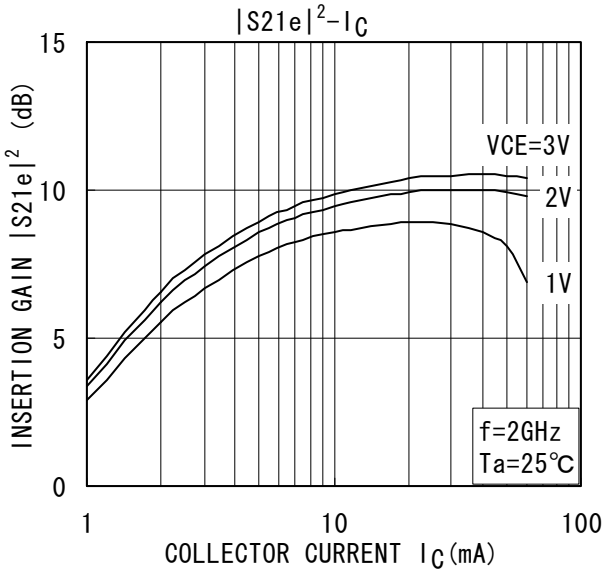
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector Cut-off Current	I_{CBO}	V_{CB}=8V, I_E=0	-	-	1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB}=1V, I_C=0	-	-	1	μA
DC Current Gain	hFE	V_{CE}=3V, I_C=20mA	70	-	140	-
Output Capacitance	C_{ob}	V_{CB}=1V, I_E=0, f=1MHz	-	0.9	1.4	pF
Reverse Transistor Capacitance	C_{re}	V_{CB}=1V, I_E=0, f=1MHz (Note 1)	-	0.55	0.9	pF

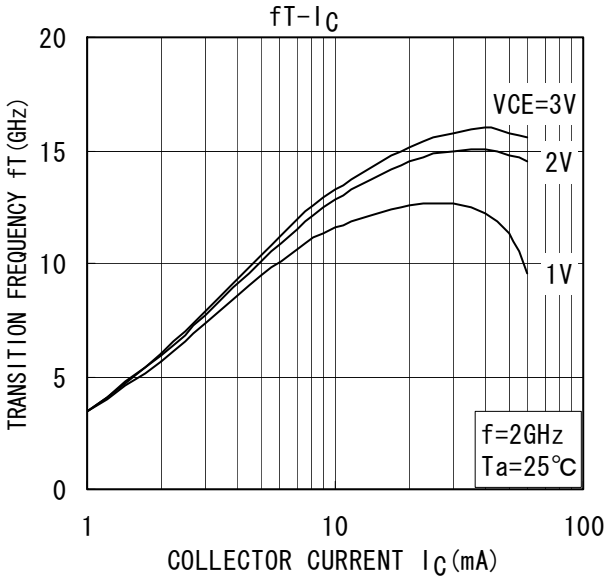
Note 1: C_{re} is measured by 3 terminal method with capacitance bridge.

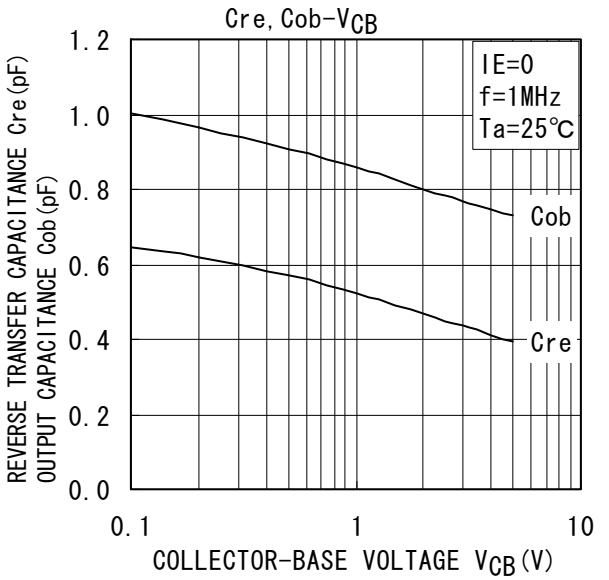
Caution: This device is sensitive to electrostatic discharge.

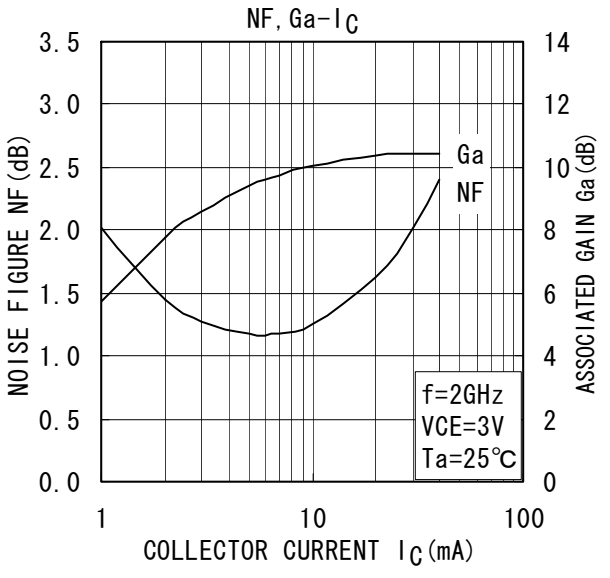
Please make enough tool and equipment earthed when you handle.

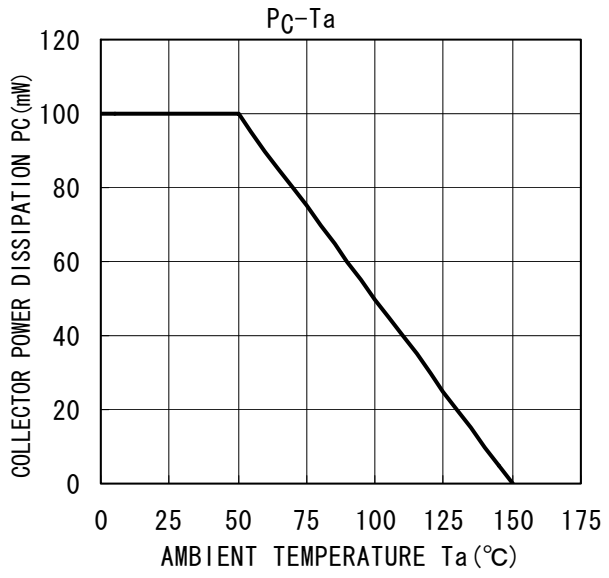












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