

TOSHIBA TRANSISTOR SILICON-GERMANIUM NPN EPITAXIAL PLANER TYPE

MT3S108FS

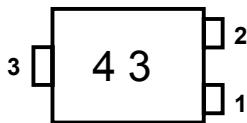
VCO OSCILLETOR STAGE

VHF-SHF Low Noise Amplifier Application

FEATURES

- Low Noise Figure : $NF=0.9\text{dB}$ (@ $f=2\text{GHz}$)
- High Gain: $|S21e|^2=11.5\text{dB}$ (@ $f=2\text{GHz}$)

Marking



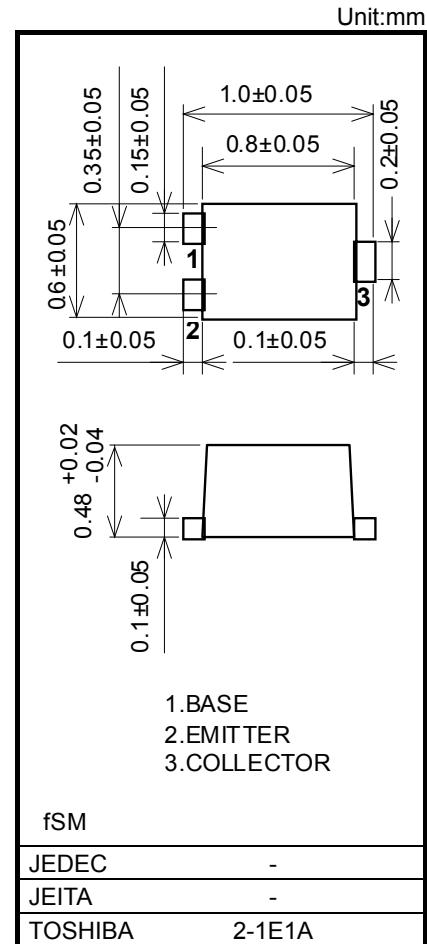
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Rating	Unit
Collector-Base voltage	V_{CBO}	10	V
Collector-Emitter voltage	V_{CEO}	4.5	V
Emitter-Base voltage	V_{EBO}	1.5	V
Collector-Current	I_C	25	mA
Base-Current	I_B	12.5	mA
Collector Power dissipation	P_C (Note 1)	100	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature Range	T_{stg}	-55~150	$^\circ\text{C}$

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.).

Note 1: Device mounted on a glass-epoxy PCB($1.0\text{ cm}^2 \times 1.0\text{ mm}$ (t))



Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition Frequency	f _T	V _{CE} =1V, I _C =10mA	10.5	13	-	GHz
Insertion Gain	S _{21e} ² (1)	V _{CE} =1V, I _C =5mA, f=2GHz	-	9	-	dB
	S _{21e} ² (2)	V _{CE} =3V, I _C =10mA, f=2GHz	9.5	11.5	-	dB
Noise Figure	NF	V _{CE} =1V, I _C =7mA, f=2GHz	-	0.9	1.5	dB

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector Cut-off Current	I _{CB0}	V _{CB} =5V, I _E =0	-	-	0.1	μA
Emitter Cut-off Current	I _{EB0}	V _{EB} =1V, I _C =0	-	-	0.5	μA
DC Current Gain	h _{FE}	V _{CE} =1V, I _C =5mA	75	-	125	-
Reverse Transistor Capacitance	C _{re}	V _{CB} =1V, I _E =0, f=1MHz (Note 1)	-	0.3	0.45	pF

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

Caution:

This device is sensitive to electrostatic discharge due to applied the high frequency transistor process of f_T=60GHz class is used for this product.

Please make enough tool and equipment earthed when you handle.

RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

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