TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

2SC5317FT

VHF-UHF Band Low Noise Amplifier Applications
(chip: f_T = 16 GHz series)

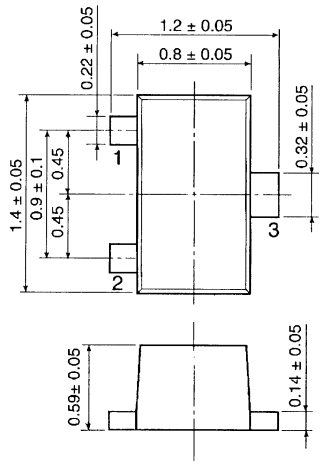
- Low Noise Figure :NF = 1.3dB (f = 2GHz)
- High Gain:$|S21e|^2$ = 9dB (f = 2GHz)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-Base voltage	V_{CBO}	8	V
Collector-Emitter voltage	V_{CEO}	5	V
Emitter-Base voltage	V_{EBO}	1.5	V
Collector-Current	I_C	20	mA
Base-Current	I_B	10	mA
Collector Power dissipation	P_C	100	mW
Junction temperature	T_j	125	°C
Storage temperature Range	T_{stg}	−55~125	°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).

Unit: mm



1. BASE
2. EMITTER
3. COLLECTOR

TESM	
JEDEC	—
JEITA	—
TOSHIBA	2-1B1A

Weight:0.0022g (typ.)

Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition Frequency	fT	V_{CE} = 3 V, I_C = 15 mA	9	—	—	GHz
Insertion Gain	$\|S21e\|^2$ (1)	V_{CE} = 3 V, I_C = 15 mA, f = 1 GHz	12	15	—	dB
	$\|S21e\|^2$ (2)	V_{CE} = 3 V, I_C = 15 mA, f = 2 GHz	6	9	—	
Noise Figure	NF (1)	V_{CE} = 3 V, I_C = 5 mA, f = 1 GHz	—	0.9	1.8	dB
	NF (2)	V_{CE} = 3 V, I_C = 5 mA, f = 2 GHz	—	1.3	2.2	

Electrical Characteristics (Ta = 25°C)

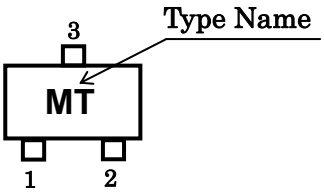
haracteristics	Symbol	CTest Condition	Min	Typ.	Max	Unit
Collector Cut-off Current	I_{CBO}	V_{CB} = 8 V, I_E = 0	—	—	1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1 V, I_C = 0	—	—-	1	μA
DC Current Gain	h_{FE}	V_{CE} = 3 V, I_C = 15 mA	50	—	250	
Output Capacitance	C_{ob}	V_{CB} = 2.5 V, I_E = 0, f = 1 MHz (Note)	—	0.6	—	pF
Reverse Transistor Capacitance	C_{re}		—	0.4	0.85	pF

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

Caution

This device is sensitive to electrostatic discharge. Please handle with caution.

Marking



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20070701-EN GENERAL

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