TOSHIBA TRANSISTOR SILICON, SILICON GERMANIUM NPN EPITAXIAL PLANAR TYPE

MT6L77FS

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

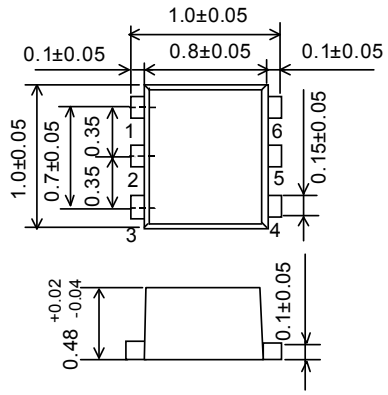
Two devices are built in to the fine pich small mold package (6pins):fs6

- It exsels in the buffer and oscillation use.

Mounted Devices

	Q1	Q2
Three-pin fSM mold products are corresponded	MT3S11FS	MT3S106FS

Unit: mm



1.COLLECTOR 1
2.EMITTER1
3.COLLECTOR2
4.BASE2
5.EMITTER2
6.BASE1

fS6

JEDEC	—
JEITA	—
TOSHIBA	2-1F1A

Weight : 0.001g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

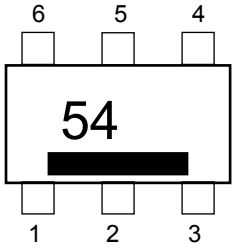
CHARACTERISTICS	SYMBOL	RATING		UNIT
		Q1	Q2	
Collector-Base Voltage	V_{CBO}	13	13	V
Collector-Emitter Voltage	V_{CEO}	6	6	V
Emitter-Base Voltage	V_{EBO}	1	1	V
Collector Current	I_C	40	80	mA
Base Current	I_B	10	20	mA
Collector power dissipation	P_C (Note 1)	100		mW
		110 (Note 2)		
Junction temperature	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).

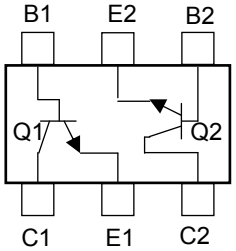
Note 1 : 1.0 cm^2 × 1.0 mm (t) at the time of glass epoxy printed circuit board mounting.

Note 2 : At the time of two-element operation

Marking (top view)



Pin Assignment (top view)



ELECTRICAL CHARACTERISTICS Q1 (Ta = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = 5 V, I_E = 0	—	—	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} = 1 V, I_C = 5 mA	100	—	160	—
Reverse Transfer Capacitance	C_{re} (Note)	V_{CB} = 1 V, I_E = 0, f = 1 MHz	—	0.65	0.9	pF
Transition Frequency	f_T	V_{CE} = 1 V, I_C = 5 mA	4	6	—	GHz
Insertion Gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 1 V, I_C = 5 mA, f = 2 GHz	—	3.5	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 3 V, I_C = 20 mA, f = 2 GHz	4	6.5	—	
Noise Figure	NF	V_{CE} = 1 V, I_C = 5 mA, f = 2 GHz	—	2.4	3.2	dB

ELECTRICAL CHARACTERISTICS Q2 (Ta = 25°C)

CHARACTERISTICS	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = 5 V, I_E = 0	—	—	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1 V, I_C = 0	—	—	0.5	μA
DC Current Gain	h_{FE}	V_{CE} = 1 V, I_C = 5 mA	110	—	160	—
Reverse Transfer Capacitance	C_{re} (Note)	V_{CB} = 1 V, I_E = 0, f = 1 MHz	—	0.5	0.7	pF
Transition Frequency	f_T	V_{CE} = 1 V, I_C = 10 mA	6.5	8.5	—	GHz
Insertion Gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 1 V, I_C = 10 mA, f = 2 GHz	—	8	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 3 V, I_C = 20 mA, f = 2 GHz	8.5	10	—	
Noise Figure	NF	V_{CE} = 1 V, I_C = 10 mA, f = 2 GHz	—	1.2	2	dB

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

Caution

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

Please make enough tool and equipment earthed when you handle.

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20070701-EN GENERAL

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