

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

MT6L59E

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

- TWO devices are built in to the super-thin and ultra super mini (6 pins) package : ES6

MOUNTED DEVICES

	Q1 : SSM (TESM)	Q2 : SSM (TESM)
Three-pins (SSM / TESSM) mold products are corresponded.	MT3S06S (MT3S06T)	MT3S07S (MT3S07T)

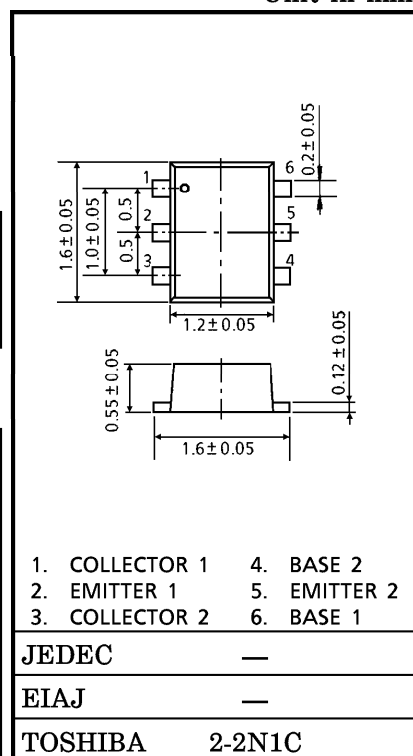
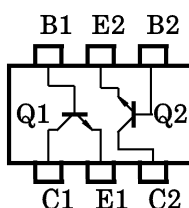
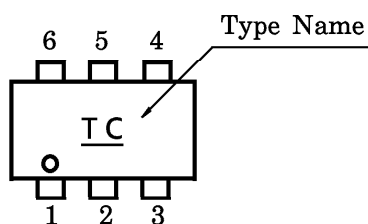
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	Q1	Q2	UNIT
Collector-Base Voltage	V _{CBO}	10	10	V
Collector-Emitter Voltage	V _{CEO}	5	5	V
Emitter-Base Voltage	V _{EBO}	1.5	1.5	V
Collector Current	I _C	15	25	mA
Base Current	I _B	7	10	mA
Collector Power Dissipation	P _C (Note 1)	100		mW
Junction Temperature	T _j	125		°C
Storage Temperature Range	T _{stg}	-55~125		°C

(Note 1) : Total power dissipation of Q1 and Q2.

MARKING

PIN ASSIGNMENT (TOP VIEW)



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ELECTRICAL CHARACTERISTICS Q1 (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CB} = 5\text{ V}, I_E = 0$	—	—	0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1\text{ V}, I_C = 0$	—	—	1	μA
DC Current Gain	h_{FE}	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}$	70	—	140	—
Transition Frequency	f_T	$V_{CE} = 3\text{ V}, I_C = 5\text{ mA}$	7	10	—	GHz
Insertion Gain	$ S_{21e} ^2$ (1)	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}, f = 2\text{ GHz}$	—	7.5	—	dB
	$ S_{21e} ^2$ (2)	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}, f = 2\text{ GHz}$	4.5	8	—	dB
Noise Figure	NF (1)	$V_{CE} = 1\text{ V}, I_C = 3\text{ mA}, f = 2\text{ GHz}$	—	1.7	3	dB
	NF (2)	$V_{CE} = 3\text{ V}, I_C = 3\text{ mA}, f = 2\text{ GHz}$	—	1.6	3	dB
Reverse Transfer Capacitance	C_{re}	$V_{CB} = 1\text{ V}, I_E = 0, f = 1\text{ MHz}$ (Note 2)	—	0.35	0.75	pF

ELECTRICAL CHARACTERISTICS Q2 (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CB} = 5\text{ V}, I_E = 0$	—	—	0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1\text{ V}, I_C = 0$	—	—	1	μA
DC Current Gain	h_{FE}	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}$	70	—	140	—
Transition Frequency	f_T	$V_{CE} = 3\text{ V}, I_C = 10\text{ mA}$	10	12	—	GHz
Insertion Gain	$ S_{21e} ^2$ (1)	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}, f = 2\text{ GHz}$	—	7	—	dB
	$ S_{21e} ^2$ (2)	$V_{CE} = 3\text{ V}, I_C = 15\text{ mA}, f = 2\text{ GHz}$	6.5	8.5	—	dB
Noise Figure	NF (1)	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}, f = 2\text{ GHz}$	—	1.6	3	dB
	NF (2)	$V_{CE} = 3\text{ V}, I_C = 5\text{ mA}, f = 2\text{ GHz}$	—	1.5	3	dB
Reverse Transfer Capacitance	C_{re}	$V_{CB} = 1\text{ V}, I_E = 0, f = 1\text{ MHz}$ (Note 2)	—	0.45	0.85	pF

(Note 2) : C_{re} is measured by 3 terminal method with capacitance bridge.

HANDLING PRECAUTION

When handling individual devices (which are not yet mounted on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static materials.