

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

MT6L57AE

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

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

MOUNTED DEVICES

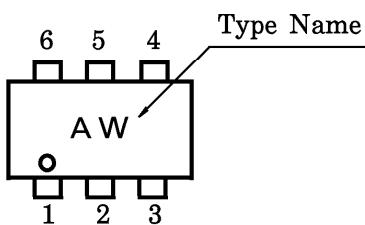
	Q1 : SSM (TESM)	Q2 : SSM (TESM)
Three-pins (SSM / TESM) mold products are corresponded.	MT3S06S (MT3S06T)	MT3S04AS (MT3S04AT)

MAXIMUM RATINGS (Ta = 25°C)

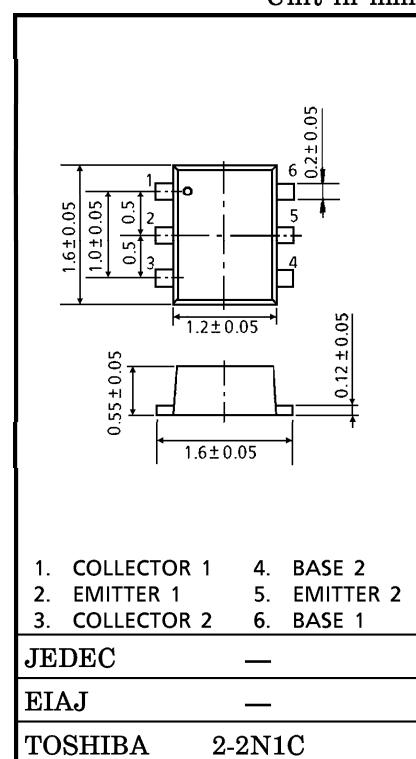
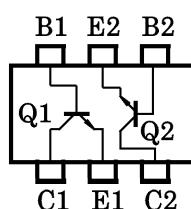
CHARACTERISTIC	SYMBOL	Q1	Q2	UNIT
Collector-Base Voltage	V _{CBO}	10	10	V
Collector-Emitter Voltage	V _{CEO}	5	5	V
Emitter-Base Voltage	V _{EBO}	1.5	2	V
Collector Current	I _C	15	40	mA
Base Current	I _B	7	10	mA
Collector Power Dissipation	P _C (Note 1)	100		mW
Junction Temperature	T _j	125		°C
Storage Temperature Range	T _{stg}	-55~125		°C

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

MARKING



PIN ASSIGNMENT (TOP VIEW)



Weight : 0.003 g

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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	$ \mathcal{S}_{21e} ^2$ (1)	$V_{CE} = 1 \text{ V}, I_C = 5 \text{ mA}, f = 2 \text{ GHz}$	—	7.5	—	dB
	$ \mathcal{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}	$V_{CE} = 1 \text{ V}, I_C = 5 \text{ mA}$	80	—	160	—
Transition Frequency	f_T (1)	$V_{CE} = 1 \text{ V}, I_C = 5 \text{ mA}$	2	4.5	—	GHz
	f_T (2)	$V_{CE} = 3 \text{ V}, I_C = 7 \text{ mA}$	5	7	—	GHz
Insertion Gain	$ \mathcal{S}_{21e} ^2$ (1)	$V_{CE} = 1 \text{ V}, I_C = 5 \text{ mA}, f = 1 \text{ GHz}$	—	8.5	—	dB
	$ \mathcal{S}_{21e} ^2$ (2)	$V_{CE} = 3 \text{ V}, I_C = 20 \text{ mA}, f = 1 \text{ GHz}$	7.5	11	—	dB
Noise Figure	NF (1)	$V_{CE} = 1 \text{ V}, I_C = 5 \text{ mA}, f = 1 \text{ GHz}$	—	1.3	2.2	dB
	NF (2)	$V_{CE} = 3 \text{ V}, I_C = 7 \text{ mA}, f = 1 \text{ GHz}$	—	1.2	2	dB
Reverse Transfer Capacitance	C_{re}	$V_{CB} = 1 \text{ V}, I_E = 0, f = 1 \text{ MHz}$ (Note 2)	—	0.9	1.25	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.