Preliminary TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

MT6L61AS

VHF-UHF Band Low Noise Amplifier Application

VHF-UHF Band Oscillator Application

- Two devices are built into the sES6 package, which is smaller and thinner than the super-thin and ultra-super mini (6-pin) ES6 package.

Mounted Devices

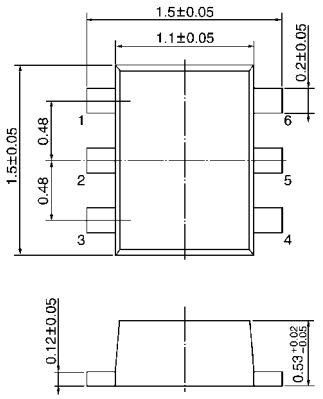
	Q1	Q2
Three pin SSM type part No.	MT3S07S	MT3S04AS

Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating		Unit
		Q1	Q2	
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	25	40	mA
Base current	I_B	10	10	mA
Collector power dissipation	P_C (Note 1)	150		mW
Junction temperature	T_j	125		°C
Storage temperature range	T_{stg}	−55~125		°C

Note 1: Total power dissipation of Q1 and Q2 mounted on the circuit board.

Unit: mm

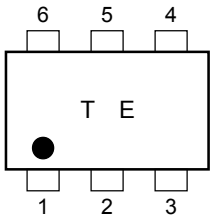


1.COLLECTOR1 4.BASE2
2.EMITTER1 5.EMITTER2
3.COLLECTOR2 6.BASE1

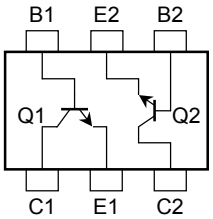
JEDEC	—
JEITA	—
TOSHIBA	2-2Q1A

Weight: 2.1 mg

Marking



Pin Assignment



Electrical Characteristics Q1-Side (Ta = 25°C)

Characteristics	Symbol	Test 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	70	—	140	—
Transition frequency	f_T	V_{CE} = 3 V, I_C = 10 mA	10	12	—	GHz
Insertion gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 1 V, I_C = 5 mA, f = 2 GHz	—	6.5	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 3 V, I_C = 15 mA, f = 2 GHz	4	7	—	
Noise figure	NF (1)	V_{CE} = 1 V, I_C = 5 mA, f = 2 GHz	—	1.6	3	dB
	NF (2)	V_{CE} = 3 V, I_C = 5 mA, f = 2 GHz	—	1.5	3	
Reverse transfer capacitance	C_{re}	V_{CB} = 1 V, I_E = 0, f = 1 MHz (Note 2)	—	0.45	0.85	pF

Electrical Characteristics Q2-Side (Ta = 25°C)

Characteristics	Symbol	Test 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	80	—	160	—
Transition frequency	f_T (1)	V_{CE} = 1 V, I_C = 5 mA	2	5	—	GHz
	f_T (2)	V_{CE} = 3 V, I_C = 7 mA	5	7	—	
Insertion gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 1 V, I_C = 5 mA, f = 1 GHz	—	8.5	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 3 V, I_C = 20 mA, f = 1 GHz	7.5	11	—	
Noise figure	NF (1)	V_{CE} = 1 V, I_C = 5 mA, f = 1 GHz	—	1.3	2.2	dB
	NF (2)	V_{CE} = 3 V, I_C = 7 mA, f = 1 GHz	—	1.2	2	
Reverse transfer capacitance	C_{re}	V_{CB} = 1 V, I_E = 0, f = 1 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.

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