

## Preliminary

TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

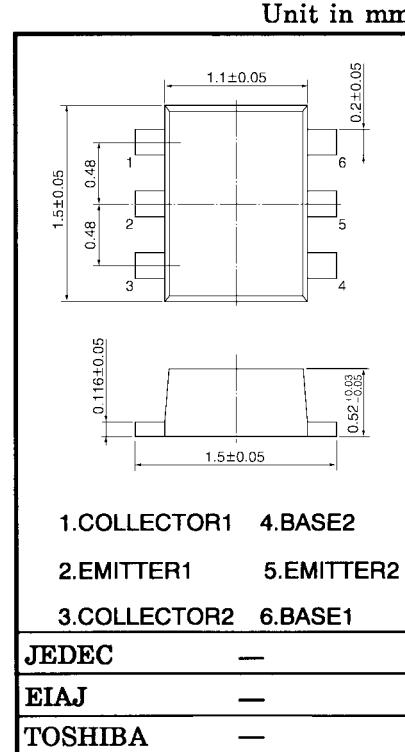
## M T 6 L 5 8 A S

VHF-UHF Band Low Noise Amplifier Application

VHF-UHF Band Oscillator Application

## Mounted Devices

	Q1: SSM (TESM)	Q2: SSM (TESM)
Three pin (SSM/TESM) type part No.	MT3S06S (MT3S06T)	MT3S03AS (MT3S03AT)



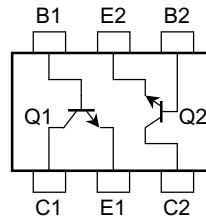
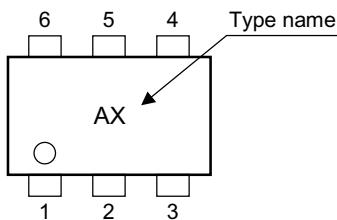
## Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Q1	Q2	Unit
Collector-base voltage	V <sub>CBO</sub>	10	10	V
Collector-emitter voltage	V <sub>CEO</sub>	5	5	V
Emitter-base voltage	V <sub>EBO</sub>	1.5	2	V
Collector current	I <sub>C</sub>	15	40	mA
Base current	I <sub>B</sub>	7	10	mA
Collector power dissipation	P <sub>C</sub> (Note 1)	100		mW
Junction temperature	T <sub>j</sub>	125		°C
Storage temperature range	T <sub>stg</sub>	-55~125		°C

Note 1: Total power dissipation of Q1 and Q2

## Marking

## Pin Assignment



000707EAA1

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit	
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 5 V, I <sub>E</sub> = 0	—	—	0.1	µA	
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 1 V, I <sub>C</sub> = 0	—	—	1	µA	
DC current gain	h <sub>FE</sub>	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 5 mA	70	—	140	—	
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 5 mA	7	10	—	GHz	
Insertion gain	S <sub>21e</sub>   <sup>2</sup> (1)	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 5 mA, f = 2 GHz	—	7.5	—	dB	
	S <sub>21e</sub>   <sup>2</sup> (2)	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA, f = 2 GHz	4.5	8	—		
Noise figure	NF (1)	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 3 mA, f = 2 GHz	—	1.7	3	dB	
	NF (2)	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 3 mA, f = 2 GHz	—	1.6	3		
Reverse transfer capacitance	C <sub>re</sub>	V <sub>CB</sub> = 1 V, I <sub>E</sub> = 0, f = 1 MHz	(Note 2)		0.35	0.75	pF

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit	
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 5 V, I <sub>E</sub> = 0	—	—	0.1	µA	
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 1 V, I <sub>C</sub> = 0	—	—	1	µA	
DC current gain	h <sub>FE</sub>	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 5 mA	80	—	160	—	
Transition frequency	f <sub>T</sub> (1)	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 5 mA	5	7	—	GHz	
	f <sub>T</sub> (2)	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 10 mA	7	10	—		
Insertion gain	S <sub>21e</sub>   <sup>2</sup> (1)	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 5 mA, f = 2 GHz	—	5	—	dB	
	S <sub>21e</sub>   <sup>2</sup> (2)	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 20 mA, f = 20 GHz	3	6.5	—		
Noise figure	NF (1)	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 5 mA, f = 2 GHz	—	1.7	3	dB	
	NF (2)	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA, f = 2 GHz	—	1.4	2.2		
Reverse transfer capacitance	C <sub>re</sub>	V <sub>CB</sub> = 1 V, I <sub>E</sub> = 0, f = 1 MHz	(Note 2)		0.8	1.15	pF

Note 2: C<sub>re</sub> is measured by 3 terminal method with capacitance bridge.

## Caution

This device electrostatic sensitivity. Please handle with caution.