

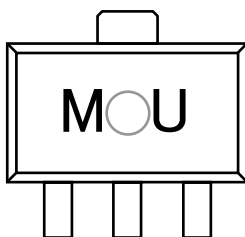
MT3S20P

VHF-UHF Band Low-Noise, Low-Distortion Amplifier Applications

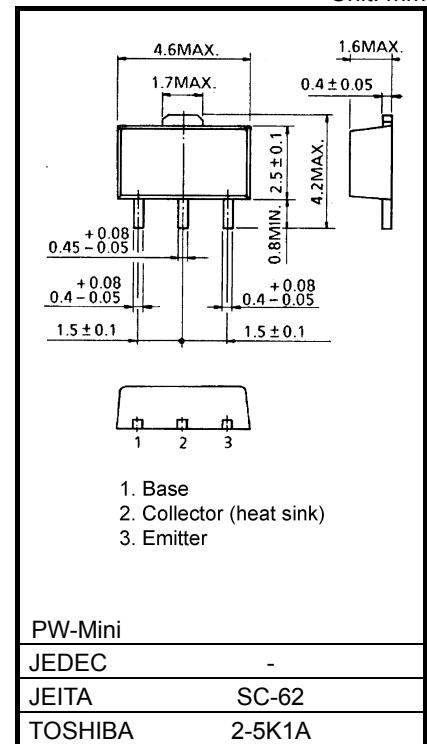
FEATURES

- Low Noise Figure: NF=1.45dB(Typ.) (@f=1GHz)
- High Gain: $|S_{21e}|^2=11\text{dB(Typ.)}$ (@f=1GHz)

Marking



Unit: mm



Weight: 0.05 g (Typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	20	V
Collector-emitter voltage	V_{CEO}	12	V
Emitter-base voltage	V_{EBO}	1.5	V
Collector current	I_C	80	mA
Base current	I_B	10	mA
Collector power dissipation	P_C	400	mW
Collector power dissipation	$P_C(\text{Note1})$	1.8	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 to 150	°C

Note.1 : The device is mounted on a ceramic board (25mm X 25mm X 0.8 mm (t))

Note.2 : 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).

Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition frequency	f_T	$V_{CE}=5V, I_C=30mA$	5	7	—	GHz
Insertion gain	$ S_{21e} ^2(1)$	$V_{CE}=5V, I_C=50mA, f=500MHz$	—	16.5	—	dB
	$ S_{21e} ^2(2)$	$V_{CE}=5V, I_C=50mA, f=1GHz$	9	11	—	
Noise figure	NF	$V_{CE}=5V, I_C=20mA, f=1GHz$	—	1.45	2	dB
3 rd order intermodulation distortion output intercept point	OIP3	$V_{CE}=5V, I_C=50mA, f=500MHz,$ $\Delta f=1MHz$	27.5	31.5	—	dBmW

Electrical Characteristics (Ta = 25°C)

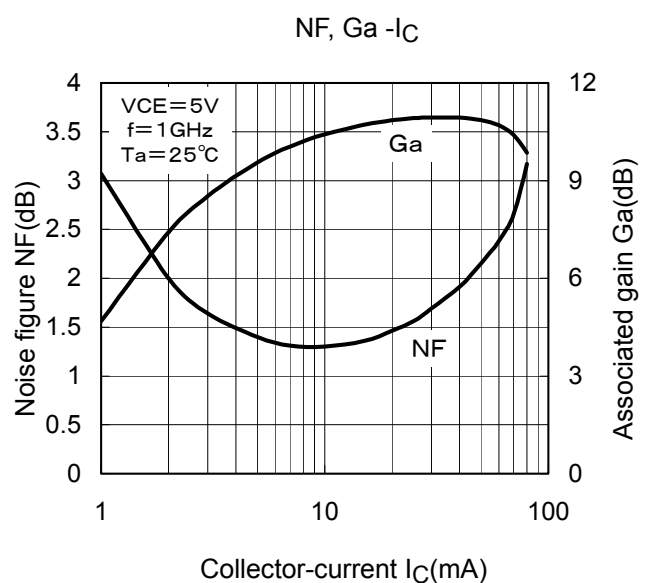
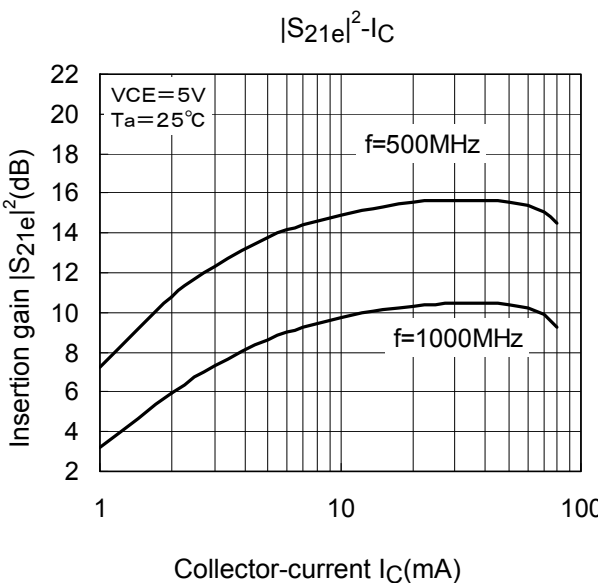
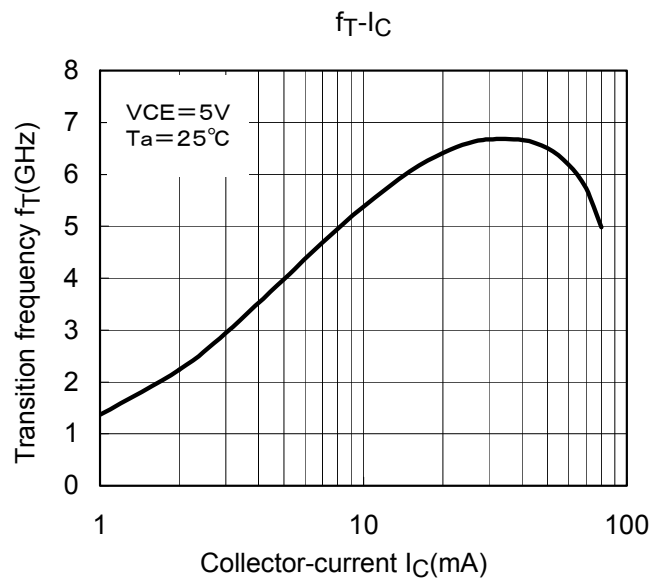
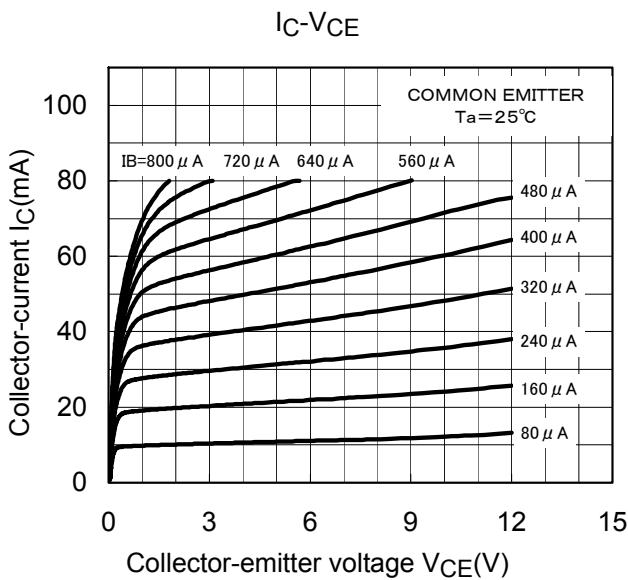
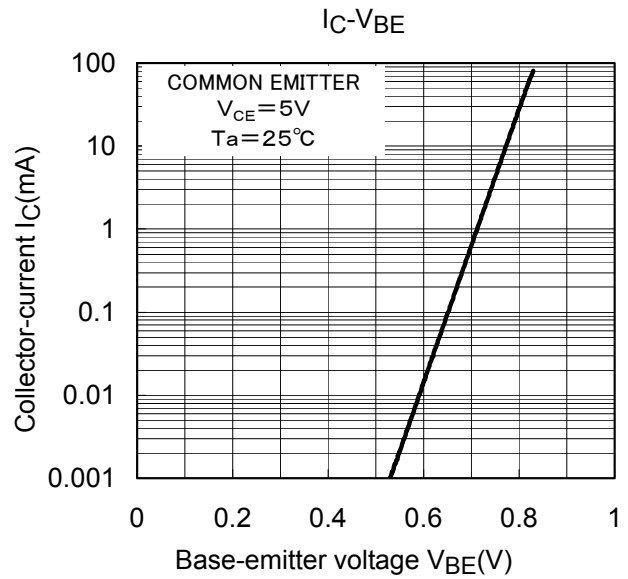
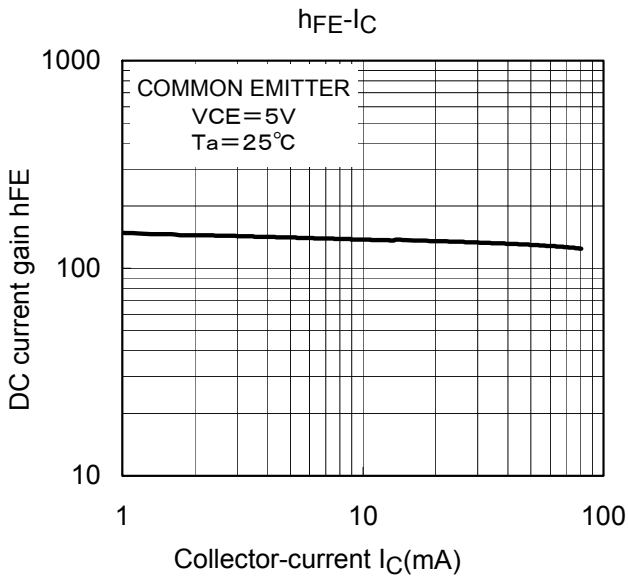
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB}=10V, I_E=0$	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=1V, I_C=0$	—	—	0.5	μA
DC current gain	hFE	$V_{CE}=5V, I_C=50mA$	100	150	200	-
Reverse transfer capacitance	C_{re}	$V_{CB}=5V, I_E=0, f=1MHz$ (Note3)	—	0.85	1.1	pF

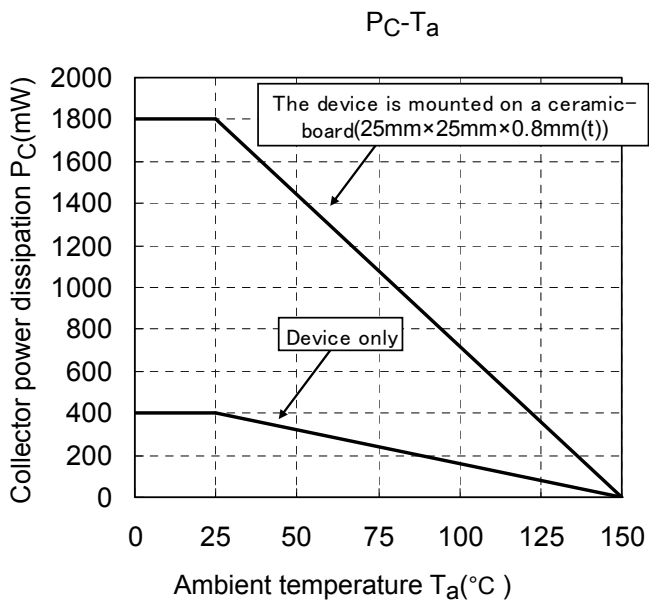
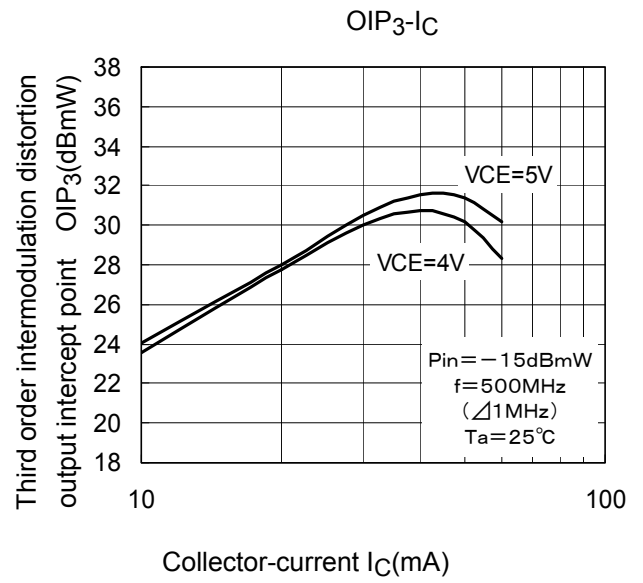
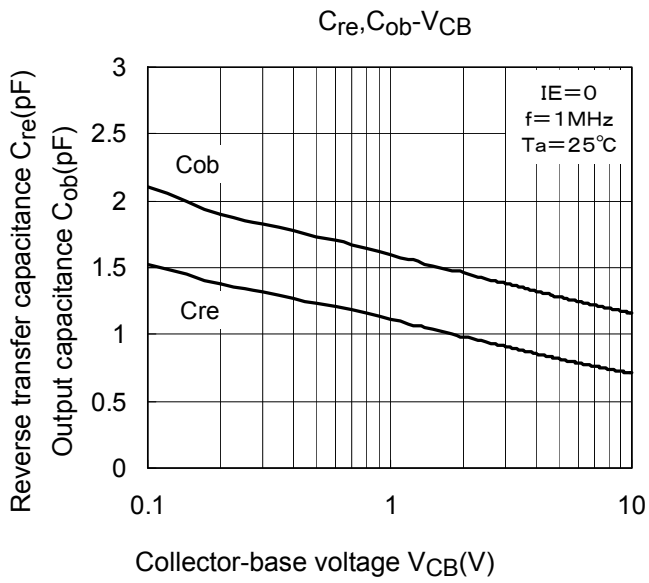
Note.3 : C_{re} is measured using a 3-terminal method with capacitance bridge.

Caution:

This device is sensitive to electrostatic discharge.

Please make enough tool and equipment earthed when you handle.





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