

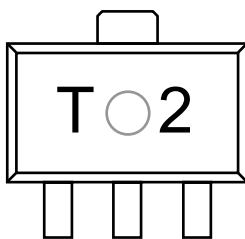
MT3S21P

VHF-UHF Low-Noise, Low-Distortion Amplifier Application

FEATURES

- Low-Noise Figure: NF=1.55 dB (typ.) (@f=1 GHz)
- High Gain: $|S_{21e}|^2=11$ dB (typ.) (@f=1 GHz)

Marking



Absolute Maximum Ratings (Ta = 25°C)

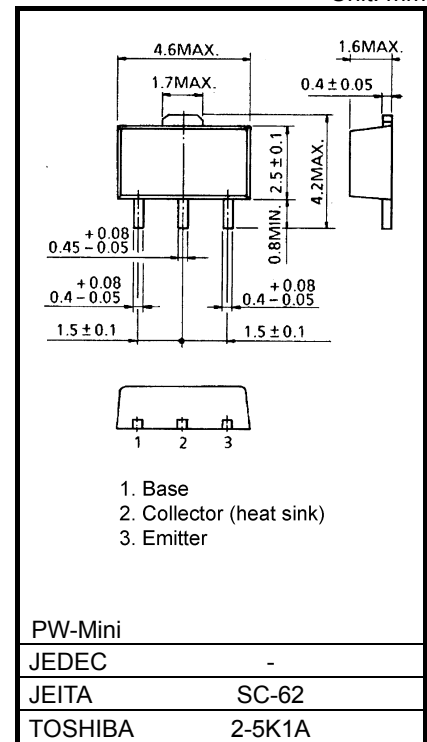
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V _{CBO}	12	V
Collector-emitter voltage	V _{CEO}	6	V
Emitter-base voltage	V _{EBO}	2	V
Collector-current	I _C	80	mA
Base-current	I _B	10	mA
Collector power dissipation	P _C	400	mW
Collector power dissipation	P _C (Note 1)	1.8	W
Junction temperature	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).

Unit: mm



Weight: 0.05 g (Typ.)

Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition frequency	f_T	$V_{CE}=5\text{ V}, I_C=50\text{ mA}$	7	9	—	GHz
Insertion gain	$ S_{21e} ^2(1)$	$V_{CE}=5\text{ V}, I_C=50\text{ mA}, f=500\text{ MHz}$	—	16.5	—	dB
	$ S_{21e} ^2(2)$	$V_{CE}=5\text{ V}, I_C=50\text{ mA}, f=1\text{ GHz}$	8	11	—	
Noise figure	NF	$V_{CE}=5\text{ V}, I_C=20\text{ mA}, f=1\text{ GHz}$	—	1.55	1.95	dB
3 rd order intermodulation distortion output intercept point	OIP ₃	$V_{CE}=5\text{ V}, I_C=50\text{ mA}, f=500\text{ MHz}, \Delta f=1\text{ MHz}$	31	35	—	dBmW

Electrical Characteristics (Ta = 25°C)

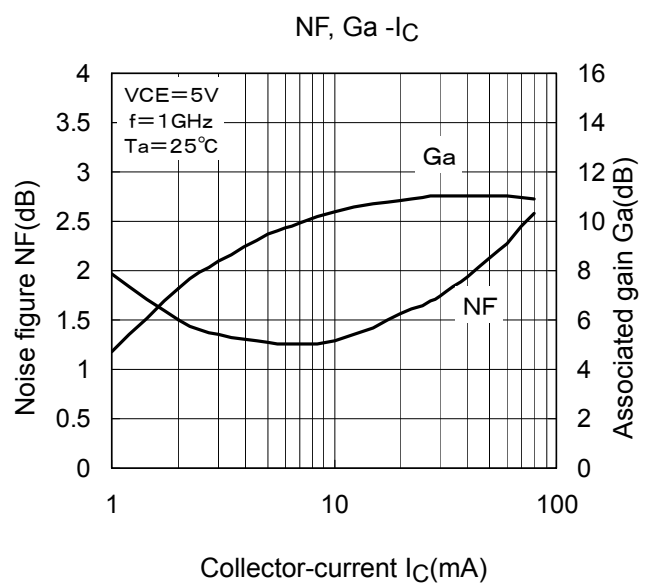
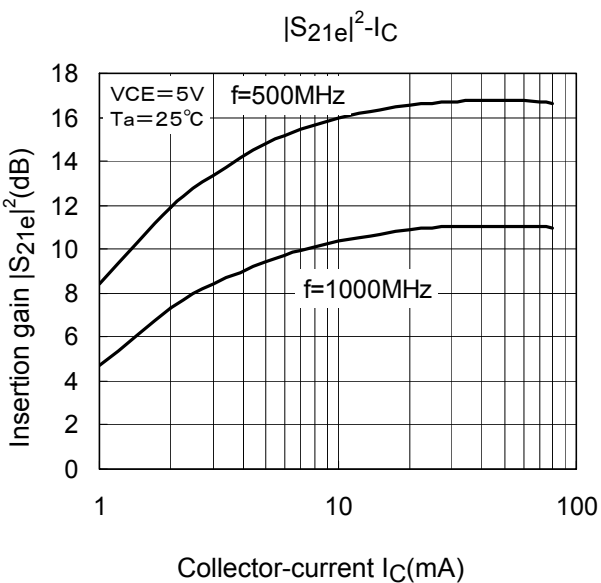
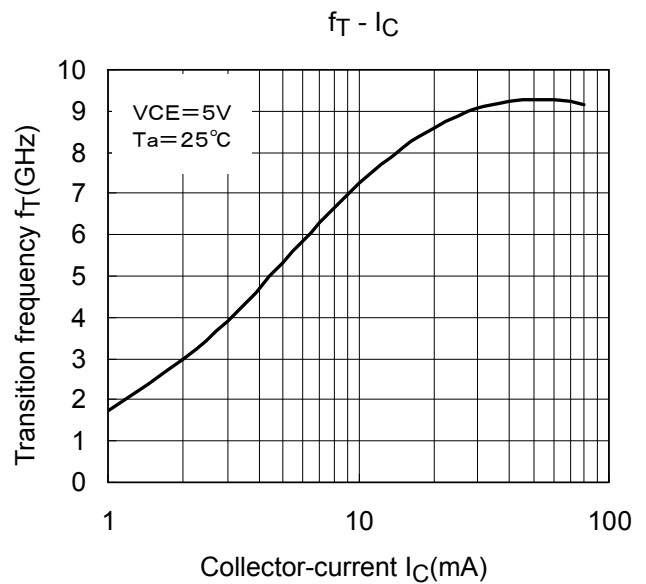
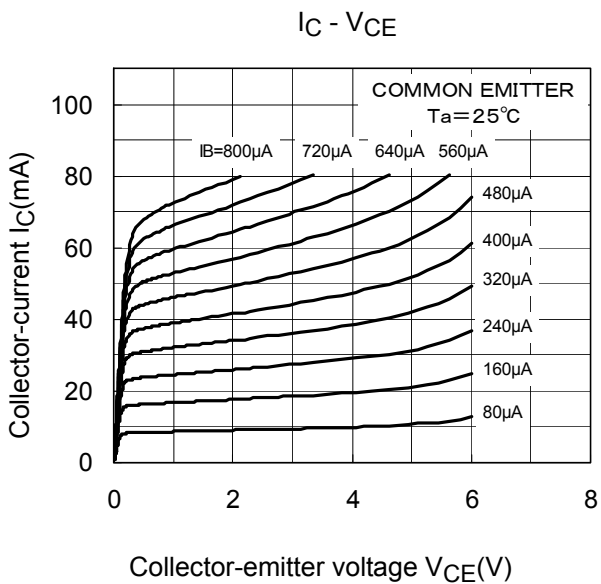
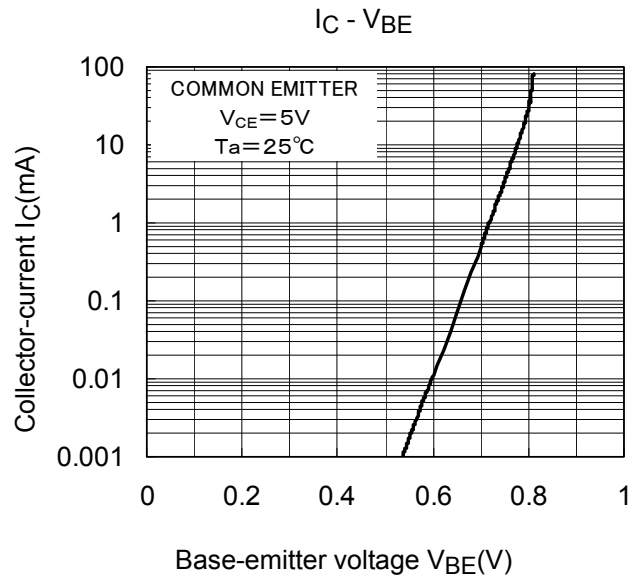
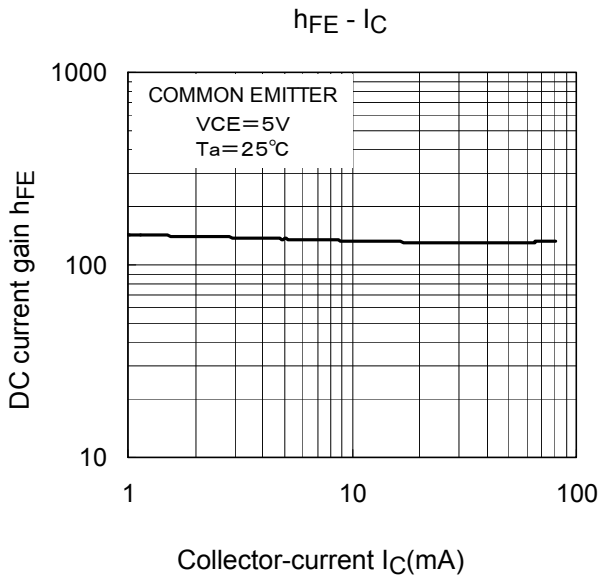
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB}=6\text{ V}, I_E=0\text{ A}$	—	—	100	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=1\text{ V}, I_C=0\text{ A}$	—	—	100	nA
DC current gain	hFE	$V_{CE}=5\text{ V}, I_C=50\text{ mA}$	100	—	250	—
Reverse transfer capacitance	C_{re}	$V_{CB}=5\text{ V}, I_E=0\text{ A}, f=1\text{ MHz}$ (Note 3)	—	0.85	1.1	pF

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

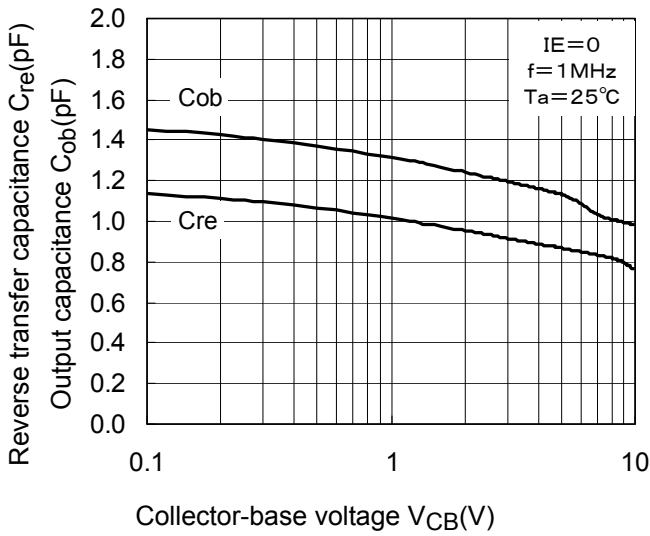
Caution:

This device is sensitive to electrostatic discharge.

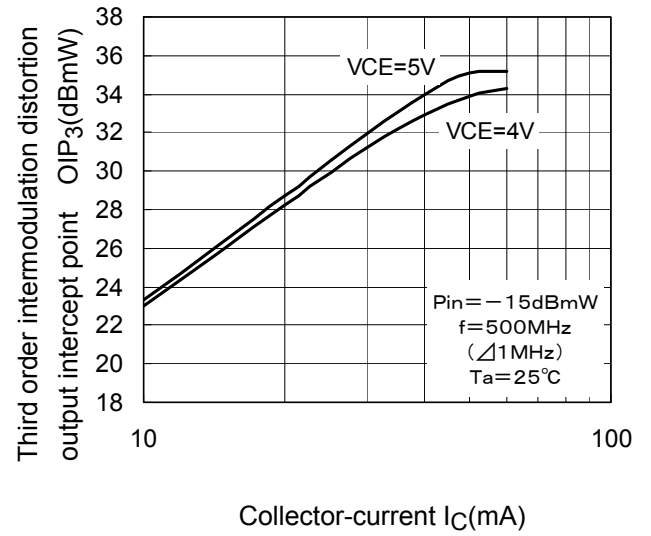
Please make tool and equipment earthed enough when you handle.



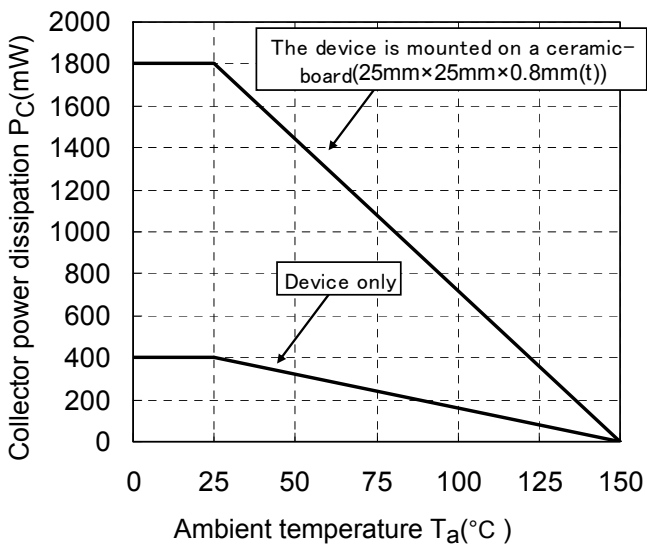
$C_{re}, C_{ob} - V_{CB}$



OIP₃ - I_C



P_C - T_a



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