

MT3S41FS

VCO Oscillator Stage

UHF Low-Noise Amplifier Application

Features

- Low-Noise Figure: NF = 1.2 dB (@f= 2 GHz)
- High Gain: $|S_{21e}|^2 = 10.0$ dB (@ f = 2 GHz)

Marking



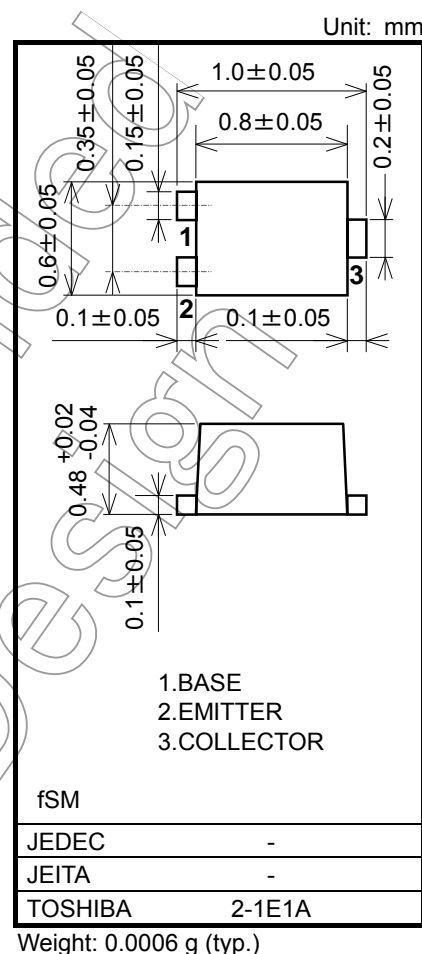
Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	8	V
Collector-emitter voltage	V_{CEO}	4.5	V
Emitter-base voltage	V_{EBO}	1.5	V
Collector-current	I_C	80	mA
Base-current	I_B	40	mA
Collector power dissipation	P_C (Note 1)	100	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55~150	°C

Note: 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).

Note 1: Device mounted on a glass-epoxy PCB (1.0 cm² x 0.8 mm (t))



Microwave Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition frequency	fT	VCE = 3 V, IC = 20 mA, f = 2 GHz	11	15	-	GHz
Insertion gain	S21e ² (1)	VCE = 3 V, IC = 20 mA, f = 1 GHz	13.5	15.5	-	dB
	S21e ² (2)	VCE = 3 V, IC = 20 mA, f = 2 GHz	8	10	-	dB
Noise figure	NF (1)	VCE = 3 V, IC = 5 mA, f = 1 GHz	-	0.8	-	dB
	NF (2)	VCE = 3 V, IC = 5 mA, f = 2 GHz	-	1.2	1.8	dB

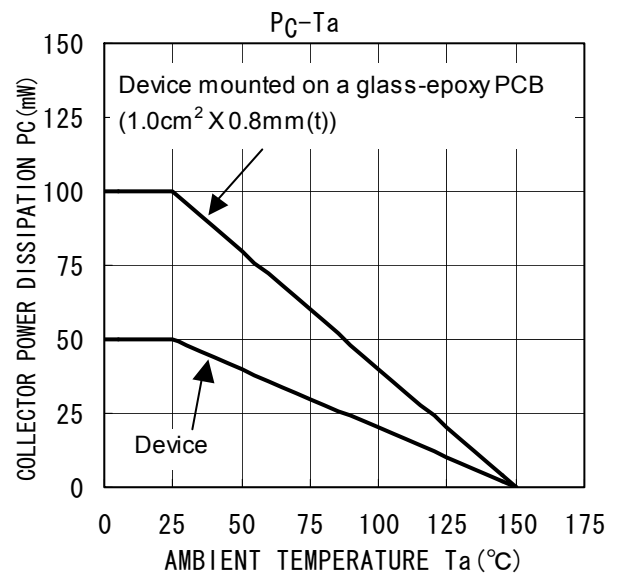
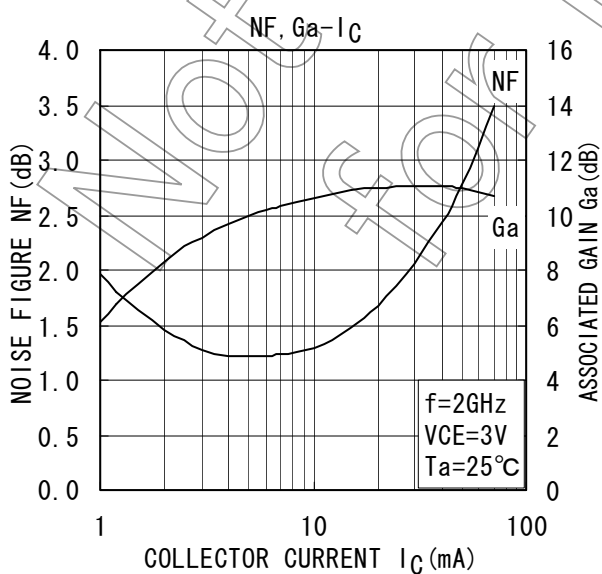
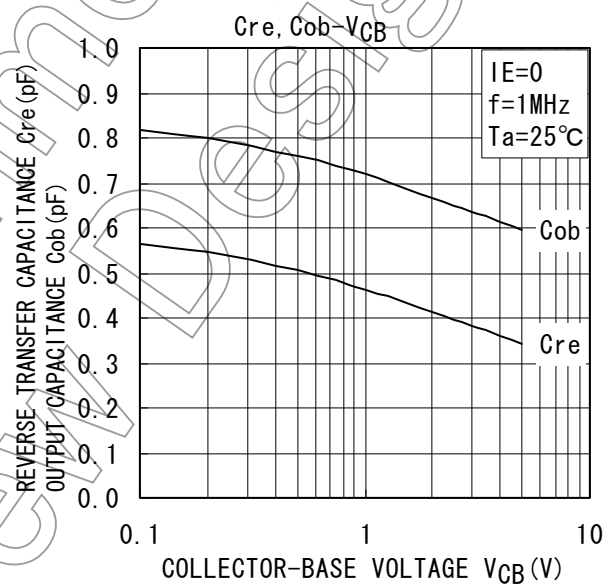
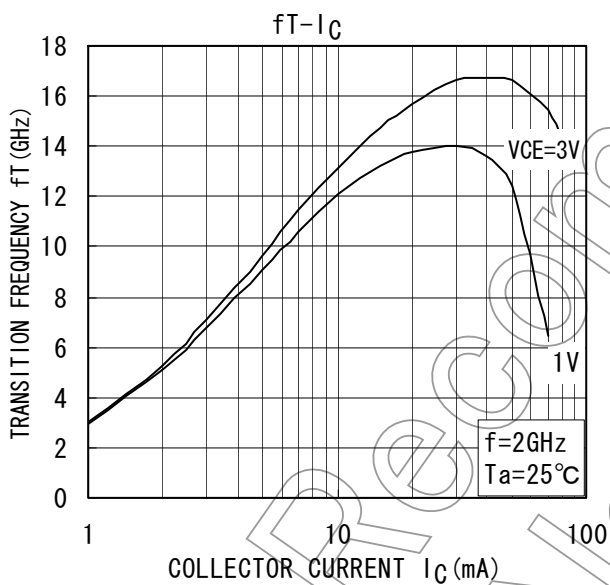
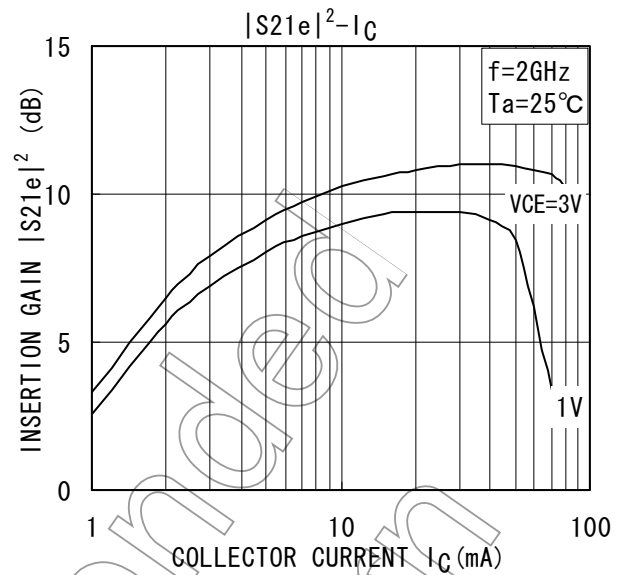
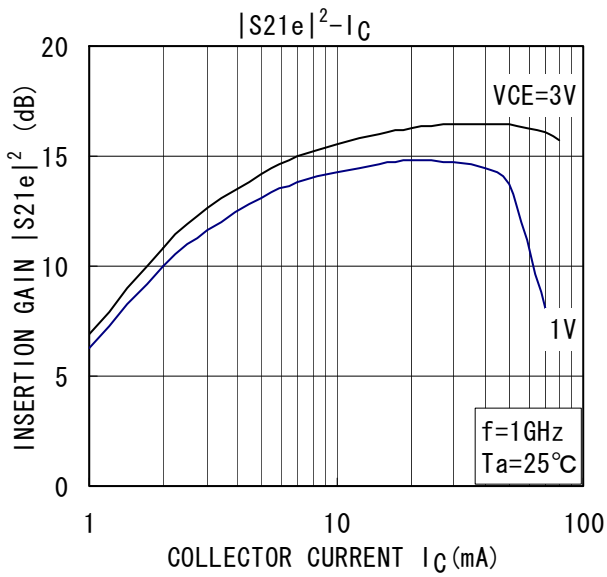
Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	ICBO	VCB = 8 V, IE = 0	-	-	1	μA
Emitter cut-off current	IEBO	VEB = 1 V, IC = 0	-	-	1	μA
DC current gain	hFE	VCE = 3 V, IC = 20 mA	70	-	140	-
Output capacitance	Cob	VCB = 1 V, IE = 0, f = 1 MHz	-	0.72	1.10	pF
Reverse transistor capacitance	Cre	VCB = 1 V, IE = 0, f = 1 MHz (Note 1)	-	0.46	0.85	pF

Note 1: Cre is measured using a three-terminal method with a capacitance bridge.

Note 2: This product is a lead-free article.

Caution: This device is sensitive to electrostatic discharge. Be sure to provide all tools and equipment with adequate grounding.



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