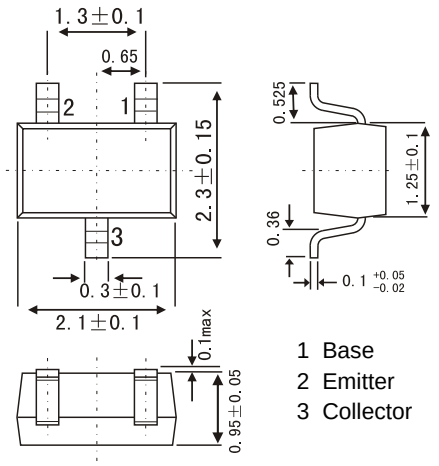
3TR1109Q

NPN TRANSISTORS

SOT-323



Dimensions in millimeter

■ Features

- Low-Noise Figure: NF=0.85 dB (typ.) (@ f=1 GHz)
- High Gain: $|S_{21e}|^2$=12.5 dB (typ.) (@ f=1 GHz)
- VHF-UHF Low-Noise, Low-Distortion Amplifier Applicati
- AEC−Q101 Qualified and PPAP Capabl

■ Absolute Maximum Ratings (T_a= 25° C)

Parameter	Symbol	Rating	Unit
Collector-emitter voltage	V_{CES}	13	V
Collector-emitter voltage	V_{CEO}	6	
Emitter-base voltage	V_{EBO}	0.6	
Collector-current	I_C	100	mA
Base-current	I_B	10	
Collector power dissipation	P_C (Note 1)	800	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 to 150	

Note 1: The device is mounted on a ceramic board (25.4 mm x 25.4 mm x 0.8 mm)

■ Microwave Characteristics (T_a= 25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Transition frequency	f_T	V_{CE}=5 V, I_C=30 mA	8	10		GHz
Insertion gain	$\|S21e\|^2$ (1)	V_{CE}=5 V, I_C=30 mA, f=500 MHz		18		dB
	$\|S21e\|^2$ (2)	V_{CE}=5 V, I_C=30 mA, f=1 GHz	10.5	12.5		
Noise figure	NF(1)	V_{CE}=5 V, I_C=30 mA, f=500 MHz		0.6		
	NF(2)	V_{CE}=5 V, I_C=30 mA, f=1 GHz		0.85	1.15	
3rd order intermodulation distortion output intercept point	OIP_3	V_{CE}=5 V, I_C=30 mA, f=500 MHz, ⊿f=1 MHz		32		dBmW

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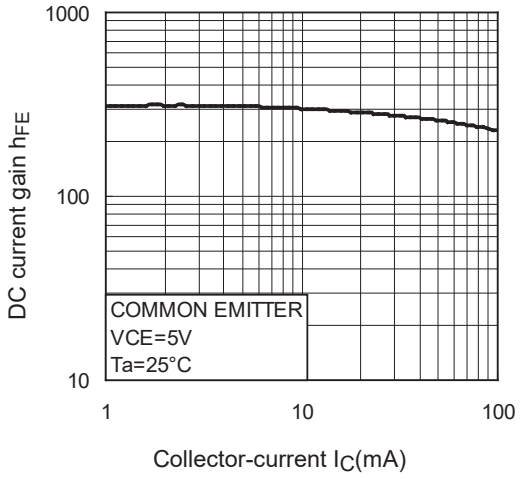
■ Electrical Characteristics (Ta= 25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB}=5 V, I_E=0 A			0.1	A
DC current gain	h_{FE}	V_{CE}=5 V, I_C=30 mA	200		400	
Output capacitance	C_{ob}	V_{CB}=5 V, I_E=0 A, f=1 MHz		1.45		pF
Reverse transfer capacitance	C_{re}	V_{CB}=5 V, I_E=0 A, f=1 MHz (Note 2)		0.9	1.2	

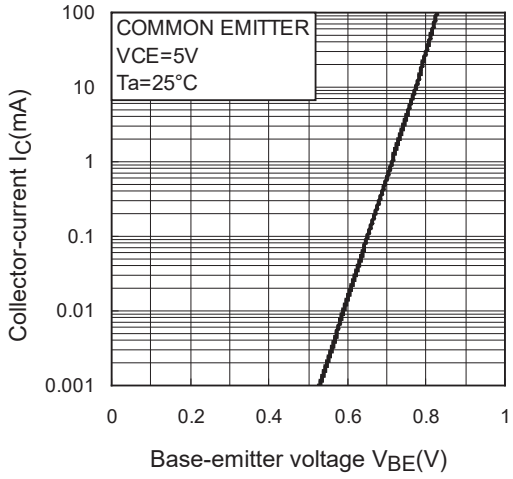
Note 2: C_{re} is measured using a 3-terminal method with capacitance bridge

■ Typical Characterisitics

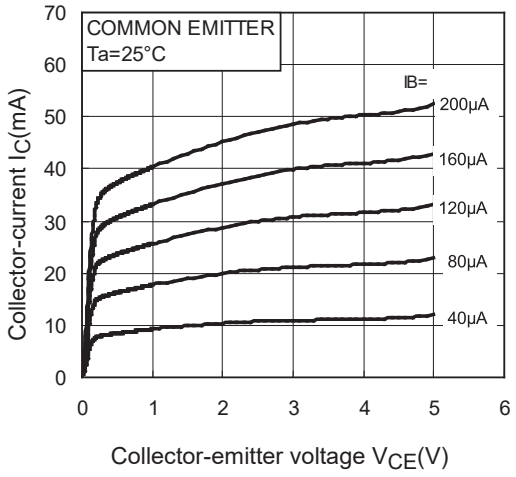
h_{FE}-I_C



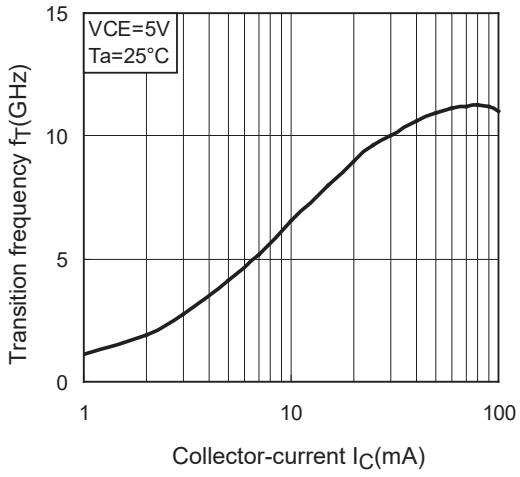
I_C-V_{BE}



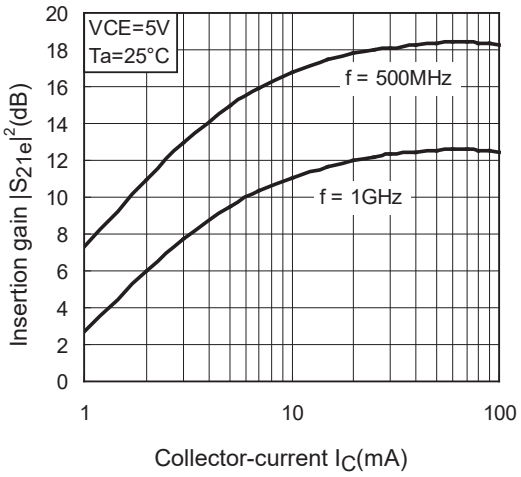
I_C-V_{CE}



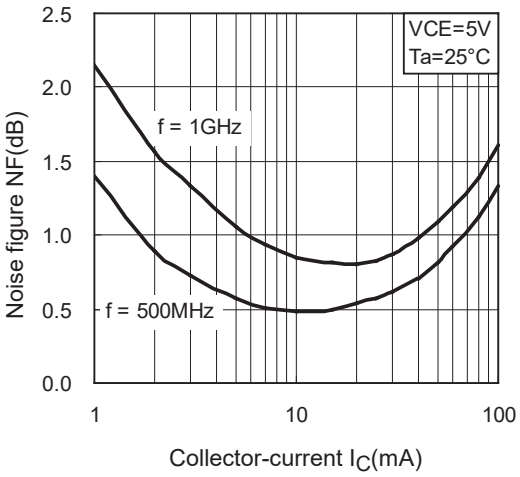
f_T-I_C



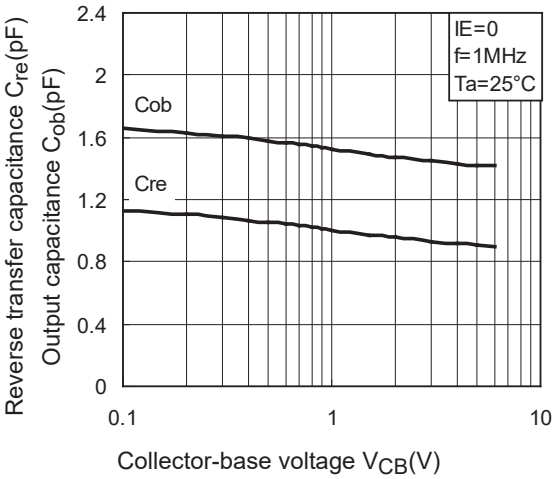
$|S_{21e}|^2$-I_C



NF-I_C



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



OIP_3-I_C