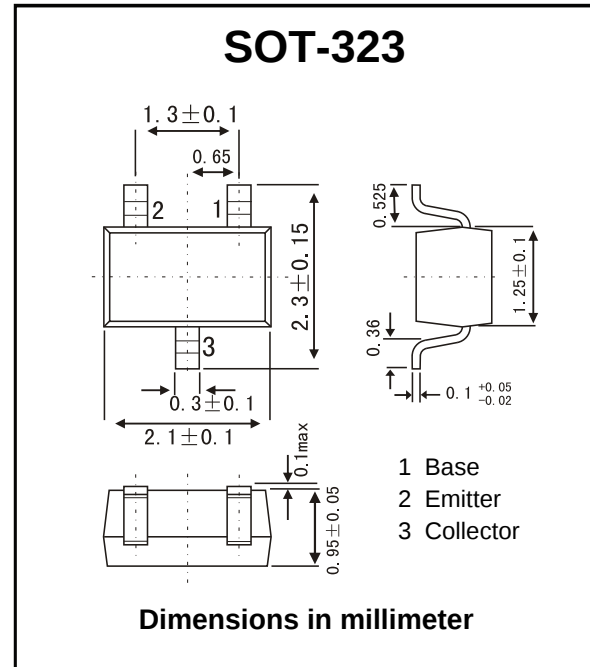


NPN TRANSISTORS

3TR1109LQ

■ 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 Application
- AEC-Q101 Qualified and PPAP Capable



■ Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

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	oatd (25.4 mm × 25.4 mm x 0.8 mm) -55 to 150		

Note 1: The device is mounted on a ceramic board

■ Microwave Characteristics ($T_a=25^\circ\text{C}$)

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	$ S_{21e} ^2$ (1)	$V_{CE}=5$ V, $I_C=30$ mA, $f=500$ MHz		18		dB
	$ S_{21e} ^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	
3 rd order intermodulation distortion output intercept point	OIP ₃	$V_{CE}=5$ V, $I_C=30$ mA, $f=500$ MHz, $\Delta f=1$ MHz		32		dBmW

■ Electrical Characteristics (Ta= 25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB}=5\text{ V}$, $I_E=0\text{ A}$			0.1	A
DC current gain	h_{FE}	$V_{CE}=5\text{ V}$, $I_C=30\text{ mA}$	150		300	
Output capacitance	C_{ob}	$V_{CB}=5\text{ V}$, $I_E=0\text{ A}$, $f=1\text{ MHz}$		1.45		pF
Reverse transfer capacitance	C_{re}	$V_{CB}=5\text{ V}$, $I_E=0\text{ A}$, $f=1\text{ MHz}$ (Note 2)		0.9	1.2	

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

■ Typical Characteristics

