

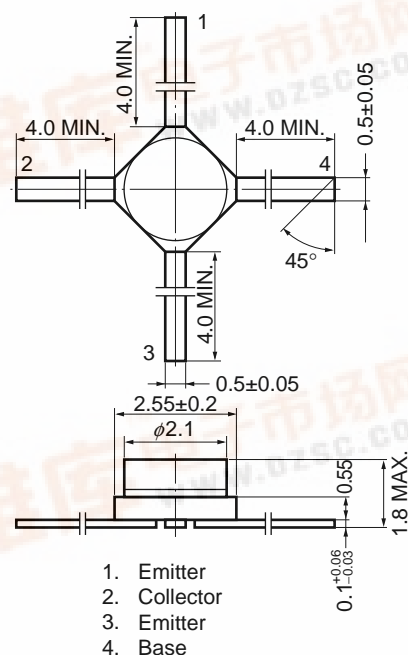
NEC**SILICON TRANSISTORS****2SC2148, 2SC2149****MICROWAVE LOW NOISE AMPLIFIER
NPN SILICON EPITAXIAL TRANSISTOR****DESCRIPTION**

The 2SC2148, 2SC2149 are economical microwave transistors encapsulated into new hermetic stripline packages, "micro X". These are designed for small signal amplifier, low noise amplifier, and oscillator applications in the L to C band, and CML circuit use.

FEATURES

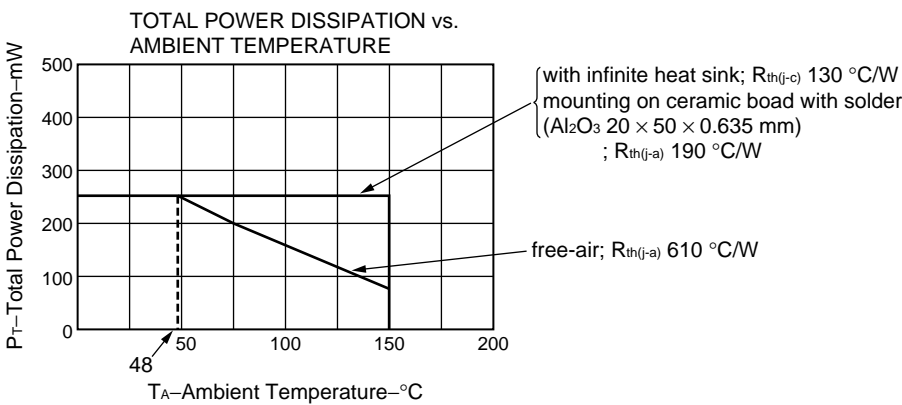
2SC2148 NF: 2.1 dB TYP. @f = 500 MHz

2SC2149 NF: 2.6 dB TYP. @f = 2.0 GHz

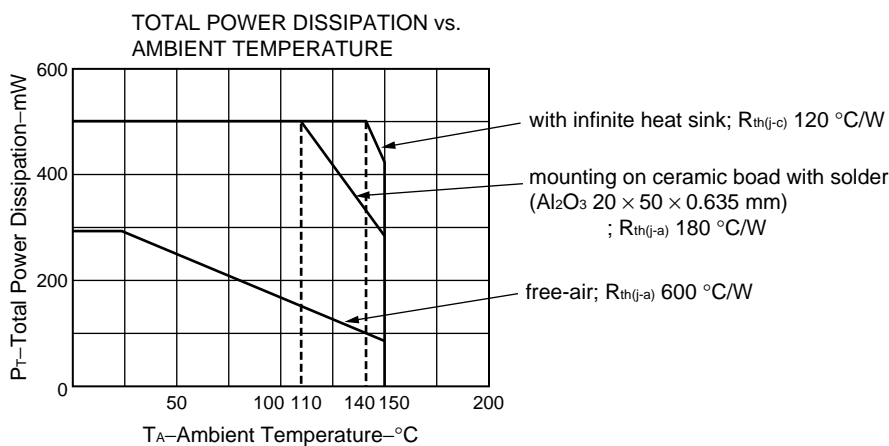
**PACKAGE DIMENSIONS
(Unit : mm)****Derating curves of the 2SC2148, 2SC2149.**

The maximum junction temperature of these transistors is allowed up to 200 °C, but the ambient or storage temperature is limited to 150 °C. The operating junction temperature is estimated with power consumption (P_T) and thermal resistance mentioned on these derating curves.

2SC2148



2SC2149



2SC2148

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

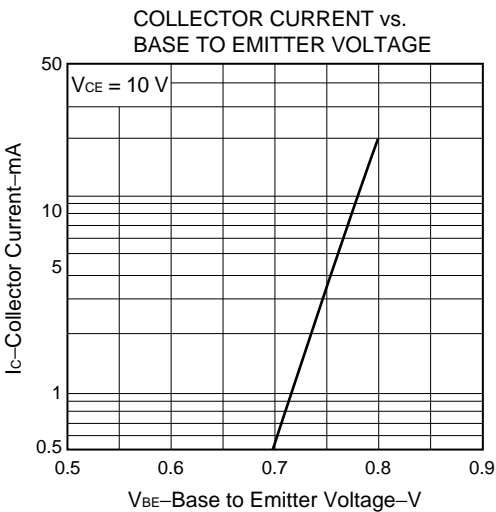
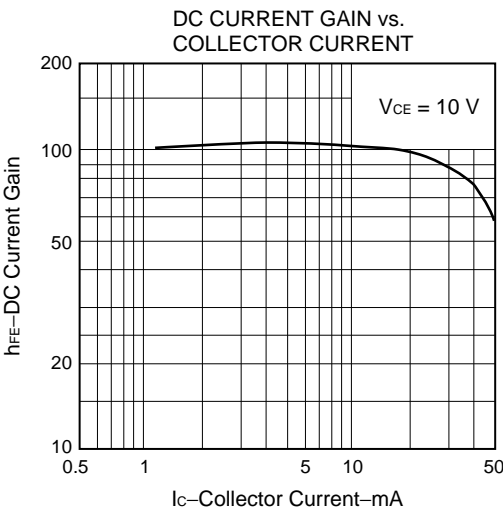
Collector to Base Voltage	V _{CBO}	30	V
Collector to Emitter Voltage	V _{CEO}	14	V
Emitter to Base Voltage	V _{EBO}	3.0	V
Collector Current	I _c	50	mA
Total Power Dissipation	P _T (TA = 48 °C)	250	mW
Total Power Dissipation	P _T (TC = 150 °C)	250	mW
Junction Temperature	T _j	200	°C
Storage Temperature	T _{stg}	−65 to +150	°C

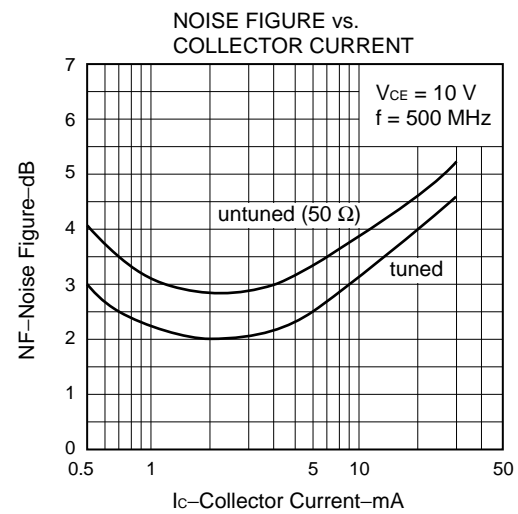
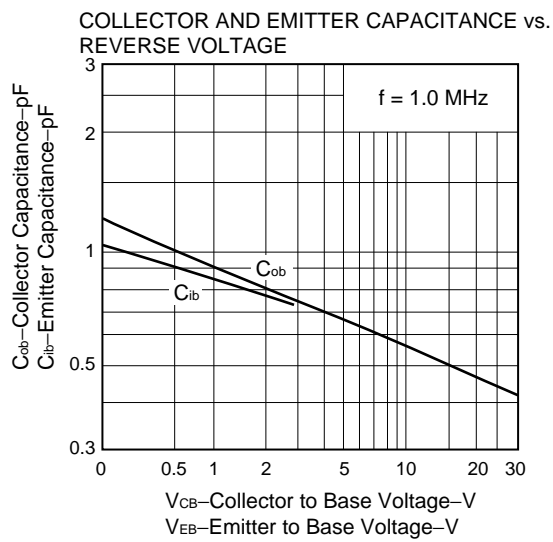
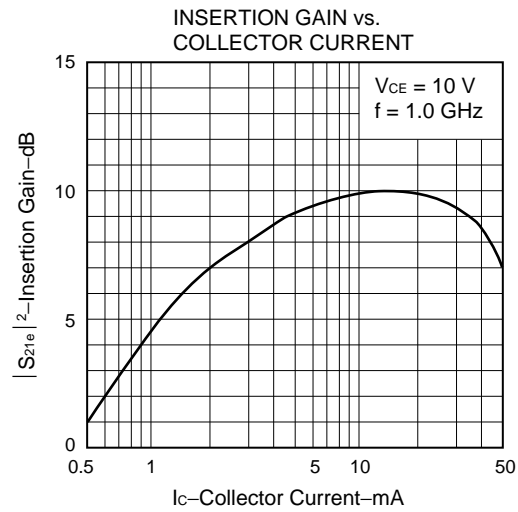
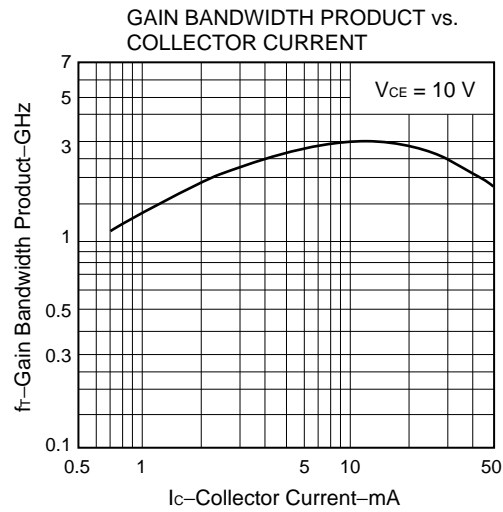
ELECTRICAL CHARACTERISTICS (TA = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I _{CBO}			0.1	μA	V _{CB} = 15 V, I _E = 0
Emitter Cutoff Current	I _{EBO}			0.1	μA	V _{EB} = 2.0 V, I _C = 0
DC Current Gain	h _{FE}	30	80	200		V _{CE} = 10 V, I _C = 10 mA
Gain Bandwidth Product	f _T		3.0		GHz	V _{CE} = 10 V, I _C = 10 mA
Output Capacitance *	C _{ob}		0.55		pF	V _{CB} = 10 V, I _E = 0, f = 1.0 MHz
Insertion Gain	S _{21e} ²	7.5	9.3		dB	V _{CE} = 10 V, I _C = 10 mA, f = 1.0 GHz
Noise Figure	NF		2.1	3.5	dB	V _{CE} = 10 V, I _C = 3.0 mA, f = 500 MHz
Maximum Available Gain	MAG		13.3		dB	V _{CE} = 10 V, I _C = 10 mA, f = 1.0 GHz

* The emitter terminal should be connected to the guard terminal of the three-terminal capacitance bridge.

TYPICAL CHARACTERISTICS (TA = 25 °C)





2SC2149

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

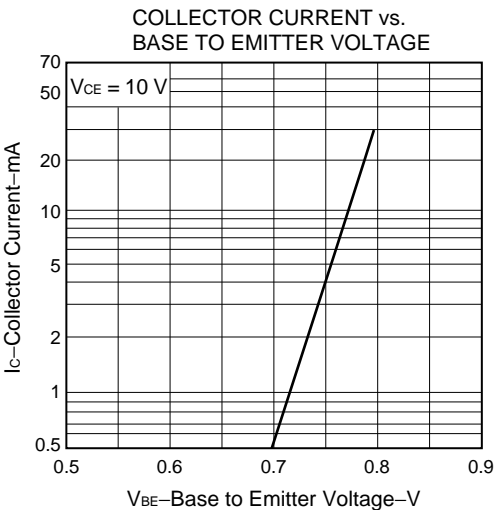
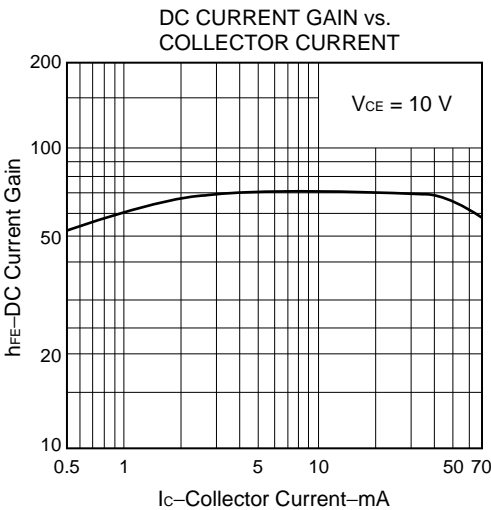
Collector to Base Voltage	V _{CBO}	25	V
Collector to Emitter Voltage	V _{CEO}	12	V
Emitter to Base Voltage	V _{EBO}	3.0	V
Collector Current	I _c	70	mA
Total Power Dissipation	P _T (TA = 25 °C)	290	mW
Total Power Dissipation	P _T (Tc = 140 °C)	500	mW
Junction Temperature	T _j	200	°C
Storage Temperature	T _{stg}	−65 to +150	°C

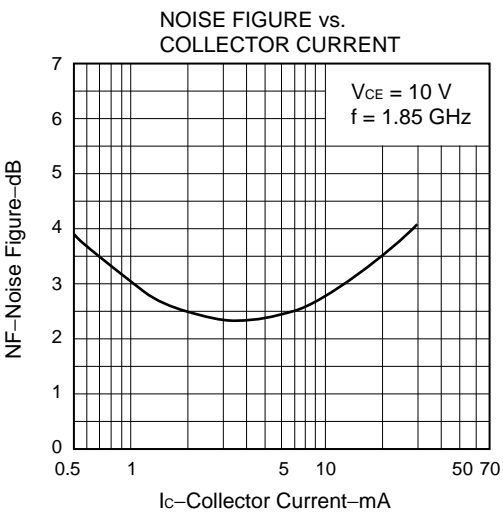
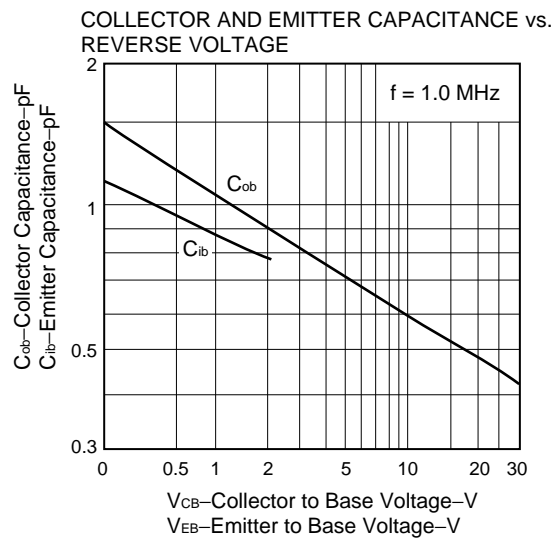
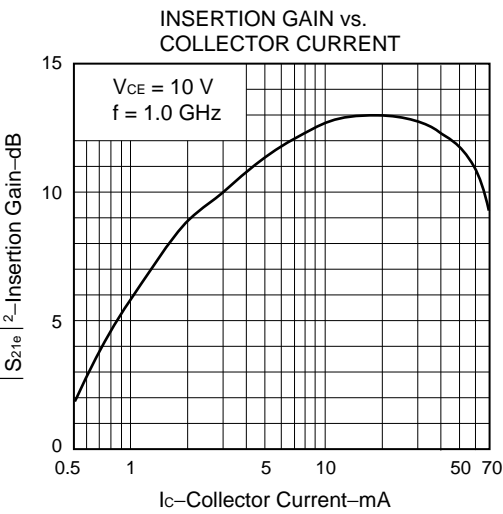
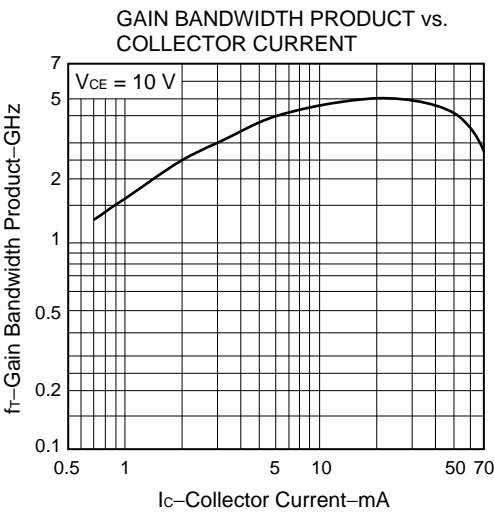
ELECTRICAL CHARACTERISTICS (TA = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS	
Collector Cutoff Current	I _{CBO}			0.1	μA	V _{CB} = 15 V, I _E = 0	
Emitter Cutoff Current	I _{EBO}			0.1	μA	V _{EB} = 2.0 V, I _C = 0	
DC Current Gain	h _{FE}	30	70	200		V _{CE} = 10 V, I _C = 20 mA	
Gain Bandwidth Product	f _T		5.0		GHz	V _{CE} = 10 V, I _C = 20 mA	
Output Capacitance *	C _{ob}		0.6		pF	V _{CB} = 10 V, I _E = 0, f = 1.0 MHz	
Insertion Gain	S _{21e} ²		12.7		dB	V _{CE} = 10 V, I _C = 20 mA	f = 1.0 GHz
		5.0	6.7		dB		f = 2.0 GHz
Noise Figure	NF		1.7		dB	V _{CE} = 10 V, I _C = 5.0 mA	f = 1.0 GHz
			2.6	4.0	dB		f = 2.0 GHz
Maximum Available Gain	MAG		17		dB	V _{CE} = 10 V, I _C = 20 mA	f = 1.0 GHz
			11		dB		f = 2.0 GHz

* The emitter terminal should be connected to the guard terminal of the three-terminal capacitance bridge.

TYPICAL CHARACTERISTICS (TA = 25 °C)





[MEMO]

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Anti-radioactive design is not implemented in this product.