

Type 2N5109

Geometry 1007

Polarity NPN

Qual Level: JAN - JANTXV

**Generic Part Number:
2N5109**

REF: MIL-PRF-19500/453

Features:

[Request Quotation](#)

- VHF-UHF amplifier silicon transistor.
- Housed in [TO-39](#) case.
- Also available in chip form using the [1007](#) chip geometry.
- The Min and Max limits shown are per [MIL-PRF-19500/398](#) which Semicoa meets in all cases.



Maximum Ratings

$T_C = 25^{\circ}\text{C}$ unless otherwise specified

Rating	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	20	V
Collector-Base Voltage	V_{CBO}	40	V
Emitter-Base Voltage	V_{EBO}	3.0	V
Collector Current, Continuous	I_C	0.4	A
Power Dissipation at 25°C ambient Derate above 25°C	P_T	1.0 5.71	W $\text{mW}/^{\circ}\text{C}$
Operating Junction Temperature	T_J	-65 to +200	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-65 to +200	$^{\circ}\text{C}$

Electrical Characteristics

 $T_C = 25^{\circ}\text{C}$ unless otherwise specified

OFF Characteristics	Symbol	Min	Max	Unit
Collector-Base Breakdown Voltage $I_C = 100\ \mu\text{A}$	$V_{(BR)CBO}$	40	---	V
Collector-Emitter Breakdown Voltage $I_C = 5\ \text{mA}$	$V_{(BR)CEO}$	20	---	V
Collector-Emitter Breakdown Voltage $I_C = 5\ \text{mA}$, $R_2 = 10\ \text{ohms}$	$V_{(BR)CER}$	40	---	V
Emitter-Base Breakdown Voltage $I_E = 100\ \mu\text{A}$	$V_{(BR)EBO}$	3.0	---	V
Collector-Emitter Cutoff Current $V_{CE} = 15\ \text{V}$	I_{CEO1}	---	20	μA
Collector-Emitter Cutoff Current $V_{CE} = 15\ \text{V}$, $T_C = +175^{\circ}\text{C}$	I_{CEO2}	---	5.0	mA

ON Characteristics	Symbol	Min	Max	Unit
Forward Current Transfer Ratio $I_C = 50\ \text{mA}$, $V_{CE} = 15\ \text{V}$ (pulsed)	h_{FE1}	40	150	---
$I_C = 50\ \text{mA}$, $V_{CE} = 5.0\ \text{V}$ (pulsed)	h_{FE2}	15	---	---
Collector-Emitter Saturation Voltage $I_C = 100\ \text{mA}$, $I_B = 50\ \text{mA}$ (pulsed)	$V_{CE(sat)1}$	---	0.5	V dc

Small Signal Characteristics	Symbol	Min	Max	Unit
<i>Magnitude of Common Emitter, Small Signal, Short Circuit</i> Current Transfer Ratio $I_C = 25\ \text{mA}$, $V_{CE} = 15\ \text{V}$, $f = 200\ \text{MHz}$	$ h_{FE} $	5.0	10	---
$I_C = 25\ \text{mA}$, $V_{CE} = 15\ \text{V}$, $f = 200\ \text{MHz}$		6.0	11	---
$I_C = 25\ \text{mA}$, $V_{CE} = 15\ \text{V}$, $f = 200\ \text{MHz}$		5.0	10.5	---
<i>Open Circuit Output Capacitance</i> $V_{CB} = 28\ \text{V}$, $I_E = 0$, $100\ \text{kHz} < f < 1\ \text{MHz}$	C_{OBO}	---	3.5	pF
<i>Power Gain (Narrow Band) Current</i> $V_{CC} = 15\ \text{V}$, $I_C = 50\ \text{mA}$, $f = 200\ \text{MHz}$	G_{PE}	11	3.5	dB
<i>Cross Modulation</i> $V_{CC} = 15\ \text{V}$, $I_C = 50\ \text{mA}$, $f = 200\ \text{MHz}$ 54 dBm V output	cm	---	-57	dB
<i>Noise Figure</i> $V_{CC} = 15\ \text{V}$, $I_C = 50\ \text{mA}$, $f = 200\ \text{MHz}$	NF	---	3.5	dB
<i>Voltage Gain (Wideband)</i> $V_{CC} = 15\ \text{V}$, $I_C = 50\ \text{mA}$, $f = 50\ \text{to}\ 216\ \text{MHz}$	G_{VE}	11	---	dB