

**Type 2N5109**  
**Geometry 1007**  
**Polarity NPN**  
**Qual Level: JAN - JANTXV**

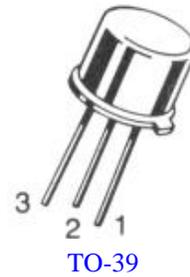
**Generic Part Number:**  
**2N5109**

**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 $25^\circ\text{C}$ ambient Derate above $25^\circ\text{C}$	$P_T$	1.0 5.71	W 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	$\mu\text{A}$
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
<b>Forward Current Transfer Ratio</b> $I_C = 50 \text{ mA}, V_{CE} = 15 \text{ V}$ (pulsed)	$h_{FE1}$	40	150	---
$I_C = 50 \text{ mA}, V_{CE} = 5.0 \text{ V}$ (pulsed)	$h_{FE2}$	15	---	---
<b>Collector-Emitter Saturation Voltage</b> $I_C = 100 \text{ mA}, I_B = 50 \text{ mA}$ (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