



ELECTRONICS, INC.
 44 FARRAND STREET
 BLOOMFIELD, NJ 07003
 (973) 748-5089
<http://www.nteinc.com>

PN4248 and PN4249 Silicon PNP Transistors Audio Amplifier, Switch TO-92 Type Package

Absolute Maximum Ratings: (Note 1)

Collector-Emitter Voltage (Note 2), V_{CEO}	
PN4248	40V
PN4249	60V
Collector-Emitter Voltage, V_{CES}	
PN4248	40V
PN4249	60V
Collector-Base Voltage, V_{CBO}	
PN4248	40V
PN4249	60V
Emitter-Base Voltage, V_{EBO}	5V
Total Device Dissipation (Note 3), P_D	
$T_A = 25^\circ\text{C}$	625mW
$T_C = 25^\circ\text{C}$	1W
Operating Junction Temperature, T_J	+150°C
Storage Temperature Range, T_{stg}	-55° to +150°C

Note 1. These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.

Note 2. Rating refers to a high current point where Collector-Emitter voltage is lowest.

Note 3. These ratings give a maximum junction temperature of +150°C and Junction-to-Case Thermal Resistance of +125°C/W (derating factor of 5.0mW/°C); Junction-to-Ambient Thermal Resistance of +200°C/W (derating factor of 5.0mW/°C)

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage PN4248	$V_{(BR)CES}$	$I_C = 10\mu\text{A}, I_E = 0$	40	-	-	V
PN4249			60	-	-	V
Collector-Base Breakdown Voltage PN4248	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}, I_E = 0$	40	-	-	V
PN4249			60	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	5	-	-	V
Emitter Cutoff Current	I_{EBO}	$V_{EB} = -3\text{V}, I_C = 0$	-	-	20	nA
Collector Cutoff Current	I_{CBO}	$V_{CB} = -40\text{V}, I_E = 0$	-	-	10	nA
		$V_{CB} = -40\text{V}, I_E = 0, T_A = +65^\circ\text{C}$	-	-	3	μA

Electrical Characteristics Cont'd): ($T_A = +25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
DC Current Gain PN4248	h_{FE}	$V_{CE} = -5V, I_C = 100\mu A$	50	-	-	
PN4249			100	-	300	
PN4248		$V_{CE} = -5V, I_C = 1mA$	50	-	-	
PN4249			100	-	-	
DC Pulse Current Gain PN4248	h_{FE}	$V_{CE} = -5V, I_C = 10mA$, Note 4	50	-	-	
PN4249			100	-	-	
Collector-Emitter Sustaining Voltage PN4248	$V_{CEO(sus)}$	$I_C = 5mA$ (pulsed), $I_B = 0$, Note 4	40	-	-	V
PN4249			60	-	-	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10mA, I_B = 0.5mA$, Note 4	-	-	0.25	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10mA, I_B = 0.5mA$, Note 4	-	-	0.9	V
Output Capacitance	C_{ob}	$V_{CB} = -5V, I_E = 0, f = 1MHz$	-	-	6	pF
Input Capacitance	C_{ib}	$V_{BE} = -0.5V, I_C = 0, f = 1MHz$	-	-	16	pF
High Frequency Current Gain	h_{fe}	$I_C = 0.5mA, V_{CE} = 5V, f = 20MHz$	2	-	-	
Small-Signal Current Gain PN4248	h_{fe}	$I_C = 1mA, V_{CE} = 5V, f = 1kHz$	50	-	1000	
PN4249			100	-	550	
Input Resistance (PN4249 ONLY)	h_{ie}	$I_C = 1mA, V_{CE} = 5V, f = 1kHz$	2.5	-	17	k Ω
Output Conductance (PN4249 ONLY)	h_{oe}	$I_C = 1mA, V_{CE} = 5V, f = 1kHz$	5	-	40	μhos
Voltage Ratio Feedback (PN4249 ONLY)	h_{re}	$I_C = 1mA, V_{CE} = 5V, f = 1kHz$	-	-	10	$\times 10^{-4}$
Wide Band Noise Figure (PN4249 ONLY)	NF	$I_C = 20\mu A, V_{CE} = 5V, R_S = 10k\Omega,$ $f = 10Hz$ to $10kHz, PBW = 15.7kHz$	-	-	3	dB
Narrow Band Noise Figure (PN4249 ONLY)	NF	$I_C = 20\mu A, V_{CE} = 5V, R_S = 10k\Omega,$ $f = 1kHz, PBW = 150Hz$	-	-	3	dB
		$I_C = 250\mu A, V_{CE} = 5V, R_S = 10\Omega,$ $f = 1kHz, PBW = 150Hz$	-	-	3	dB

Note 4. Pulse Test: Pulse Width = $300\mu s$, Duty Cycle = 2%.

