

## NTE232 Silicon PNP Transistor Darlington Amplifier, Preamp

**Description:**

The NTE232 is a silicon, planar, epitaxial passivated PNP Darlington transistor in a TO92 type package designed for preamplifier input applications where high impedance is a requirement.

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Collector–Emitter Voltage, $V_{CES}$ .....	30V
Emitter–Base Voltage, $V_{EBO}$ .....	8V
Collector–Base Voltage, $V_{CBO}$ .....	30V
Collector Current, $I_C$ .....	300mA
Total Power Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_T$ .....	625mW
Derate above $+25^\circ\text{C}$ .....	5mW/ $^\circ\text{C}$
Total Power Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_T$ .....	1500mW
Derate above $+25^\circ\text{C}$ .....	12mW/ $^\circ\text{C}$
Operating Junction Temperature range, $T_J$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Storage Temperature range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Lead Temperature (During Soldering, 1/16" $\pm$ 1/32" from case, 10sec), $T_L$ .....	$+230^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Collector–Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C = 100\mu\text{A}$ , $I_B = 0$	30	–	–	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 30\text{V}$ , $I_E = 0$	–	–	100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 8\text{V}$ , $I_C = 0$	–	–	100	nA
Forward Current Transfer Ratio	$h_{FE}$	$I_C = 10\text{mA}$ , $V_{CE} = 5\text{V}$	50k	–	–	
		$I_C = 100\text{mA}$ , $V_{CE} = 5\text{V}$	20k	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100\text{mA}$ , $I_B = 0.1\text{mA}$	–	0.9	1.5	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 100\text{mA}$ , $V_{CE} = 5\text{V}$ , Note 1	–	1.45	2.00	V

Note 1. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Dynamic Characteristics</b>						
Current Gain–Bandwidth Product	$f_T$	$I_C = 30\text{mA}$ , $V_{CE} = 10\text{V}$ , $f = 50\text{MHz}$	100	125	–	MHz
Output Capacitance	$C_{cb}$	$I_{CB} = 10\text{mA}$ , $I_E = 0$ , $f = 100\text{MHz}$	–	2.5	–	pF
Noise Figure	NF	$I_C = 1\text{mA}$ , $V_{CE} = 5\text{V}$ , $R_S = 100\text{k}\Omega$ , $f = 1\text{kHz}$	–	2	–	dB

