

## NTE261 (NPN) & NTE262 (PNP) Silicon Complementary Transistors Darlington Power Amplifier

**Description:**

The NTE261 (NPN) and NTE262 (PNP) are complementary silicon Darlington power transistors in a TO220 type package designed for general purpose amplifier and low-speed switching applications.

**Features:**

- High DC Current Gain:  $h_{FE} = 2500$  Typ @  $I_C = 4A$
- Collector–Emitter Sustaining Voltage:  $V_{CEO(sus)} = 100V$  Min @ 100mA
- Low Collector–Emitter Saturation Voltage:
  - $V_{CE(sat)} = 2V$  Max @  $I_C = 3A$
  - $= 4V$  Max @  $I_C = 5A$
- Monolithic Construction with Built–In Base–Emitter Shunt Resistor

**Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CEO}$ .....	100V
Collector–Base Voltage, $V_{CB}$ .....	100V
Emitter–Base Voltage, $V_{EB}$ .....	5V
Collector Current, $I_C$	
Continuous .....	5A
Peak .....	8A
Base Current, $I_B$ .....	120mA
Total Power Dissipation ( $T_C = +25^\circ C$ ), $P_D$ .....	65W
Derate Above $25^\circ C$ .....	0.52W/ $^\circ C$
Total Power Dissipation ( $T_A = +25^\circ C$ ), $P_D$ .....	2W
Derate Above $25^\circ C$ .....	0.016W/ $^\circ C$
Unclamped Inductive Load Energy (Note 1), E .....	50mJ
Operating Junction Temperature range, $T_J$ .....	$-65^\circ$ to $+150^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+150^\circ C$
Thermal Resistance, Junction–to–Case, $R_{thJC}$ .....	1.92 $^\circ C/W$
Thermal Resistance, Junction–to–Ambient, $R_{thJA}$ .....	62.5 $^\circ C/W$

Note 1.  $I_C = 1A$ ,  $L = 100mH$ , P.R.F. = 10Hz,  $V_{CC} = 20V$ ,  $R_{BE} = 100\Omega$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 100\text{mA}$ , $I_B = 0$ , Note 2	100	–	–	V
Collector Cutoff Current	$I_{CEO}$	$V_{CE} = 50\text{V}$ , $I_B = 0$	–	–	0.5	mA
	$I_{CBO}$	$V_{CB} = 100\text{V}$ , $I_E = 0$	–	–	0.2	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 5\text{V}$ , $I_C = 0$	–	–	2.0	mA
<b>ON Characteristics (Note 2)</b>						
DC Current Gain	$h_{FE}$	$I_C = 0.5\text{A}$ , $V_{CE} = 3\text{V}$	1000	–	–	
		$I_C = 3\text{A}$ , $V_{CE} = 3\text{V}$	1000	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 3\text{A}$ , $I_B = 12\text{mA}$	–	–	2.0	V
		$I_C = 5\text{A}$ , $I_B = 20\text{mA}$	–	–	4.0	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 3\text{A}$ , $V_{CE} = 3\text{V}$	–	–	2.5	V
<b>Dynamic Characteristics</b>						
Small–Signal Current Gain	$ h_{fe} $	$I_C = 3\text{A}$ , $V_{CE} = 4\text{V}$ , $f = 1\text{MHz}$	4.0	–	–	
Output Capacitance NTE261	$C_{ob}$	$V_{CB} = 10\text{V}$ , $I_E = 0$ , $f = 0.1\text{MHz}$	–	–	300	pF
			NTE262	–	–	200

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

