

NTE263 (NPN) & NTE264 (PNP) Silicon Complementary Transistors Darlington Power Amplifier

Description:

The NTE263 (NPN) and NTE264 (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:
 $h_{FE} = 2500 \text{ Typ (NTE263)}$
 $h_{FE} = 3500 \text{ Typ (NTE264)}$
- Collector–Emitter Sustaining Voltage: $V_{CEO(sus)} = 100V \text{ Min}$
- Low Collector–Emitter Saturation Voltage:
 $V_{CE(sat)} = 2V \text{ Max @ } I_C = 5A$
- 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	10A
Peak	15A
Base Current, I_B	250mA
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/ $^\circ C$
Operating Junction Temperature range, T_J	-65° to $+150^\circ C$
Storage Temperature range, T_{stg}	-65° 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 $^\circ C/W$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{\text{CEO(sus)}}$	$I_{\text{C}} = 200\text{mA}$, $I_{\text{B}} = 0$, Note 1	100	–	–	V
Collector Cutoff Current	I_{CEO}	$V_{\text{CE}} = 100\text{V}$, $I_{\text{B}} = 0$	–	–	1.0	mA
	I_{CEX}	$V_{\text{CE}} = 100\text{V}$, $V_{\text{EB(off)}} = 1.5\text{V}$	–	–	300	μA
		$V_{\text{CE}} = 100\text{V}$, $V_{\text{EB(off)}} = 1.5\text{V}$, $T_{\text{C}} = +125^{\circ}\text{C}$	–	–	3	mA
Emitter Cutoff Current	I_{EBO}	$V_{\text{BE}} = 5\text{V}$, $I_{\text{C}} = 0$	–	–	5	mA
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	$I_{\text{C}} = 5\text{A}$, $V_{\text{CE}} = 3\text{V}$	1000	–	20000	
		$I_{\text{C}} = 10\text{A}$, $V_{\text{CE}} = 3\text{V}$	100	–	–	
Collector–Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$I_{\text{C}} = 5\text{A}$, $I_{\text{B}} = 0.01\text{A}$	–	–	2	V
		$I_{\text{C}} = 10\text{A}$, $I_{\text{B}} = 0.1\text{A}$	–	–	3	V
Base–Emitter ON Voltage	$V_{\text{BE(on)}}$	$I_{\text{C}} = 3\text{A}$, $V_{\text{CE}} = 3\text{V}$	–	–	2.8	V
		$I_{\text{C}} = 10\text{A}$, $V_{\text{CE}} = 3\text{V}$	–	–	4.5	V
Dynamic Characteristics						
Small–Signal Current Gain	$ h_{\text{fe}} $	$I_{\text{C}} = 1\text{A}$, $V_{\text{CE}} = 5\text{V}$, $f_{\text{test}} = 1\text{MHz}$	20	–	–	
Output Capacitance	C_{ob}	$V_{\text{CB}} = 10\text{V}$, $I_{\text{E}} = 0$, $f = 1\text{MHz}$	–	–	200	pF
Small–Signal Current Gain	h_{fe}	$I_{\text{C}} = 1\text{A}$, $V_{\text{CE}} = 5\text{V}$, $f = 1\text{kHz}$	1000	–	–	

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

