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NTE268 (NPN) & NTE269 (PNP) Silicon Complementary Transistors Darlington Power Amplifier

Description:

The NTE268 (NPN) and NTE269 (PNP) are silicon complementary Darlington transistors in a TO202 type package designed for amplifier and driver applications where high gain is an essential requirement, low power lamp and relay drivers and power drivers for high-current applications such as voltage regulators.

Features:

- Low Collector-Emitter Saturation Voltage: $V_{CE(sat)} = 1.5V \text{ Max @ } I_C = 1.5A$
- TO202 Type Package: 2W Free Air Dissipation @ $T_A = +25^\circ C$

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CEO}	50V
Collector-Emitter Voltage, V_{CES}	50V
Emitter-Base Voltage, V_{EBO}	13V
Collector Current, I_C	
Continuous	2A
Peak (Note 1)	3A
Continuous Base Current, I_B	100mA
Total Power Dissipation ($T_A = +25^\circ C$), P_D	1.67W
Derate Above $25^\circ C$ (Note 2)	13.3mW/ $^\circ C$
Total Power Dissipation ($T_C = +25^\circ C$), P_D	10W
Derate Above $25^\circ C$	80mW/ $^\circ C$
Operating Junction Temperature Range, T_J	-55° to $+150^\circ C$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ C$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	75 $^\circ C/W$
Thermal Resistance, Junction-to-Case, R_{thJC}	12.5 $^\circ C/W$

Note 1. Pulse Width $\leq 25ms$, Duty Cycle $\leq 50\%$.

Note 2. The actual power dissipation capability of the TO202 type package is 2W @ $T_A = +25^\circ C$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}$, Note 3	50	-	-	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 50\text{V}$, $I_E = 0$, $T_J = +150^\circ\text{C}$	-	-	20	μA
	I_{CES}	$V_{CE} = 50\text{V}$, $V_{BE} = 0$	-	-	0.5	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 13\text{V}$, $I_C = 0$	-	-	100	nA
ON Characteristics (Note 4)						
DC Current Gain	h_{FE}	$I_C = 200\text{mA}$, $V_{CE} = 5\text{V}$	10000	-	-	
		$I_C = 1.5\text{A}$, $V_{CE} = 5\text{V}$	1000	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1.5\text{A}$, $I_B = 3\text{mA}$	-	-	1.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1.5\text{A}$, $I_B = 3\text{mA}$	-	-	2.5	V
Dynamic Characteristics						
Collector Capacitance NTE268	C_{cb}	$V_{CB} = 10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	-	-	10	pF
			NTE269	-	-	25
High Frequency Current Gain	$ h_{fe} $	$I_C = 20\text{mA}$, $V_{CE} = 5\text{V}$, $f = 100\text{MHz}$	1.0	-	-	

Note 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

