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NTE243 (NPN) & NTE244 (PNP) Silicon Complementary Transistors Darlington Power Amplifier

Description:

The NTE243 (NPN) and NTE244 (PNP) are silicon complementary Darlington transistors in a TO3 type case designed for general-purpose amplifier and low-frequency switching applications.

Features:

- High DC Current Gain: $h_{FE} = 3000$ Typ @ $I_C = 4A$
- Collector-Emitter Sustaining Voltage: $V_{CEO(sus)} = 80V$ Min @ 100mA
- Low Collector-Emitter Saturation Voltage:
 - $V_{CE(sat)} = 2V$ Max @ $I_C = 4A$
 - $= 3V$ Max @ $I_C = 8A$
- Monolithic Construction with Built-In Base-Emitter Shunt Resistors

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CEO}	80V
Collector-Base Voltage, V_{CB}	80V
Emitter-Base Voltage, V_{EB}	5V
Collector Current, I_C	
Continuous	8A
Peak	16A
Base Current, I_B	120mA
Total Power Dissipation ($T_C = +25^\circ C$), P_D	100W
Derate Above $25^\circ C$	0.571W/ $^\circ C$
Operating Junction Temperature Range, T_J	-65° to $+200^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ C$
Thermal Resistance, Junction-to-Case, R_{thJC}	1.78 $^\circ C/W$

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

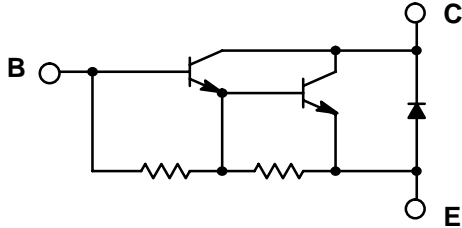
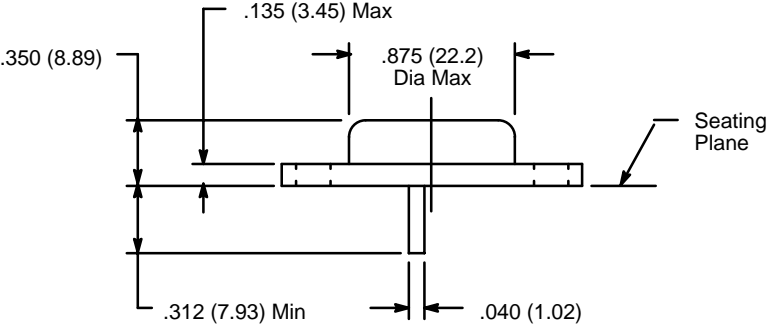
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 100mA, I_B = 0$, Note 1	80	-	-	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 40V, I_E = 0$	-	-	0.5	mA
		$V_{CE} = 80V, V_{BE(off)} = 1.5V$	-	-	0.5	mA
		$V_{CE} = 80V, V_{BE(off)} = 1.5V, T_A = +150^\circ C$	-	-	5.0	mA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 5V, I_C = 0$	-	-	2.0	mA

Note 1. Pulse Test: Pulse Width = 300 μs , Duty Cycle = 2%

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	$V_{CE} = 3\text{V}, I_C = 4\text{A}$	750	–	18000	
		$V_{CE} = 3\text{V}, I_C = 8\text{A}$	100	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 4\text{A}, I_B = 16\text{mA}$	–	–	2.0	V
		$I_C = 8\text{A}, I_B = 80\text{mA}$	–	–	3.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 8\text{A}, I_B = 80\text{mA}$	–	–	4.0	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$V_{CE} = 3\text{V}, I_C = 4\text{A}$	–	–	2.8	V
Dynamic Characteristics						
Small–Signal Current Gain	h_{fe}	$V_{CE} = 3\text{V}, I_C = 3\text{A}, f = 1\text{kHz}$	300	–	–	
Magnitude of Common Emitter Small–Signal Short–Circuit Forward Current Transfer Ratio	$ h_{fe} $	$V_{CE} = 3\text{V}, I_C = 3\text{A}, f = 1\text{MHz}$	4.0	–	–	MHz
Output Capacitance NTE243	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f = 0.1\text{MHz}$	–	–	200	pF
			–	–	300	pF
NTE244						

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

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