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NTE253 (NPN) & NTE254 (PNP)
Silicon Complementary Transistors
Darlington Power Amplifier

Description:

The NTE253 (NPN) and NTE254 (PNP) are silicon complementary Darlington transistors in a TO126 type case designed for general–purpose amplifier and low–speed switching applications.

Features:

- High DC Current Gain: h_{FE} = 2000 (Typ) @ I_C = 2A
- Monolithic Construction with Built–In Base–Emitter Resistors to Limit Leakage Multiplication

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Collector–Emitter Voltage, V_{CEO} 80V
Collector–Base Voltage, V_{CB} 80V
Emitter–Base Voltage, V_{EB} 5V
Collector Current, I_C 4A
Base Current, I_B 100mA
Total Power Dissipation (T_C = +25°C), P_D 40W
Derate Above 25°C . . . . . 0.32W/°C
Operating Junction Temperature Range, T_J . . . . . –65° to +150°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 3.23°C/W

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 50mA, I_B = 0, Note 1	80	–	–	V
Collector Cutoff Current	I_{CEO}	V_{CE} = 80V, I_B = 0	–	–	100	μA
	I_{CBO}	V_{CE} = 80V, I_E = 0	–	–	100	μA
		V_{CE} = 80V, I_E = 0, T_C = +100°C	–	–	500	μA
Emitter Cutoff Current	I_{EBO}	V_{BE} = 5V, I_C = 0	–	–	2.0	mA

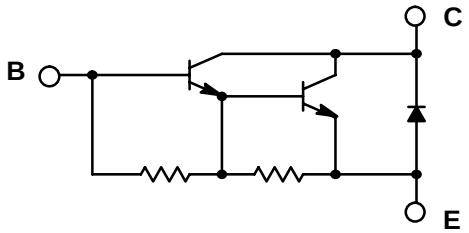
Electrical Characteristics (Cont'd): (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain NTE253	h_{FE}	V_{CE} = 3V, I_C = 1.5A	750	2000	–	
NTE254		V_{CE} = 3V, I_C = 2A	750	2000	–	
NTE253 & NTE253		V_{CE} = 3V, I_C = 4A	100	–	–	
Collector–Emitter Saturation Voltage NTE253	$V_{CE(sat)}$	I_C = 1.5A, I_B = 30mA	–	–	2.5	V
NTE254		I_C = 2.0A, I_B = 40mA	–	–	2.8	V
NTE253 & NTE254		I_C = 4.0A, I_B = 40mA	–	–	3.0	V
Base–Emitter ON Voltage NTE253	$V_{BE(on)}$	V_{CE} = 3V, I_C = 1.5A	–	–	2.5	V
NTE254		V_{CE} = 3V, I_C = 2.0A	–	–	2.5	V
NTE253 & NTE254		V_{CE} = 3V, I_C = 4.0A	–	–	3.0	V
Dynamic Characteristics						
Small–Signal Current Gain	$\|h_{fe}\|$	V_{CE} = 3V, I_C = 1.5A, f = 1MHz	1.0	–	–	

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

Note 2. NTE253MCP is a matched complementary pair containing 1 each of NTE253 (NPN) and NTE254 (PNP).

NTE253



NTE254

