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NTE392 (NPN) & NTE393 (PNP)
Silicon Complementary Transistors
General Purpose
TO–3PN Type Package

Description:

The NTE392 (NPN) and NTE393 (PNP) are silicon complementary transistors in a TO–3PN type package designed for general purpose power amplifier and switching applications.

Features:

- 25A Collector Current
- Low Leakage Current: I_{CEO} = 1mA @ V_{CE} = 60V
- Excellent DC Gain: h_{FE} = 40 Typ @ 15A
- High Current Gain Bandwidth Product: h_{fe} = 3 Min @ I_C = 1A, f = 1MHz

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 25A
  Peak (Note 1) 40A
Continuous Base Current, I_B 5A
Total Power Dissipation (T_C = +25°C), P_D 125W
  Derate Above 25°C . . . . . 1W/°C
Operating Junction Temperature Range, T_J . . . . . –65° to +150°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C
Unclamped Inductive Load, E_{SB} 90mJ
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 1.0°C/W
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 35.7°C/W

Note 1. Pulse Test: Pulse Width = 10ms, Duty Cycle ≤ 10%.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector−Emitter Sustaining Voltage	$V_{CEO(sus)}$	I_C = 30mA, I_B = 0, Note 2	100	–	–	V
Collector−Emitter Cutoff Current	I_{CEO}	V_{CE} = 60V, I_B = 0	–	–	1	mA
	I_{CES}	V_{CE} = 100V, V_{EB} = 0	–	–	0.7	mA
Emitter−Base Cutoff Current	I_{EBO}	V_{EB} = 5V, I_C = 0	–	–	1	mA
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	I_C = 1.5A, V_{CE} = 4V	25	–	–	
		I_C = 15A, V_{CE} = 4V	15	–	75	
Collector−Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 15A, I_B = 1.5A	–	–	1.8	V
		I_C = 25A, I_B = 5A	–	–	4	V
Base−Emitter ON Voltage	$V_{BE(on)}$	I_C = 15A, V_{CE} = 4V	–	–	2.0	V
		I_C = 25A, V_{CE} = 4V	–	–	4.0	V
Dynamic Characteristics						
Small−Signal Current Gain	h_{fe}	I_C = 1A, V_{CE} = 10V, f = 1kHz	25	–	–	
Current−Gain Bandwidth Product	f_T	I_C = 1A, V_{CE} = 10V, f = 1MHz, Note 3	3	–	–	MHz

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

Note 3. $f_T = |h_{fe}| \bullet f_{test}$