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NTE87 (NPN) & NTE88 (PNP)
Silicon Complementary Transistors
High Power Audio, Disk Head Positioner for Linear Applications

Description:

The NTE87 (NPN) and NTE88 (PNP) are complementary silicon power transistors in a TO3 type package designed for high power audio, disk head positioners, and other linear applications. These devices can also be used in power switching circuits such as relay or solenoid drivers, DC–to–DC converters or inverters.

Features:

- High Safe Operating Area: 1.2A @ 100V
- Completely Characterized for Linear Operation
- High DC Current Gain: h_{FE} = 20 Min @ I_C = 2A
- Low Saturation Voltage: 2V
- For Low Distortion Complementry Designs

Absolute Maximum Ratings:

Collector–Emitter Voltage, $V_{CEO(sus)}$ 250V
Collector–Emitter Voltage, V_{CEX} 250V
Emitter–Base Voltage, V_{EB} 5V
Collector Current, I_C
  Continuous 10A
  Peak (Note 2) 15A
Base Current, I_B
  Continuous 2A
  Peak (Note 2) 5A
Emitter Current, I_E
  Continuous 12A
  Peak (Note 2) 20A
Total Power Dissipation (T_C = +25°C), P_D 200W
  Derate Above 25°C . . . . . 1.14W/°C
Operating Junction Temperature Range, T_J . . . . . –65° to +200°C
Storage Temperature Range, T_{stg} . . . . . –65° to +200°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 0.875°C/W
Lead Temperature (During Soldering), T_L . . . . . +265°C

Note 1. Matched complementary pairs are available upon request (NTE88MCP). Matched complementary pairs have their gain specification (h_{FE}) matched to within 10% of each other.

Note 2. Pulse Test: Pulse Width = 5ms, Duty Cycle ≤ 10%.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{CEO(sus)}$	I_C = 100mA, Note 3	250	–	–	V
Collector Cutoff Current	I_{CEO}	V_{CE} = 250V	–	–	1	mA
	I_{CEX}	V_{CE} = 250V, $V_{BE(off)}$ = 1.5V	–	–	500	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 5V	–	–	500	μA
Second Breakdown						
Second Breakdown Collector Current with Base Forward Bias	$I_{S/b}$	V_{CE} = 40V, t = 0.5s (non–repetitive)	5	–	–	A
		V_{CE} = 100V, t = 0.5s (non–repetitive)	1.4	–	–	A
ON Characteristics (Note 3)						
DC Current Gain	h_{FE}	V_{CE} = 2V, I_C = 2A	20	–	100	
		V_{CE} = 2V, I_C = 4A	5	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 2A, I_B = 200mA	–	–	0.8	V
		I_C = 4A, I_B = 400mA	–	–	2.5	V
Base–Emitter On Voltage	$V_{BE(on)}$	V_{CE} = 2V, I_C = 4A	–	–	2	V
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	V_{CE} = 10V, I_C = 1A, f_{test} = 1MHz	4	–	–	MHz
Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f_{test} = 1MHz	–	–	500	pF

Note 3. Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2%.