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NTE130 (NPN) & NTE219 (PNP) Silicon Power Transistor Audio Power Amp, Medium Speed Switch

Description:

The NTE130 (NPN) and NTE219 (PNP) are silicon complementary transistors in a TO3 type case designed for general purpose switching and amplifier applications.

Features:

- DC Current Gain: $h_{FE} = 20 - 70 @ I_C = 4A$
- Collector–Emitter Saturation Voltage: $V_{CE(sat)} = 1.1V$ (Max) @ $I_C = 4A$
- Excellent Safe Operating Area

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}	60V
Collector–Emitter Voltage, V_{CER}	70V
Collector–Base Voltage, V_{CB}	100V
Emitter–Base Voltage, V_{EB}	7V
Continuous Collector Current, I_C	15A
Base Current, I_B	7A
Total Device Dissipation ($T_C = +25^\circ C$), P_D	115W
Derate Above $25^\circ C$	0.657W/ $^\circ C$
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}	1.52 $^\circ C/W$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 200mA, I_B = 0$, Note 1	60	–	–	V
Collector–Emitter Sustaining Voltage	$V_{CER(sus)}$	$I_C = 200mA, R_{BE} = 100\Omega$, Note 1	70	–	–	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 30V, I_B = 0$	–	–	0.7	mA
		$V_{CE} = 100V, V_{BE(off)} = 1.5V$	–	–	1.0	mA
		$V_{CE} = 100V, V_{BE(off)} = 1.5V, T_C = +150^\circ C$	–	–	5.0	mA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 7V, I_C = 0$	–	–	5.0	mA

Note 1. Pulse Test: Pulse Width $\leq 300\mu s$. Duty Cycle $\leq 2\%$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	$I_C = 4\text{A}, V_{CE} = 4\text{V}$	20	–	70	
		$I_C = 10\text{A}, V_{CE} = 4\text{V}$	5	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 4\text{A}, I_B = 400\text{mA}$	–	–	1.1	V
		$I_C = 10\text{A}, I_B = 3.3\text{A}$	–	–	3.0	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 4\text{A}, V_{CE} = 4\text{V}$	–	–	1.5	V
Second Breakdown						
Second Breakdown Collector Current with Base Forward Biased	$I_{s/b}$	$V_{CE} = 40\text{V}, t = 1.0\text{s};$ Nonrepetitive	2.87	–	–	A
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	$I_C = 500\text{mA}, V_{CE} = 10\text{V}, f = 1\text{MHz}$	2.5	–	–	MHz
Small–Signal Current Gain	h_{fe}	$I_C = 1\text{A}, V_{CE} = 4\text{V}, f = 1\text{kHz}$	15	–	120	
Small–Signal Current Gain Cutoff Frequency	f_{hfe}	$V_{CE} = 4\text{V}, I_C = 1\text{A}, f = 1\text{kHz}$	10	–	–	kHz

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

Note 2. NTE130MP is a matched pair of NTE130 with their DC Current Gain (h_{FE}) matched to within 10% of each other.

Note 3. NTE219MCP is a matched complementary pair containing 1 each of NTE219 (PNP) and NTE130 (NPN).

