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NTE2345 (NPN) & NTE2346 (PNP) Silicon Complementary Transistors General Purpose Darlington, Power Amplifier

Description:

The NTE2345 (NPN) and NTE2346 (PNP) are silicon complementary Darlington transistors in an SOT-82 type package designed for use in audio output stages and general amplifier and switching applications..

Features:

- High DC Current Gain: $h_{FE} = 750$ (Min) @ $I_C = 3A, V_{CE} = 3V$
- Junction Temperature to $+150^{\circ}C$

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}	120V
Collector–Base Voltage, V_{CBO}	120V
Emitter–Base Voltage, V_{EBO}	5V
Collector Current, I_C	
Continuous	6A
Peak ($t_p \leq 10ms, \delta \leq 0.1$)	10A
Base Current, I_B	150mA
Total Power Dissipation ($T_C = +25^{\circ}C$), P_D	60W
Junction Temperature, T_J	$+150^{\circ}C$
Storage Temperature Range, T_{stg}	-65° to $+150^{\circ}C$
Thermal Resistance, Junction–to–Case, R_{thJC}	2.08K/W
Thermal Resistance, Junction–to–Ambient, R_{thJA}	100K/W

Note 1. **NTE2346** is a **discontinued** device and **no longer available**.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CBO}	$I_E = 0, V_{CBO} = 120V$	–	–	0.2	mA
		$I_E = 0, V_{CBO} = 120V, T_J = +150^{\circ}C$	–	–	2mA	mA
	I_{CEO}	$I_B = 0, V_{CEO} = 60V$	–	–	0.5	mA
Emitter Cutoff Current	I_{EBO}	$I_C = 0, V_{EBO} = 5V$	–	–	5	mA
DC Current Gain	h_{FE}	$I_C = 500mA, V_{CEO} = 3V, \text{Note 1}$	–	2700	–	
		$I_C = 3A, V_{CEO} = 3V, \text{Note 2}$	750	–	–	
		$I_C = 6A, V_{CEO} = 3V, \text{Note 2}$	–	400	–	

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

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Base-Emitter Voltage	V_{BE}	$I_C = 3A, V_{CEO} = 3V$, Note 3	2.5	-	-	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 3A, I_B = 12mA$	2.0	-	-	V
Small-Signal Current Gain	h_{fe}	$I_C = 3A, V_{CEO} = 3V, f = 1MHz$	10	-	-	
Cut-Off Frequency	f_{hfe}	$I_C = 3A, V_{CEO} = 3V$	-	100	-	kHz
Diode, Forward Voltage	V_F	$I_F = 3A$	-	1.8	-	V
Second Breakdown Collector Current Non-Repetitive, without Heatsink	$I_{(SB)}$	$V_{CEO} = 60V, t_p = 25ms$	1	-	-	A
Turn-On Time	t_{on}	$I_{C(on)} = 3A, I_{B(on)} = I_{B(off)} = 12mA$	-	1	2	μs
Turn-Off Time	t_{off}	$I_{C(on)} = 3A, I_{B(on)} = I_{B(off)} = 12mA$	-	5	10	μs

Note 3. V_{BE} decreases by about 3.8mV/K with increasing temperature.

