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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°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 ($t_p \le 10$ms, $\delta \le 0.1$) 10A
Base Current, I_B 150mA
Total Power Dissipation (T_C = +25°C), P_D 60W
Junction Temperature, T_J . . . . . +150°C
Storage Temperature Range, T_{stg} . . . . . −65° to +150°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°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°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, Note 1	–	2700	–	
		I_C = 3A, V_{CEO} = 3V, Note 2	750	–	–	
		I_C = 6A, V_{CEO} = 3V, Note 2	–	400	–	

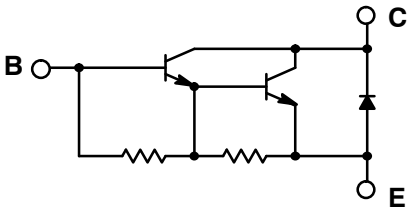
Note 2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

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

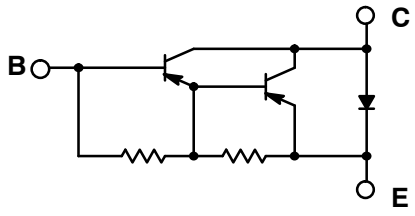
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Base−Emitter Voltage	V_{BE}	I_C = 3A, V_{CEO} = 3V, Note 3	2.5	–	–	V
Collector−Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 3A, I_B = 12mA	2.0	–	–	V
Small−Signal Current Gain	h_{fe}	I_C = 3A, V_{CEO} = 3V, f = 1MHz	10	–	–	
Cut−Off Frequency	f_{hfe}	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.

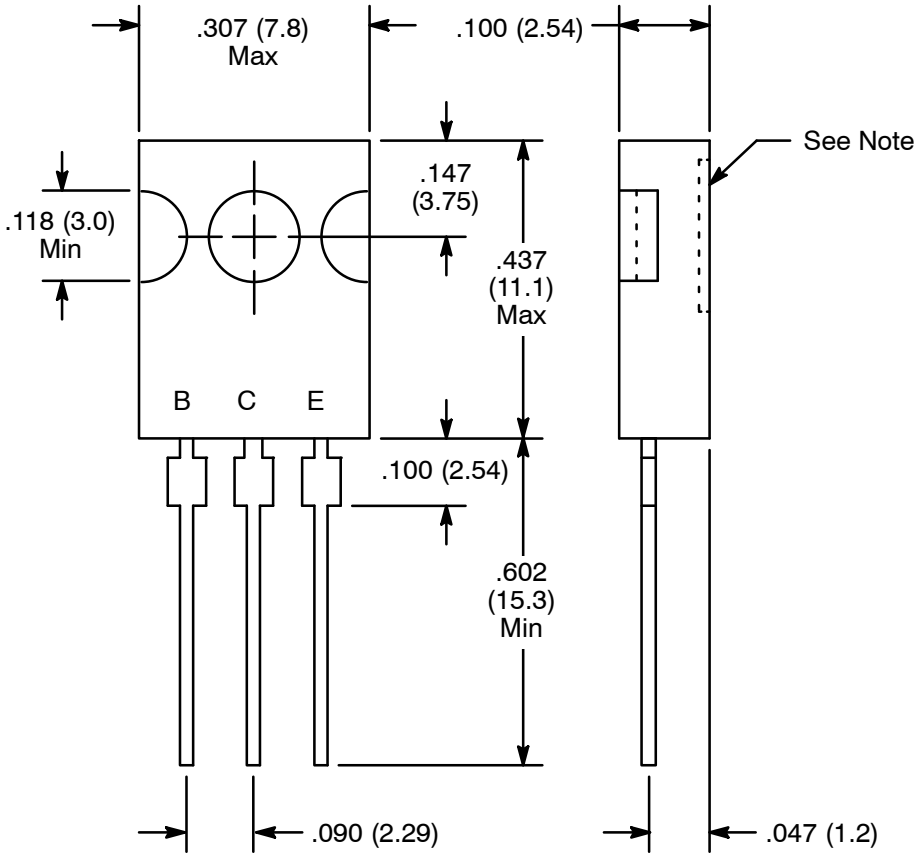
Schematic Diagram



NPN



PNP



Note: Collector connected to metal part of mounting surface.