ELECTRONICS, INC.
44 FARRAND STREET
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NTE81
Silicon NPN Transistor
Dual Differential Amp, General Purpose Switch

Absolute Maximum Ratings:

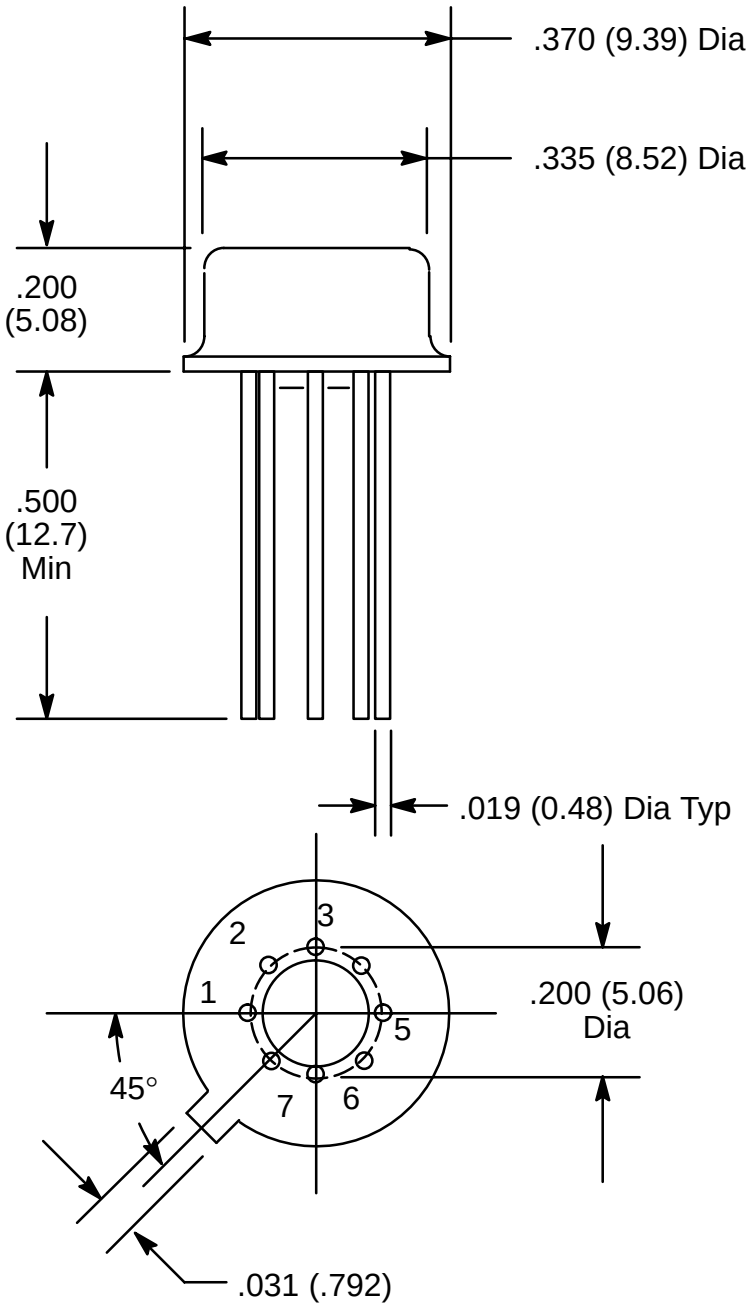
Collector–Emitter Voltage, V_{CEO} 30V
Collector–Base Voltage, V_{CBO} 60V
Emitter–Base Voltage, V_{EBO} 5V
Continuous Collector Current, I_C 500mA
Total Device Dissipation (T_A = +25°C), P_D
  One Die 575mW
  All Die Equal Power 625mW
  Derate Above 25°C
    One Die . . . . . 3.29mW/°C
    All Die Equal Power . . . . . 3.57mW/°C
Total Device Dissipation (T_C = +25°C), P_D
  One Die 1.8W
  All Die Equal Power 2.5W
  Derate Above 25°C
    One Die . . . . . 10.3mW/°C
    All Die Equal Power . . . . . 14.3mW/°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, $R_{\Theta JC}$
  One Die . . . . . 97°C/W
  All Die Equal Power . . . . . 70°C/W
Thermal Resistance, Junction–to–Ambient (Note 1), R_{thJA}
  One Die . . . . . 304°C/W
  All Die Equal Power . . . . . 280°C/W
Coupling Factors
  Q1 – Q2
    Junction–to–Ambient 57%
    Junction–to–Case 0%
  Q1 – Q3 or Q1 – Q4
    Junction–to–Ambient 55%
    Junction–to–Case 0%

Note 1. R_{thJA} is measured with the device soldered into a typical printed circuit board.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10mA, I_B = 0, Note 2	30	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E = 0	60	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	5	–	–	V
Collector Cutoff Current	I_{CEV}	V_{CE} = 50V, $V_{BE(off)}$ = 3V	15	–	–	nA
Base Cutoff Current	I_{BL}	V_{CE} = 50V, $V_{EB(off)}$ = 3V	30	–	–	nA
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	I_C = 0.1mA, V_{CE} = 10V	20	50	–	
		I_C = 1.0mA, V_{CE} = 10V	25	55	–	
		I_C = 10mA, V_{CE} = 10V	35	65	–	
		I_C = 150mA, V_{CE} = 1.0V	20	65	–	
		I_C = 150mA, V_{CE} = 10V	40	30	120	
		I_C = 300mA, V_{CE} = 10V	25	75	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 150mA, I_B = 15mA	–	0.2	0.4	V
		I_C = 300mA, I_B = 30mA	–	0.35	1.2	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 150mA, I_B = 15mA	0.6	0.95	1.3	V
		I_C = 300mA, I_B = 30mA	–	–	2.0	V
Small–Signal Characteristics						
Current Gain–Bandwidth Product	f_T	I_C = 20mA, V_{CE} = 20V, f = 100MHz	200	250	–	MHz
Output Capacitance	C_{obo}	V_{CB} = 10V, I_E = 0, f = 100kHz	–	3.5	8.0	pF
Input Capacitance	C_{ibo}	V_{EB} = 0.5V, I_C = 0, f = 100kHz	–	15	20	pF
Switching Characteristics						
Delay Time	t_d	V_{CC} = 30V, I_C = 150mA, $V_{BE(off)}$ = 0.5V, I_{B1} = 15mA	–	–	15	μs
Rise Time	t_r		–	–	30	μs
Storage Time	t_s	V_{CC} = 30V, I_C = 150mA, I_{B1} = I_{B2} = 15mA	–	–	250	μs
Fall Time	t_f		–	–	60	μs

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



Pin4 and Pin8 Omitted

Pin 1. C1
2. B1
3. E1
5. E2
6. B2
7. C2