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NTE379
Silicon NPN Transistor
Power Amp, High Voltage, Switch

Description:

The NTE379 is a silicon NPN transistor in a TO220 type package designed for high–voltage, high–speed power switching inductive circuits where fall time is critical. This device is particularly suited for 115 and 220V switch–mode applications such as Switching Regulators, Inverters, Motor Controls, Solenoid/Relay drivers, and Deflection circuits.

Features:

- $V_{CEO(sus)}$ = 400V
- Reverse Bias SOA with Inductive Loads @ T_C = +100°C
- 700V Blocking Capability

Absolute Maximum Ratings:

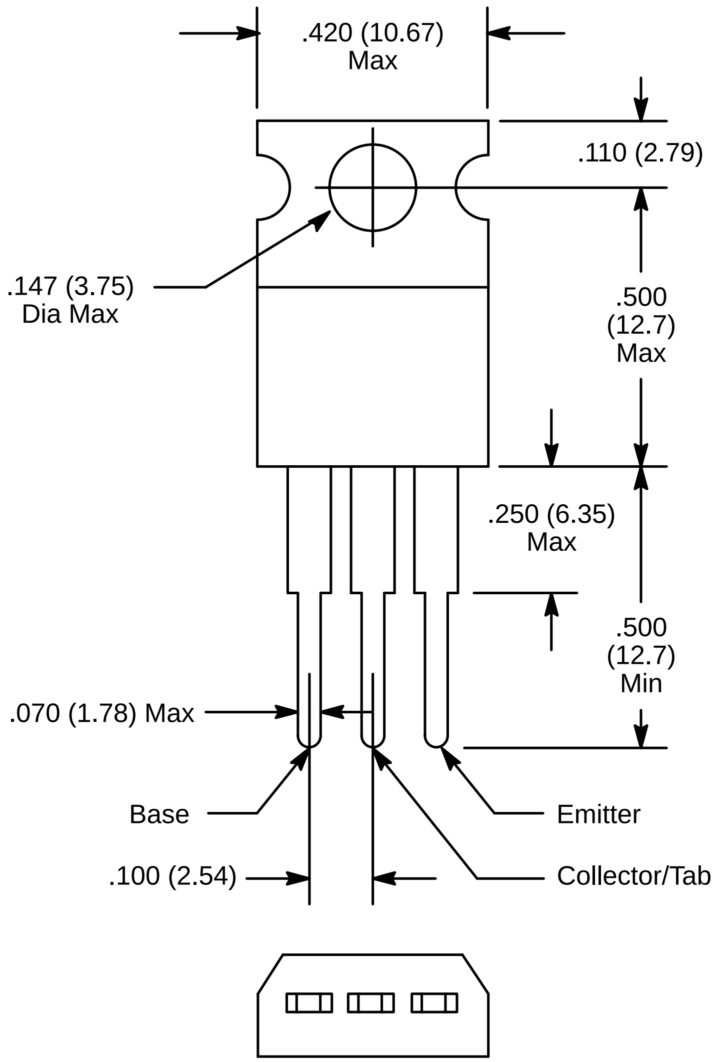
Collector–Emitter Voltage, $V_{CEO(sus)}$	400V
Collector–Emitter Voltage, V_{CEV}	700V
Emitter–Base Voltage, V_{EBO}	9V
Collector Current, I_C	
Continuous	12A
Peak (Note 1)	24A
Base Current, I_B	
Continuous	6A
Peak (Note 1)	12A
Emitter Current, I_E	
Continuous	18A
Peak (Note 1)	36A
Total Power Dissipation (T_A = +25°C), P_D	2W
Derate Above 25°C	16mW/°C
Total Power Dissipation (T_C = +25°C), P_D	100W
Derate Above 25°C	800mW/°C
Operating Junction Temperature Range, T_J	–65° to +150°C
Storage Temperature Range, T_{stg}	–65° to +150°C
Thermal Resistance, Junction to Case, R_{thJC}	1.25°C/W
Thermal Resistance, Junction to Ambient, R_{thJA}	62.5°C/W
Lead Temperature (During Soldering, 1/8” from case for 5sec), T_L	+275°C

Note 1. 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 (Note 2)						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	I_C = 10mA, I_B = 0	400	–	–	V
Collector Cutoff Current	I_{CEV}	V_{CEV} = 700V, $V_{BE(off)}$ = 1.5V	–	–	1	mA
		V_{CEV} = 700V, $V_{BE(off)}$ = 1.5V, T_C = +100°C	–	–	5	mA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 9V, I_C = 0	–	–	1	mA
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	I_C = 5A, V_{CE} = 5V	8	–	40	
		I_C = 8A, V_{CE} = 5V	6	–	30	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 5A, I_B = 1A	–	–	1.0	V
		I_C = 8A, I_B = 1.6A	–	–	1.5	V
		I_C = 12A, I_B = 3A	–	–	3.0	V
		I_C = 8A, I_B = 1.6A, T_C = +100°C	–	–	2.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 5A, I_B = 1A	–	–	1.2	V
		I_C = 8A, I_B = 1.6A	–	–	1.6	V
		I_C = 8A, I_B = 1.6A, T_C = +100°C	–	–	1.5	V
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	I_C = 500mA, V_{CE} = 10V, f = 1MHz	4	–	–	MHz
Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 0.1MHz	–	180	–	pF
Switching Characteristics						
Resistive Load						
Delay Time	t_d	V_{CC} = 125V, I_C = 8A, I_{B1} = I_{B2} = 1.6A, t_p = 25μs, Duty Cycle ≤ 1%	–	0.06	0.1	μs
Rise Time	t_r		–	0.45	1.0	μs
Storage Tme	t_s		–	1.3	3.0	μs
Fall Time	t_f		–	0.2	0.7	μs
Inductive Load, Clamped						
Voltage Storage Time	t_{sv}	I_C = 8A, V_{clamp} = 300V, I_{B1} = 1.6A, $V_{BE(off)}$ = 5V, T_C = +100°C	–	0.92	2.3	μs
Crossover Time	t_c		–	0.12	0.7	μs

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


.420 (10.67)
Max
.110 (2.79)
.147 (3.75)
Dia Max
.500
(12.7)
Max
.250 (6.35)
Max
.500
(12.7)
Min
.070 (1.78) Max
Base
Emitter
.100 (2.54)
Collector/Tab