



**ELECTRONICS, INC.**  
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## NTE2339 Silicon NPN Transistor High Voltage, High Speed Switch TO-220 Full Pack

**Features:**

- High Breakdown Voltage, High Reliability
- Fast Switching Speed
- Wide Safe Operating Area

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Collector-Base Voltage, $V_{CBO}$ .....	1100V
Collector-Emitter Voltage, $V_{CEO}$ .....	800V
Emitter-Base Voltage, $V_{EBO}$ .....	7V
Collector Current, $I_C$	
Continuous .....	3A
Peak (Note 1) .....	10A
Collector Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_C$ .....	30W
Operating Junction Temperature, $T_J$ .....	+150°C
Storage Temperature Range, $T_{stg}$ .....	-55° to +150°C

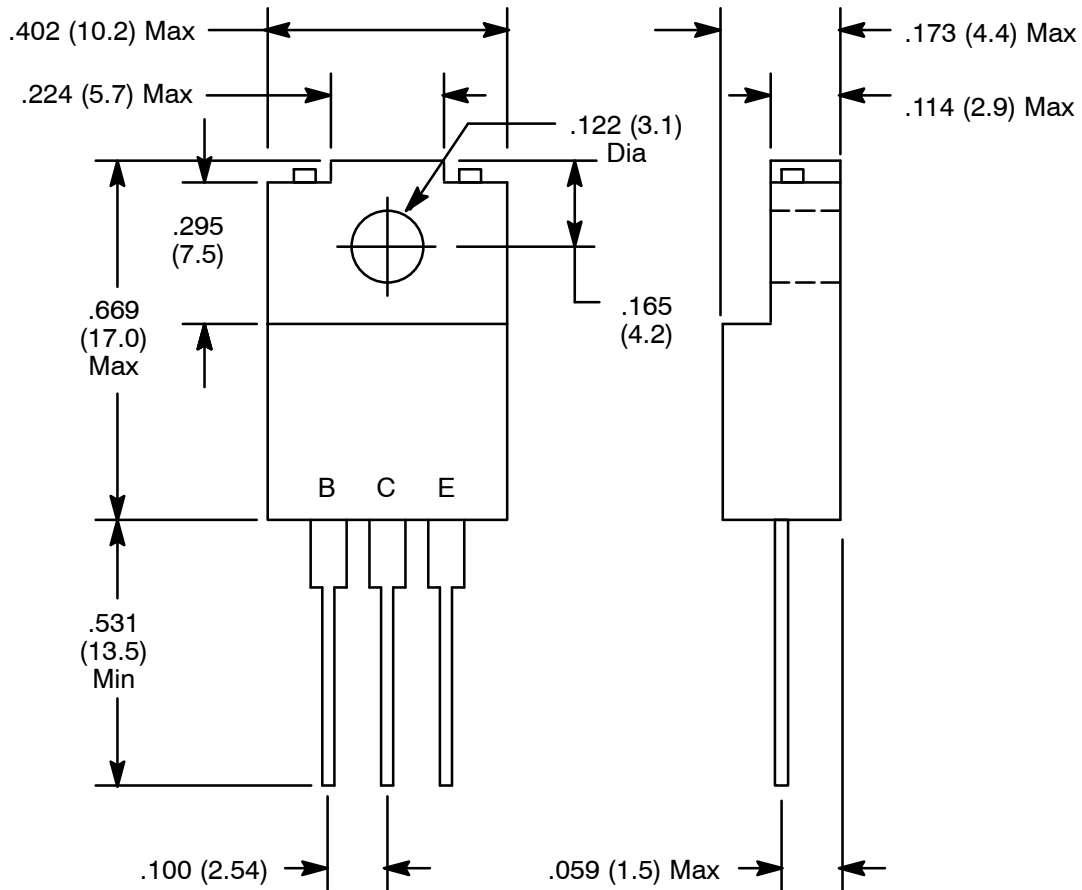
Note 1. Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 10\%$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 800V, I_E = 0$	-	-	10	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$	-	-	10	$\mu\text{A}$
DC Current Gain	$h_{FE(1)}$	$V_{CE} = 5V, I_C = 200\text{mA}$	20	-	40	
	$h_{FE(2)}$	$V_{CE} = 5V, I_C = 1A$	8	-	-	
Gain Bandwidth Product	$f_T$	$V_{CE} = 10V, I_C = 200\text{mA}$	-	15	-	MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10V, f = 1\text{MHz}$	-	60	-	pF
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1.5A, I_B = 300\text{mA}$	-	-	2.0	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1.5A, I_B = 300\text{mA}$	-	-	1.5	V

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 1\text{mA}, I_E = 0$	1100	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 5\text{mA}, R_{BE} = \infty$	800	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1\text{mA}, I_C = 0$	7	-	-	V
Collector-Emitter Sustaining Voltage	$V_{CEX(sus)}$	$I_C = 1.5\text{A}, I_{B1} = I_{B2} = 300\text{mA}, L = 2\text{mH}, \text{Clamped}$	800	-	-	V
Turn-On Time	$t_{on}$	$V_{CC} = 400\text{V}, I_{B1} = -2.5\text{A}, I_{B2} = I_C = 2\text{A}, R_L = 200\Omega$	-	-	0.5	$\mu\text{s}$
Storage Time	$t_{stg}$		-	-	3.0	$\mu\text{s}$
Fall Time	$t_f$		-	-	0.3	$\mu\text{s}$



**NOTE:** TO-220 Full Pack

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