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NTE2313 Silicon NPN Transistor High Speed Switch

Description:

The NTE2313 is a high-voltage, high-speed, glass-passivated NPN power transistor in a TO220 type package designed for use in converters, inverters, switching regulators, motor control systems, and switching applications.

Absolute Maximum Ratings:

Collector–Emitter Voltage, $V_{CEO(sus)}$	450V
Collector–Emitter Voltage, V_{CES}	1000V
Emitter–Base Voltage, V_{EBO}	5V
Collector Current, I_C	
Continuous	2A
Peak (Note 1)	3A
Base Current, I_B	
Continuous	0.75A
Peak (Note 1)	1A
Peak Reverse Base Current, $-I_{BM}$	1A
Total Power Dissipation ($T_C = +25^\circ\text{C}$), P_{tot}	50W
Derate Above 25°C	400mW/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	-65° to $+150^\circ\text{C}$
Storage Temperature range, T_{stg}	-65° to $+150^\circ\text{C}$
Thermal Resistance, Junction–to–Case, R_{thJC}	2.5 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction–to–Ambient, R_{thJA}	62.5 $^\circ\text{C}/\text{W}$
Lead Temperature (During Soldering, 1/8" from case, 5sec), T_L	$+275^\circ\text{C}$

Note 1. Pulse Test: Pulse Width = 5ms, Duty Cycle \leq 10%.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics (Note 2)						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 100\text{mA}$, $L = 25\text{mH}$	450	–	–	V
Collector Cutoff Current	I_{CES}	$V_{CS} = 1000\text{V}$	–	–	0.2	mA
		$V_{CS} = 1000\text{V}$, $T_C = +125^\circ\text{C}$	–	–	1.5	mA
Emitter Cutoff Current	I_{EBO}	$I_C = 0$, $V_{EB} = 5\text{V}$	–	–	1	mA

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

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	$I_C = 0.1\text{A}, V_{CE} = 5\text{V}$	30	50	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 0.3\text{A}, I_B = 30\text{mA}$	–	–	0.8	V
		$I_C = 1\text{A}, I_B = 200\text{mA}$	–	–	1.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1\text{A}, I_B = 0.2\text{A}$	–	–	1.1	V
Dynamic Characteristics						
Current–Gain Bandwidth Product	f_T	$I_C = 500\text{mA}, V_{CE} = 10\text{V}, f = 1\text{MHz}$	4	–	–	MHz
Switching Characteristics						
Turn–On Time	t_{on}	$V_{CC} = 250\text{V}, I_C = 1\text{A}, I_{B1} = 0.2\text{A}, I_{B2} = 0.4\text{A}$	–	0.3	0.5	μs
Storage Time	t_s		–	2.0	3.5	μs
Fall Time	t_f		–	0.3	–	μs

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

