



ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748-5089
<http://www.nteinc.com>

NTE2311 Silicon NPN Transistor High Voltage, High Speed Switch TO-3P Type Package

Description:

The NTE2311 is a silicon NPN transistor in a TO-3P type case designed for use in high voltage, high speed switching applications.

Features:

- High Blocking Capability: $V_{CEX} = 1000V$
- Wide Surge Area: $I_{CSM} = 55A @ 350V$

Applications:

- Switchmode Power Supply
- DC/DC and DC/AC Converters
- Motor Control

Absolute Maximum Ratings: ($T_C = +25^\circ C$ unless otherwise specified)

Collector-Emitter Voltage, V_{CEO}	450V
Collector-Emitter Voltage ($V_{BE} = -2.5V$), V_{CEX}	1000V
Emitter-Base Voltage, V_{EBO}	7V
Collector Current ($t_p \leq 5ms$), I_C	
Continuous	15A
Peak	30A
Base Current ($t_p \leq 5ms$), I_B	
Continuous	4A
Peak	20A
Power Dissipation, P_{tot}	
$T_C = +25^\circ C$	150W
$T_C = +60^\circ C$	115W
Operating Junction Temperature Range, T_J	-65° to $+175^\circ C$
Thermal Resistance, Junction-to-Case, R_{thJC}	$1^\circ C/W$

Electrical Characteristics: ($T_J = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_B = 0, I_C = 200mA, L = 25mH$	450	—	—	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_C = 0, I_E = 50mA$	7	—	30	V
Collector Cutoff Current	I_{CEX}	$T_J = +25^\circ C$	—	—	0.2	mA
		$T_J = +125^\circ C$			2.0	mA
	I_{CER}	$T_J = +25^\circ C$	—	—	0.5	mA
		$T_J = +125^\circ C$			4.0	mA

Rev. 6-16

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
OFF Characteristics (Cont,d)							
Emitter Cutoff Current	I _{EBO}	I _C = 0, V _{BE} = -5V	-	-	1	mA	
ON Characteristics (Note 1)							
DC Current Gain	h _{FE}	I _C = 8Adc, V _{CE} = 5Vdc)	10	-	-	-	
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C = 8A, I _B = 1.6A	-	-	1.5	V	
		I _C = 12A, I _B = 2.4A	-	-	5.0	V	
Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C = 8A, I _B = 1.6A	-	-	1.6	V	
Switching Characteristics (Switching Times on Resistive Load)							
Turn-On Time	t _{on}	V _{CC} = 150V, I _C = 8A, I _{B1} = -I _{B2} = 1.6A	-	0.55	1.0	μs	
Storage Time	t _s		-	1.5	3.0	μs	
Fall Time	t _f		-	0.3	0.8	μs	
Switching Characteristics (Switching Times on Inductive Load)							
Storage Time	t _s	T _J = +25°C	V _{CC} = 300V, V _{BB} = -5V, L _B = 3μH, I _C = 8A, I _{Bend} = 1.6A	-	3.5	-	μs
		T _J = +125°C		-	-	5.0	μs
Fall Time	t _f	T _J = +25°C		-	0.08	-	μs
		T _J = +125°C		-	-	0.4	μs

Note 1. Pulse Test: Pulse Width < 300 μs , Duty Cycle < 2%

