

# NTE2317

## Silicon NPN Transistors

### High Voltage, Fast Switching Power Darlington

#### Description:

The NTE2317 is a silicon multiepitaxial bipolar NPN transistor in a monolithic Darlington configuration mounted in a TO218 type package designed for use in automotive ignition applications and inverter circuits for motor controls. Controlled performance in the linear region make this device particularly suitable for car ignitions where current limiting is achieved desaturation the Darlington.

#### Features:

- High Performance Electronic Ignition Darlington
- High Ruggedness

#### Applications:

- Automotive Market

#### Absolute Maximum Ratings:

Collector-Emitter Voltage ( $V_{BE} = 0$ ), $V_{CES}$	500V
Collector-Emitter Voltage ( $I_B = 0$ ), $V_{CEO}$	450V
Emitter-Base Voltage ( $I_C = 0$ ), $V_{EBO}$	5V
Collector Current, $I_C$	
Continuous	15A
Peak ( $t_p \leq 10\text{ms}$ )	30A
Base Current, $I_B$	
Continuous	1A
Peak ( $t_p \leq 10\text{ms}$ )	5A
Total Power Dissipation ( $T_C \leq +25^\circ\text{C}$ ), $P_{tot}$	125W
Operating Junction Temperature, $T_J$	$+150^\circ\text{C}$
Storage Temperature Range, $T_{stg}$	$-40^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case, $R_{thJC}$	$1.0^\circ\text{C/W}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
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OFF Characteristics

Collector-Emitter Sustaining Voltage	$V_{CE(sus)}$	$I_C = 100\text{mA}, I_B = 0, \text{Note 1}$	450	-	-	V
Collector Cutoff Current	$I_{CES}$	$V_{CE} = 500\text{V}, V_{BE} = 0$	-	-	1	mA
		$V_{CE} = 500\text{V}, V_{BE} = 0, T_C = +125^\circ\text{C}$	-	-	5	mA
	$I_{CEO}$	$V_{CE} = 450\text{V}, I_B = 0$	-	-	1	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$	-	-	50	mA

ON Characteristics (Note 1)

Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 8\text{A}, I_B = 150\text{mA}$	-	1.09	1.8	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 8\text{A}, I_B = 150\text{mA}$	-	1.77	2.2	V
DC Current Gain	$h_{FE}$	$I_C = 5\text{A}, V_{CE} = 10\text{V}$	300	-	-	
Diode Forward Voltage	$V_F$	$I_F = 10\text{A}$	-	1.43	2.8	V

Switching Characteristics (Switching Times on Inductive Load)

Storage Time	$t_s$	$V_{CC} = 12\text{V}, V_{BE} = 0, I_C = 7\text{A}, I_B = 70\text{mA}, R_{BE} = 47\text{ Ohm}, L_B = 7\text{mH}, V = 300\text{V}$	-	15	-	$\mu\text{s}$
Fall Time	$t_f$		-	0.5	-	$\mu\text{s}$

Note 1. Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle = 1.5%.

