

## NTE2332

### Darlington Silicon NPN Transistor w/ Internal Damper & Zener Diode

**Description:**

The NTE2332 Darlington transistor is especially well suited for use in switching of L load motor drivers, printer hammer drivers, relay drivers, etc.

**Features:**

- High DC Current Gain
- Large Current Capacity and Wide ASO
- Contains 60 ±10V Avalanche Diode Between Collector and Base
- Uniformity in Collector-to-Base Breakdown Voltage Due to Adoption of Accurate Impurity Diffusion Process
- 25mJ Reverse Energy Rating

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

Collector to Base Voltage, $V_{CBO}$ , .....	60 ±10V
Collector to Emitter Voltage, $V_{CEO}$ , .....	60 ±10V
Emitter to Base Voltage, $V_{EBO}$ .....	6V
Collector Current, $I_C$ .....	2A
Peak Collector Current, $i_{cp}$ .....	4A
Base Current, $I_B$ .....	0.4A
Collector Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_C$ .....	20W
Junction Temperature, $T_J$ .....	+150°C
Storage Temperature Range, $T_{stg}$ .....	-55° to +150°C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cutoff Current	$I_{CEO}$	$V_{CB} = 40V, I_E = 0$	–	–	10	μA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$	–	–	2	mA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
DC Current Gain	$h_{FE}$	$V_{CE} = 5\text{V}$ , $I_C = 1\text{A}$	1000	4000	–	
Gain Bandwidth Product	$f_T$	$V_{CE} = 5\text{V}$ , $I_C = 1\text{A}$	–	180	–	MHz
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1\text{A}$ , $I_B = 4\text{mA}$	–	1.0	1.5	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1\text{A}$ , $I_B = 4\text{mA}$	–	–	2.0	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 0.1\text{mA}$ , $I_E = 0$	50	60	70	V
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}$ , $R_{BE} = \infty$	50	60	70	V
Unclamped Inductive Load Energy	$E_{s/b}$	$L = 100\text{mH}$ , $R_{BE} = 100\Omega$	25	–	–	mJ
Turn–On Time	$t_{on}$	$V_{CC} = 20\text{V}$ , $I_C = 1\text{A}$	–	0.2	–	$\mu\text{s}$
Storage Time	$t_{stg}$	$I_{B1} = -I_{B2} = 4\text{mA}$	–	3.5	–	$\mu\text{s}$
Fall Time	$t_f$	$I_{B1} = -I_{B2} = 4\text{mA}$	–	0.5	–	$\mu\text{s}$

