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## NTE2428 (NPN) & NTE2429 (PNP) Silicon Complementary Transistors General Purpose Switch

### **Description:**

The NTE2428 and NTE2429 are silicon complementary transistors in a SOT-89 type surface mount package designed for use in thick and thin film circuits. Typical applications include telephone and general industrial.

### **Absolute Maximum Ratings:**

Collector-Base Voltage (Open Emitter), $V_{CBO}$ .....	90V
Collector-Emitter Voltage, $V_{CER}$ .....	80V
Emitter-Base Voltage (Open Collector), $V_{EBO}$ .....	5V
DC Collector Current, $I_C$ .....	1A
DC Base Current, $I_B$ .....	100mA
Total Power Dissipation ( $T_A \leq +25^\circ\text{C}$ , Note 1), $P_{tot}$ .....	1W
Operating Junction Temperature, $T_J$ .....	+150°C
Storage Temperature Range, $T_{stg}$ .....	-65° to +150°C
Thermal Resistance, Junction-to-Ambient (Note 1), $R_{thJA}$ .....	125K/W
Thermal Resistance, Junction-to-Tab, $R_{thJTAB}$ .....	10K/W

Note 1. Device mounted on a ceramic substrate; area = 2.5cm<sup>2</sup>, thickness = 0.7mm.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 60\text{V}, I_E = 0$	-	-	100	nA
		$V_{CB} = 60\text{V}, I_E = 0, T_J = +150^\circ\text{C}$	-	-	50	μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	80	-	-	V
	$V_{(BR)CES}$	$I_C = 10\mu\text{A}, V_{BE} = 0$	90	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	5	-	-	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 150\text{mA}, I_B = 15\text{mA}, \text{Note 2}$	-	-	250	mV
		$I_C = 500\text{mA}, I_B = 50\text{mA}, \text{Note 2}$	-	-	500	mV
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 150\text{mA}, I_B = 15\text{mA}, \text{Note 2}$	-	-	1.0	V
		$I_C = 500\text{mA}, I_B = 50\text{mA}, \text{Note 2}$	-	-	1.2	V

Note 2. Measured under pulsed conditions.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
DC Current Gain	$h_{FE}$	$V_{CE} = 5\text{V}, I_C = 100\mu\text{A}$ , Note 2	30	–	–	
		$V_{CE} = 5\text{V}, I_C = 100\text{mA}$ , Note 2	100	–	300	
		$V_{CE} = 5\text{V}, I_C = 500\text{mA}$ , Note 2	50	–	–	
Transition Frequency	$f_T$	$V_{CE} = 10\text{V}, I_C = 50\text{mA}, f = 35\text{MHz}$	100	–	–	MHz
Collector Capacitance NTE2428	$C_c$	$V_{CB} = 10\text{V}, I_E = I_e = 0, f = 1\text{MHz}$	–	–	12	pF
			NTE2429	–	–	20
Emitter Capacitance NTE2428	$C_e$	$V_{EB} = 500\text{mV}, I_C = I_c = 0, f = 1\text{MHz}$	–	–	90	pF
			NTE2429	–	–	120
Turn-On Time NTE2428	$t_{on}$	$I_{Con} = 100\text{mA}, I_{Bon} = -I_{Boff} = 5\text{mA}$	–	–	250	ns
			NTE2429	–	–	500
Turn-Off Time NTE2428	$t_{off}$		–	–	1000	ns
			NTE2429	–	–	650

Note 2. Measured under pulsed conditions.

