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## NTE2646

### Silicon NPN Transistor

### General Purpose Amplifier, Switch

### SOT-323 Type Surface Mount Package

**Features:**

- Low Current
- Low Voltage

**Applications:**

- General Purpose Switching and Amplification

**Absolute Maximum Ratings:**

Collector-Base Voltage (Open Emitter), $V_{CBO}$ .....	80V
Collector-Emitter Voltage (Open Base), $V_{CEO}$ .....	65V
Emitter-Base Voltage (Open Collector), $V_{EBO}$ .....	6V
DC Collector Current, $I_C$	
Continuous .....	100mA
Peak .....	200mA
Peak Base Current, $I_{BM}$ .....	200mA
Total Power Dissipation ( $T_A = +25^\circ\text{C}$ , Note 1), $P_{tot}$ .....	200mW
Junction Temperature, $T_J$ .....	+150°C
Operating Ambient Temperature Range, $T_A$ .....	-65° to +150°C
Storage Temperature Range, $T_{stg}$ .....	-65° to +150°C
Thermal Resistance, Junction-to-Ambient (In free air, Note 1), $R_{thJA}$ .....	625K/W

Note 1. Transistor mounted on a FR4 printed-circuit board.

**Electrical Characteristics:** ( $T_A = +25$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Cut-Off Current	$I_{CBO}$	$V_{CB} = 30\text{V}, I_E = 0$	-	-	15	nA
		$V_{CB} = 30\text{V}, I_E = 0, T_J = +150^\circ\text{C}$	-	-	5	μA
Emitter-Base Cut-Off Current	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$	-	-	100	nA
DC Current Gain	$h_{FE}$	$I_C = 10\mu\text{A}, V_{CE} = 5\text{V}$	-	150	-	
		$I_C = 2\text{mA}, V_{CE} = 5\text{V}$	200	290	450	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$	-	90	250	mV
		$I_C = 10\text{mA}, I_B = 5\text{mA}$ , Note 2	-	200	600	mV
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$	-	700	-	mV
		$I_C = 10\text{mA}, I_B = 5\text{mA}$ , Note 2	-	900	-	mV

Note 2. Pulse Test:  $t_p \leq 300\mu\text{s}$ ,  $\delta \leq 0.02$ .

**Electrical Characteristics (Cont'd):** ( $T_A = +25$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Base-Emitter Voltage	$V_{BE}$	$I_C = 2\text{mA}, V_{CE} = 5\text{V}$	580	660	700	mV
		$I_C = 10\text{mA}, V_{CE} = 5\text{V}$	-	-	770	mV
Collector Capacitance	$C_C$	$V_{CB} = 5\text{V}, I_C = I_E = 0, f = 1\text{MHz}$	-	-	3	pF
Transition Frequency	$f_T$	$V_{CE} = 5\text{V}, I_C = 10\text{mA}, f = 100\text{MHz}$	100	-	-	MHz
Noise Figure	F	$I_C = 200\mu\text{A}, V_{CE} = 5\text{V}, R_S = 2\text{k}\Omega, f = 1\text{kHz}, B = 200\text{Hz}$	-	-	10	dB

