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## 2N5771 Silicon PNP Transistor Switching Transistor TO-92 Type Package

**Absolute Maximum Ratings:** (Note 1, Note 2,  $T_A = +25^\circ\text{C}$  unless otherwise specified)

Collector-Emitter Voltage, $V_{CEO}$ .....	15V
Collector-Base Voltage, $V_{CBO}$ .....	15V
Emitter-Base Voltage, $V_{EBO}$ .....	4.5V
Continuous Collector Current, $I_C$ .....	200mA
Total Device Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_D$ .....	350mW
Derate Above $25^\circ\text{C}$ .....	2.8mW/ $^\circ\text{C}$
Operating Junction Temperature Range, $T_J$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	$+125^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	$+357^\circ\text{C/W}$

Note 1. These ratings are limiting values above which the serviceability of any semiconductor may be impaired.

Note 2. These are steady state limits and are based on a maximum junction temperature of  $+150^\circ\text{C}$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 3\text{mA}, I_B = 0$ , Note 3	15	-	-	V
	$V_{(BR)CES}$	$I_C = 100\mu\text{A}, V_{BE} = 0$	15	-	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	15	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	4.5	-	-	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 8\text{V}, I_E = 0$	-	-	10	nA
		$V_{CE} = 8\text{V}, V_{BE} = 0$	-	-	10	nA
	$V_{CE} = 8\text{V}, V_{BE} = 0, T_A = +125^\circ\text{C}$	-	-	5	$\mu\text{A}$	
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 4.5\text{V}, I_C = 0$	-	-	1	$\mu\text{A}$

Note 3. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>ON Characteristics (Note 3)</b>						
DC Current Gain	$h_{FE}$	$I_C = 1\text{mA}, V_{CE} = 500\text{mV}$	35	-	-	
		$I_C = 10\text{mA}, V_{CE} = 300\text{mV}$	50	-	120	
		$I_C = 10\text{mA}, V_{CE} = 300\text{mV}, T_A = -55^\circ\text{C}$	20	-	-	
		$I_C = 50\text{mA}, V_{CE} = 1\text{V}$	40	-	-	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1\text{mA}, I_B = 0.1\text{mA}$	-	-	0.15	V
		$I_C = 10\text{mA}, I_B = 1\text{mA}$	-	-	0.18	V
		$I_C = 50\text{mA}, I_B = 5\text{mA}$	-	-	0.6	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1\text{mA}, I_B = 0.1\text{mA}$	-	-	0.8	V
		$I_C = 10\text{mA}, I_B = 1\text{mA}$	0.75	-	0.95	V
		$I_C = 50\text{mA}, I_B = 5\text{mA}$	-	-	1.5	V
<b>Small–Signal Characteristics</b>						
Small Signal Current Gain	$h_{fe}$	$I_C = 10\text{mA}, V_{CE} = 10\text{V}, f = 100\text{MHz}$	8.5	-	-	MHz
Collector–Base Capacitance	$C_{cb}$	$V_{CB} = 5\text{V}, I_E = 0, f = 140\text{kHz}$	-	-	3.0	pF
Emitter–Base Capacitance	$C_{eb}$	$V_{BE} = 500\text{mV}, I_C = 0, f = 140\text{kHz}$	-	-	3.5	pF
<b>Switching Characteristics</b>						
Storage Time	$t_s$	$I_C = 10\text{mA}, V_{CC} = 1.5\text{V}, I_{B1} = I_{B2} = 1\text{mA}$	-	-	20	ns
Turn–Off Time	$t_{off}$		-	-	20	ns
Turn–On Time	$t_{on}$	$I_C = 10\text{mA}, V_{CC} = 1.5\text{V}, I_{B1} = 1\text{mA}$	-	-	15	ns

Note 3. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

