

ST5771-1



PNP Switching Transistor

This device is designed for high speed saturated switching applications at currents to 100mA. Sourced from Process 65. See PN4258 for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage	15	V
V _{CB0}	Collector-Base Voltage	15	V
V _{EBO}	Emitter-Base Voltage	4.5	V
I _C	Collector Current - Continuous	200	mA
T _J , T _{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

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

NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		ST5771-1	
P _D	Total Device Dissipation Derate above 25°C	350	mW
		2.8	mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	125	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	357	°C/W

PNP Switching Transistor

(continued)

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Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
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OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 3.0 \text{ mA}, I_B = 0$	15		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \mu\text{A}, I_E = 0$	15		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100 \mu\text{A}, I_C = 0$	4.5		V
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	$I_C = 100 \mu\text{A}$	15		V
I_{CBO}	Collector Cutoff Current	$V_{CB} = 8.0 \text{ V}, I_E = 0$		10	nA
I_{CES}	Collector Cutoff Current	$V_{CE} = 8.0 \text{ V}, I_E = 0$ $V_{CE} = 8.0 \text{ V}, I_E = 0, T_A = 125 \text{ }^\circ\text{C}$		10 5.0	nA μA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 4.5 \text{ V}, I_C = 0$		1.0	μA

ON CHARACTERISTICS*

h_{FE}	DC Current Gain	$I_C = 10 \text{ mA}, V_{CE} = 0.3 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 0.3 \text{ V}, T_A = -55 \text{ }^\circ\text{C}$ $I_C = 1.0 \text{ mA}, V_{CE} = 0.5 \text{ V}$ $I_C = 50 \text{ mA}, V_{CE} = 1.0 \text{ V}$	30 15 30 20	150	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1.0 \text{ mA}, I_B = 0.1 \text{ mA}$ $I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$ $I_C = 50 \text{ mA}, I_B = 5.0 \text{ mA}$		0.15 0.18 0.6	V V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 1.0 \text{ mA}, I_B = 0.1 \text{ mA}$ $I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$ $I_C = 50 \text{ mA}, I_B = 5.0 \text{ mA}$	0.8	0.8 0.95 1.5	V V V

SMALL SIGNAL CHARACTERISTICS

C_{cb}	Collector-Base Capacitance	$V_{CB} = 5.0 \text{ V}, f = 1.0 \text{ MHz}$		3.0	pF
C_{eb}	Emitter-Base Capacitance	$V_{EB} = 0.5 \text{ V}, f = 1.0 \text{ MHz}$		3.5	pF
h_{fe}	Small-Signal Current Gain	$I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}, f = 100 \text{ MHz}$	7.0		

SWITCHING CHARACTERISTICS

t_s	Storage Time	$V_{CC} = 3.0 \text{ V}$ $I_C = I_{B1} = I_{B2} = 1.0 \text{ mA}$		20	ns
t_{on}	Turn-on Time	$V_{CC} = 1.5 \text{ V}, I_C = 10 \text{ mA}, I_{B1} = 1.0 \text{ mA}$		15	ns
t_d	Delay Time			10	ns
t_r	Rise Time			15	ns
t_{off}	Turn-off Time	$V_{CC} = 1.5 \text{ V}, I_C = 10 \text{ mA}, I_{B1} = I_{B2} = 1.0 \text{ mA}$		20	ns
t_s	Storage Time			20	ns
t_f	Fall Time			10	ns

* Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$