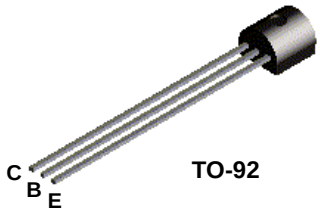
FAIRCHILD SEMICONDUCTOR TM

Discrete POWER & Signal Technologies

ST5771-1



TO-92

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_{CBO}	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 2.8	mW mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

PNP Switching Transistor
(continued)

Electrical Characteristics
TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	I_C = 3.0 mA, I_B = 0	15		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100 µA, I_E = 0	15		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 100 µA, I_C = 0	4.5		V
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	I_C = 100 µA	15		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 8.0 V, I_E = 0		10	nA
I_{CES}	Collector Cutoff Current	V_{CE} = 8.0 V, I_E = 0 V_{CE} = 8.0 V, I_E = 0, T_A = 125 ^{0}C		10 5.0	nA µA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 4.5 V, I_C = 0		1.0	µA
ON CHARACTERISTICS*					
h_{FE}	DC Current Gain	I_C = 10 mA, V_{CE} = 0.3 V I_C = 10 mA, V_{CE} = 0.3 V, T_A = - 55 °C I_C = 1.0 mA, V_{CE} = 0.5 V I_C = 50 mA, V_{CE} = 1.0 V	30 15 30 20	150	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 1.0 mA, I_B = 0.1 mA I_C = 10 mA, I_B = 1.0 mA I_C = 50 mA, I_B = 5.0 mA		0.15 0.18 0.6	V V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 1.0 mA, I_B = 0.1 mA I_C = 10 mA, I_B = 1.0 mA I_C = 50 mA, I_B = 5.0 mA	 0.8	0.8 0.95 1.5	V V V
SMALL SIGNAL CHARACTERISTICS					
C_{cb}	Collector-Base Capacitance	V_{CB} = 5.0 V, f = 1.0 MHz		3.0	pF
C_{eb}	Emitter-Base Capacitance	V_{EB} = 0.5 V, f = 1.0 MHz		3.5	pF
h_{fe}	Small-Signal Current Gain	I_C = 10 mA, V_{CE} = 10 V, f = 100 MHz	7.0		
SWITCHING CHARACTERISTICS					
t_s	Storage Time	V_{CC} = 3.0 V $I_C = I_{B1} = I_{B2}$ = 1.0 mA		20	ns
t_{on}	Turn-on Time	V_{CC} = 1.5 V, I_C = 10 mA,		15	ns
t_d	Delay Time	I_{B1} = 1.0 mA		10	ns
t_r	Rise Time			15	ns
t_{off}	Turn-off Time	V_{CC} = 1.5 V, I_C = 10 mA		20	ns
t_s	Storage Time	$I_{B1} = I_{B2}$ = 1.0 mA		20	ns
t_f	Fall Time			10	ns

*Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 2.0%