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2N5771/FTSO5771

PNP Ultra High Speed Saturated
Logic Switch

- V_{CE0} ... 15 V (Min)
- t_{on} ... 15 ns (Max) @ 10 mA, t_{off} ... 20 ns (Max) @ 10 mA
- τ_{95} ... 20 ns (Max) @ 10 mA
- Complements ... 2N5769, 2N5772

PACKAGE
2N5771 TO-92
FTSO5771 TO-236AA/AB

ABSOLUTE MAXIMUM RATINGS (Note 1)

Temperatures
Storage Temperature -55°C to 150°C
Operating Junction Temperature 150°C

Power Dissipation (Notes 2 & 3)
Total Dissipation at 25°C Ambient Temperature **2N** 0.625 W **FTSO** 0.350 W*
25°C Case Temperature 1.0 W

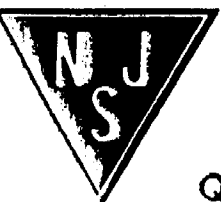
Voltages & Currents
 V_{CE0} Collector to Emitter Voltage -15 V (Note 4)
 V_{CBO} Collector to Base Voltage -15 V
 V_{EBO} Emitter to Base Voltage -4.5 V
 I_C Collector Current 50 mA

ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
BV_{CE0}	Collector to Emitter Breakdown Voltage (Note 5)	-15		V	$I_C = 3.0$ mA, $I_B = 0$
BV_{CES}	Collector to Emitter Breakdown Voltage	-15		V	$I_C = 100$ μ A, $V_{BE} = 0$
BV_{CBO}	Collector to Base Breakdown Voltage	-15		V	$I_C = 100$ μ A, $I_E = 0$
BV_{EBO}	Emitter to Base Breakdown Voltage	-4.5		V	$I_E = 100$ μ A, $I_C = 0$
I_{CBO}	Collector to Base Cutoff Current		10	nA	$V_{CB} = -8.0$ V, $I_C = 0$
I_{EBO}	Emitter Cutoff Current		1.0	μ A	$V_{EB} = -4.5$ V, $I_C = 0$
I_{CES}	Collector Reverse Current		10 5.0	nA μ A	$V_{CE} = -8.0$ V, $V_{BE} = 0$ $V_{CE} = -8.0$ V, $V_{BE} = 0$, $T_A = 125^\circ$ C
h_{FE}	DC Current Gain (Note 5)	35 50 40 20	120		$I_C = 1.0$ mA, $V_{CE} = -0.5$ V $I_C = 10$ mA, $V_{CE} = -0.3$ V $I_C = 50$ mA, $V_{CE} = -1.0$ V $I_C = 10$ mA, $V_{CE} = -0.3$ V, $T_A = 55^\circ$ C

NOTES:

1. These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
 2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
 3. These ratings give a maximum junction temperature of 150°C and (TO-92) junction-to-case thermal resistance of 125°C/W (derating factor of 8.0 mW/°C); junction-to-ambient thermal resistance of 200°C/W (derating factor of 5.0 mW/°C); (TO-236) junction-to-ambient thermal resistance of 357°C/W (derating factor of 2.8 mW/°C).
 4. Rating refers to a high current point where collector to emitter voltage is lowest
 5. Pulse conditions: length = 300 μ s; duty cycle = 1%.
 6. For product family characteristic curves, refer to Curve Set T292.
- * Package mounted on 99.5% alumina 8 mm x 8 mm x 0.6 mm.



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Quality Semi-Conductors

2N5771/FTSO5771

ELECTRICAL CHARACTERISTICS (25° C Ambient Temperature unless otherwise noted) (Note 6)

SYMBOL	CHARACTERISTIC	MIN	MAX	UNITS	TEST CONDITIONS
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)		-0.18	V	$I_C = 10 \text{ mA}$, $I_B = 1.0 \text{ mA}$
			-0.15	V	$I_C = 1.0 \text{ mA}$, $I_B = 0.1 \text{ mA}$
			-0.6	V	$I_C = 50 \text{ mA}$, $I_B = 5.0 \text{ mA}$
$V_{BE(sat)}$	Base to Emitter Saturation Voltage (Note 5)	-0.8	-0.8	V	$I_C = 1.0 \text{ mA}$, $I_B = 0.1 \text{ mA}$
			-0.95	V	$I_C = 10 \text{ mA}$, $I_B = 1.0 \text{ mA}$
			-1.5	V	$I_C = 50 \text{ mA}$, $I_B = 5.0 \text{ mA}$
C_{cb}	Collector to Base Capacitance		3.0	pF	$V_{CB} = -5.0 \text{ V}$, $I_E = 0$, $f = 140 \text{ kHz}$
C_{eb}	Emitter to Base Capacitance		3.5	pF	$V_{EB} = -0.5 \text{ V}$, $I_C = 0$, $f = 140 \text{ kHz}$
h_{fe}	High Frequency Current Gain	8.5			$I_C = 10 \text{ mA}$, $V_{CE} = -10 \text{ V}$, $f = 100 \text{ MHz}$
t_{on}	Turn On Time (test circuit no 348)		15	ns	$I_C = 10 \text{ mA}$, $I_{B1} = 1.0 \text{ mA}$
t_{off}	Turn Off Time (test circuit no 348)		20	ns	$I_C = 10 \text{ mA}$, $I_{B1} = I_{B2} = 1.0 \text{ mA}$
τ_s	Charge Storage Time Constant (test circuit no. 234)		20	ns	$I_C = 10 \text{ mA}$, $I_{B1} \approx I_{B2} \approx 10 \text{ mA}$

