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2N5771/FTSO5771

PNP Ultra High Speed Saturated Logic Switch

- **V_{CEO} ... 15 V (Min)**
- **t_{on} ... 15 ns (Max) @ 10 mA, t_{off} ... 20 ns (Max) @ 10 mA**
- **τ_s ... 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	2N	FTSO
25° C Ambient Temperature	0.625 W	0.350 W*
25° C Case Temperature	1.0 W	

Voltages & Currents

V_{CEO}	Collector to Emitter Voltage (Note 4)	−15 V
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_{CEO}	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 μA, V_{BE} = 0
BV_{CBO}	Collector to Base Breakdown Voltage	−15		V	I_C = 100 μA, I_E = 0
BV_{EBO}	Emitter to Base Breakdown Voltage	−4.5		V	I_E = 100 μA, 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	μA	V_{EB} = −4.5 V, I_C = 0
I_{CES}	Collector Reverse Current		10 5.0	nA μA	V_{CE} = −8.0 V, V_{BE} = 0 V_{CE} = −8.0 V, V_{BE} = 0, T_A = 125°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°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 μs; 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.

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