

- V_{CEO} ... 12 V (Min)
- t_{on} ... 45 ns (Max) @ 10 mA
- t_{off} ... 60 ns (Max) @ 10 mA
- f_T ... 250 MHz (Min) @ 10 mA
- C_{cb} ... 4.0 pF (Max)
- Complement ... MPSL08

PACKAGE

2N5224

FTSO5224

TO-92

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	12 V
(Note 4)	
V_{CBO} Collector to Base Voltage	25 V
V_{EBO} Emitter to Base Voltage	5.0 V
I_C DC Collector Current	100 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)	12		V	$I_C = 10 \text{ mA}$, $I_B = 0$
BV_{CBO}	Collector to Base Breakdown Voltage	25		V	$I_C = 100 \text{ } \mu\text{A}$, $I_E = 0$
BV_{EBO}	Emitter to Base Breakdown Voltage	5.0		V	$I_E = 100 \text{ } \mu\text{A}$, $I_C = 0$
I_{EBO}	Emitter Cutoff Current		100	μA	$V_{EB} = 4.0 \text{ V}$, $I_C = 0$
I_{CBO}	Collector Cutoff Current		500	nA	$V_{CB} = 15 \text{ V}$, $I_E = 0$
h_{FE}	DC Current Gain (Note 5)	40 15	400		$I_C = 10 \text{ mA}$, $V_{CE} = 1.0 \text{ V}$ $I_C = 100 \text{ mA}$, $V_{CE} = 1.0 \text{ V}$
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)		0.35	V	$I_C = 10 \text{ mA}$, $I_B = 3.0 \text{ mA}$
$V_{BE(sat)}$	Base to Emitter Saturation Voltage (Note 5)		0.9	V	$I_C = 10 \text{ mA}$, $I_B = 3.0 \text{ mA}$

NOTES:

- These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
- 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).
- Rating refers to a high current point where collector to emitter voltage is lowest.
- Pulse conditions: length = 300 μs ; duty cycle < 2%.
- For product family characteristic curves, refer to Curve Set T162.
- 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
C_{cb}	Collector to Base Capacitance		4.0	pF	$V_{CB} = 5.0 \text{ V}$, $I_E = 0$, $f = 1.0 \text{ MHz}$
f_T	Current Gain Bandwidth Product	250		MHz	$I_C = 10 \text{ mA}$, $V_{CE} = 10 \text{ V}$, $f = 100 \text{ MHz}$
t_d	Delay Time (test circuit no. 531)		25	ns	$I_C = 10 \text{ mA}$, $V_{CC} = 3.0 \text{ V}$, $I_{B1} = 3.0 \text{ mA}$
t_r	Rise Time (test circuit no. 531)		20	ns	$I_C = 10 \text{ mA}$, $V_{CC} = 3.0 \text{ V}$, $I_{B1} = 3.0 \text{ mA}$
t_s	Storage Time (test circuit no. 531)		35	ns	$I_C = 10 \text{ mA}$, $V_{CC} = 3.0 \text{ V}$, $I_{B1} = I_{B2} = 3.0 \text{ mA}$
t_f	Fall Time (test circuit no. 531)		25	ns	$I_C = 10 \text{ mA}$, $V_{CC} = 3.0 \text{ V}$, $I_{B1} = I_{B2} = 3.0 \text{ mA}$