

FAIRCHILD

A Schlumberger Company

MPS6520/FTSO6520
MPS6521/FTSO6521NPN Small Signal General
Purpose Amplifiers

T-29-23

- V_{CE0} ... 25 V (Min)
- h_{FE} ... 100 (Min) (MPS/FTSO6520), 150 (Min) (MPS/FTSO6521) @ 100 μ A
- h_{FE} ... 200-400 (MPS/FTSO6520), 300-600 (MPS/FTSO6521) @ 2.0 mA
- NF ... 3.0 dB (Max) @ $I_C = 10 \mu$ A, Wide Band

PACKAGE

MPS6520	TO-92
MPS6521	TO-92
FTSO6520	TO-236AA/AB
FTSO6521	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	MPS	FTSO
25° C Ambient Temperature	0.625 W	0.350 W*
70° C Ambient Temperature	0.400 W	
25° C Case Temperature	1.0 W	

Voltages & Currents

V_{CE0} Collector to Emitter Voltage	25 V
(Note 4)	
V_{CBO} Collector to Base Voltage	40 V
V_{EBO} Emitter to Base Voltage	4.0 V
I_C Collector Current	100 mA

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

SYMBOL	CHARACTERISTIC	6520		6521		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
BV_{CE0}	Collector to Emitter Breakdown Voltage	25		25		V	$I_C = 0.5 \text{ mA}$, $I_B = 0$
BV_{EBO}	Emitter to Base Breakdown Voltage	4.0		4.0		V	$I_E = 10 \mu\text{A}$, $I_C = 0$
I_{CBO}	Collector Cutoff Current		50 1.0		50 1.0	nA μA	$V_{CB} = 30 \text{ V}$, $I_E = 0$ $V_{CB} = 30 \text{ V}$, $I_E = 0$, $T_A = 60^\circ \text{ C}$

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 μ s; duty cycle = 1%.
- For product family characteristic curves, refer to Curve Set T144.
- * Package mounted on 99.5% alumina 8 mm x 8 mm x 0.6 mm.

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

SYMBOL	CHARACTERISTIC	6520		6521		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
h_{FE}	DC Current Gain	100 200	400	150 300	600		$I_C = 100 \mu A, V_{CE} = 10 V$ $I_C = 2.0 mA, V_{CE} = 10 V$
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Note 5)		0.5		0.5	V	$I_C = 50 mA, I_B = 5.0 mA$
C_{ob}	Output Capacitance		3.5		3.5	pF	$V_{CE} = 10 V, I_E = 0, f = 100 kHz$
NF	Noise Figure		3.0		3.0	dB	$V_{CE} = 5.0 V, I_C = 10 \mu A,$ $R_g = 10 k\Omega,$ Power Bandwidth $\pm 15.7 kHz,$ 3.0 dB pts @ 10 Hz & 10 kHz