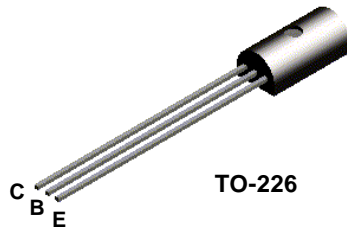


MPSW06



NPN General Purpose Amplifier

This device is designed for general purpose amplifier applications at collector currents to 300 mA. Sourced from Process 33. See MP5A06 for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage	80	V
V _{CBO}	Collector-Base Voltage	80	V
V _{EBO}	Emitter-Base Voltage	4.0	V
I _C	Collector Current - Continuous	500	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
		MPSW06	
P _D	Total Device Dissipation Derate above 25°C	1.0	W
		8.0	mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	125	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	50	°C/W

* Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

** Device mounted on FR-4 PCB 36 mm X 18 mm X 1.5 mm; mounting pad for the collector lead min. 6 cm².

NPN General Purpose Amplifier

(continued)

MPSW06

Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
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OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Sustaining Voltage*	$I_C = 1.0 \text{ mA}, I_B = 0$	80		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100 \text{ } \mu\text{A}, I_C = 0$	4.0		V
I_{CEO}	Collector-Cutoff Current	$V_{CE} = 60 \text{ V}, I_B = 0$		0.1	μA
I_{CBO}	Collector-Cutoff Current	$V_{CB} = 80 \text{ V}, I_E = 0$		0.1	μA

ON CHARACTERISTICS

h_{FE}	DC Current Gain	$I_C = 10 \text{ mA}, V_{CE} = 1.0 \text{ V}$ $I_C = 100 \text{ mA}, V_{CE} = 1.0 \text{ V}$	100 100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$		0.25	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 100 \text{ mA}, V_{CE} = 1.0 \text{ V}$		1.2	V

SMALL SIGNAL CHARACTERISTICS

f_T	Current Gain - Bandwidth Product	$I_C = 10 \text{ mA}, V_{CE} = 2.0 \text{ V},$ $f = 100 \text{ MHz}$	100		MHz
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*Pulse Test: Pulse Width $\leq 300 \text{ } \mu\text{s}$, Duty Cycle $\leq 2.0\%$

Spice Model

NPN (Is=8.324f Xti=3 Eg=1.11 Vaf=100 Bf=12.16K Ne=1.368 Ise=73.27f Ikf=.1096 Xtb=1.5 Br=11.1 Nc=2 Isc=0
Ikr=0 Rc=.25 Cjc=18.36p Mjc=.3843 Vjc=.75 Fc=.5 Cje=55.61p Mje=.3834 Vje=.75 Tr=72.15n Tf=516.1p Itf=.5
Vtf=4 Xtf=6 Rb=10)