

## MPSA18



### NPN General Purpose Amplifier

This device is designed for low noise, high gain, applications at collector currents from 1  $\mu$ A to 50 mA. Sourced from Process 07. See 2N5088 for characteristics.

#### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CEO</sub>	Collector-Emitter Voltage	45	V
V <sub>CB0</sub>	Collector-Base Voltage	45	V
V <sub>EBO</sub>	Emitter-Base Voltage	6.5	V
I <sub>C</sub>	Collector Current - Continuous	100	mA
T <sub>J</sub> , T <sub>stg</sub>	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
		MPSA18	
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	625	mW
		5.0	mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	83.3	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	200	°C/W

## NPN General Purpose Amplifier

(continued)

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### 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 Breakdown Voltage*	$I_C = 10 \text{ mA}, I_B = 0$	45		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \mu\text{A}, I_E = 0$	45		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}, I_C = 0$	6.5		V
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = 30 \text{ V}, I_E = 0$		50	nA

#### ON CHARACTERISTICS\*

$h_{FE}$	DC Current Gain	$V_{CE} = 5.0 \text{ V}, I_C = 10 \mu\text{A}$ $V_{CE} = 5.0 \text{ V}, I_C = 100 \mu\text{A}$ $V_{CE} = 5.0 \text{ V}, I_C = 1.0 \text{ mA}$ $V_{CE} = 5.0 \text{ V}, I_C = 10 \text{ mA}$	400 500 500 500	1500	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$ $I_C = 50 \text{ mA}, I_B = 5.0 \text{ mA}$		0.2 0.3	V V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 5.0 \text{ V}, I_C = 1.0 \text{ mA}$		0.7	V

#### SMALL SIGNAL CHARACTERISTICS

$C_{cb}$	Collector-Base Capacitance	$V_{CB} = 5.0 \text{ V}, f = 1.0 \text{ MHz}$		3.0	pF
$C_{eb}$	Emitter-Base Capacitance	$V_{EB} = 0.5 \text{ V}, f = 1.0 \text{ MHz}$		6.5	pF
$f_T$	Current Gain - Bandwidth Product	$I_C = 1.0 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $f = 100 \text{ MHz}$	100		MHz
NF	Noise Figure	$V_{CE} = 5.0 \text{ V}, I_C = 100 \mu\text{A},$ $R_S = 10 \text{ k}\Omega, f = 1.0 \text{ kHz},$		1.5	dB

\*Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$