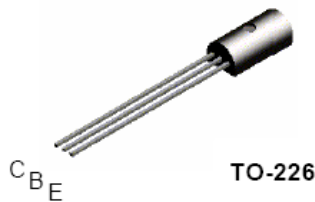


# MPSW01

## NPN General Purpose Amplifier

### Features

- This device is designed for general purpose medium power amplifiers
- Sourced from process 37



### Absolute Maximum Ratings \* $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CEO}$	Collector-Emitter Voltage	30	V
$V_{CBO}$	Collector-Base Voltage	40	V
$V_{EBO}$	Emitter-Base Voltage	5.0	V
$I_C$	Collector Current - Continuous	1.0	A
$P_D$	Total Device Dissipation Derate about $25^\circ\text{C}$	1.0 8.0	W mW/ $^\circ\text{C}$
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

**Note :**

- 1) These ratings are based on a maximum junction temperature  $150^\circ\text{C}$
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations

### Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case*	50	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient*	125	$^\circ\text{C}/\text{W}$

\* Device mounted on FR-4 PCB 36 mm X 18 mm X 1.5 mm; mounting pad for the collector lead min.  $6\text{cm}^2$

### Electrical Characteristics (Note) $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	MIN	MAX	Units
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#### Off Characteristics

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{ mA}, I_B = 0$	30		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\text{ }\mu\text{A}, I_E = 0$	40		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100\text{ }\mu\text{A}, I_C = 0$	5.0		V
$I_{CBO}$	Collector-Cutoff Current	$V_{CB} = 30\text{ V}, I_E = 0$		0.1	$\mu\text{A}$
$I_{EBO}$	Emitter-Cutoff Current	$V_{EB} = 3.0\text{ V}, I_C = 0$		0.1	$\mu\text{A}$

#### On Characteristics

$h_{FE}$	DC Current Gain	$I_C = 10\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_C = 100\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_C = 1.0\text{ A}, V_{CE} = 1.0\text{ V}$	55 60 50		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage *	$I_C = 1.0\text{ A}, I_B = 100\text{ mA}$		0.5	V
$V_{BE(on)}$	Emitter-Base On Voltage *	$I_C = 1.0\text{ A}, V_{CE} = 1.0\text{ V}$		1.2	V

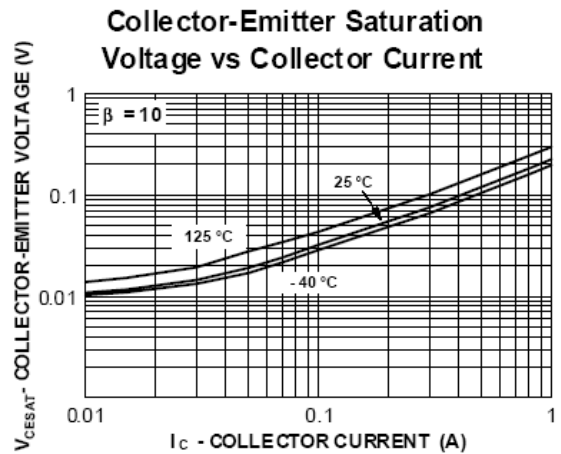
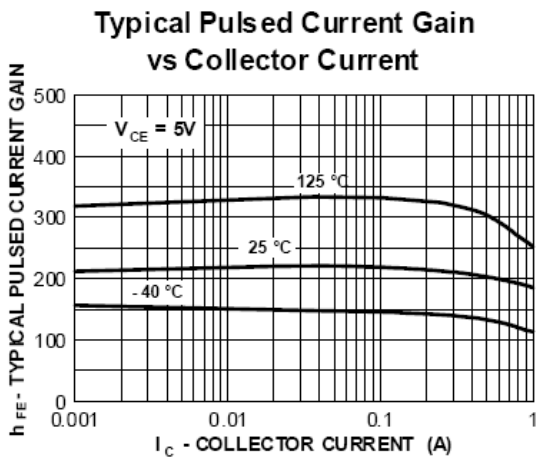
#### Small Signal Characteristics

$f_r$	Small-Signal Current Gain	$I_C = 50\text{ mA}, V_{CE} = 10\text{ V}, f = 20\text{ MHz}$	50		MHz
$C_{cb}$	Collector-Base Capacitance	$V_{CB} = 10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$		20	pF

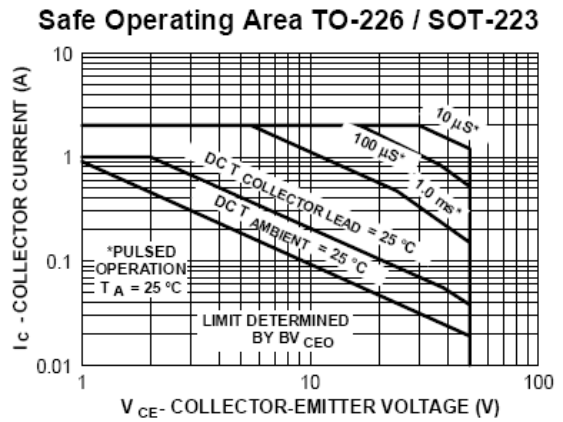
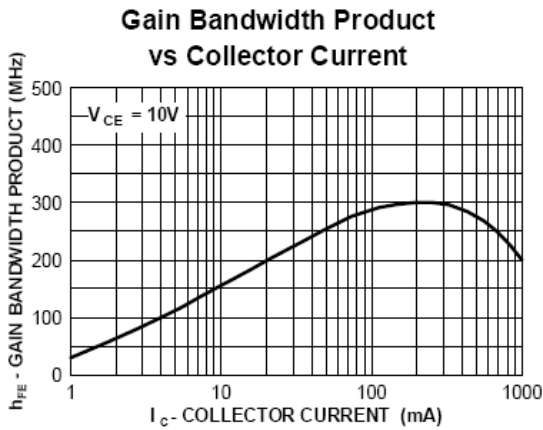
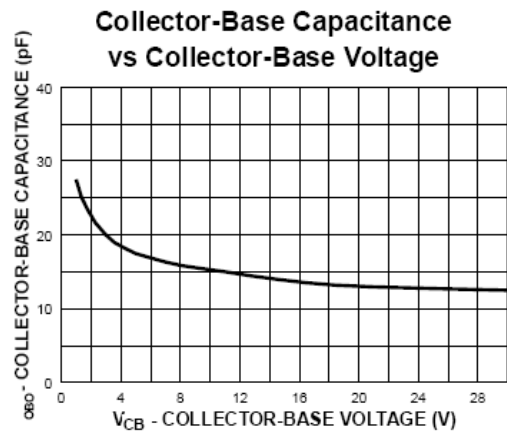
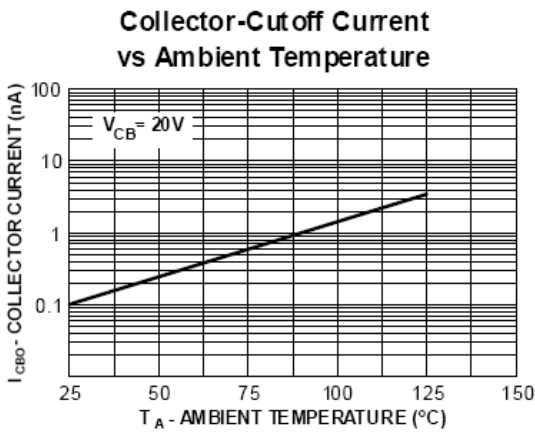
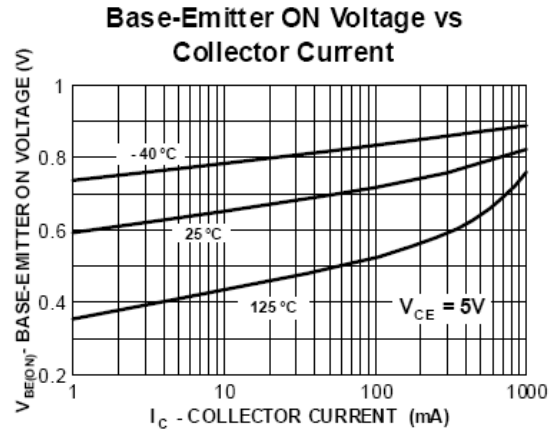
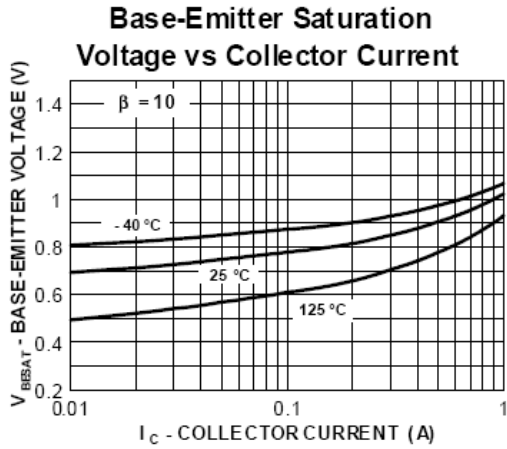
**Note:**

- 1) These ratings are based on a maximum junction temperature  $150^\circ\text{C}$
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations
- 3) \*Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 1.0\%$

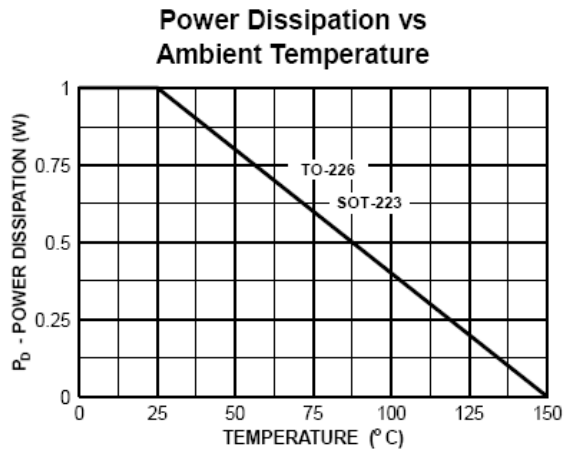
### Typical Characteristics



**Typical Characteristics** (continued)



Typical Characteristics (continued)



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