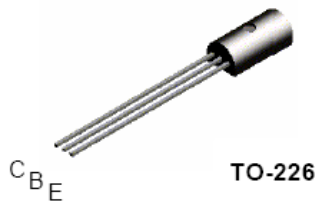


MPSW01

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°C	1.0 8.0	W $\text{mW}/^\circ\text{C}$
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°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. 6cm^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	μA
I_{EBO}	Emitter-Cutoff Current	$V_{EB} = 3.0\text{ V}, I_C = 0$		0.1	μA

On Characteristics

h_{FE}	DC Current Gain	$I_C = 10\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_C = 100\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_C = 1.0\text{ A}, V_{CE} = 1.0\text{ V}$	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

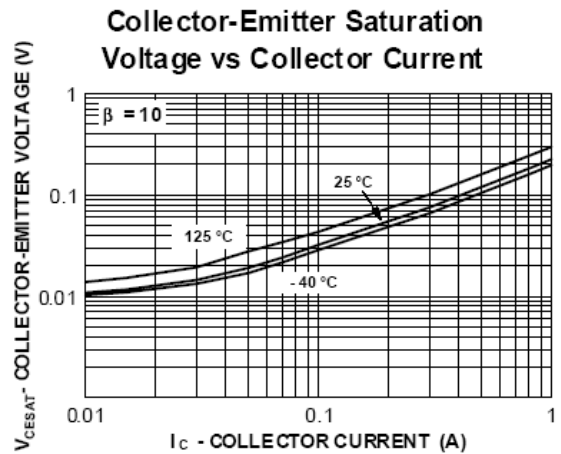
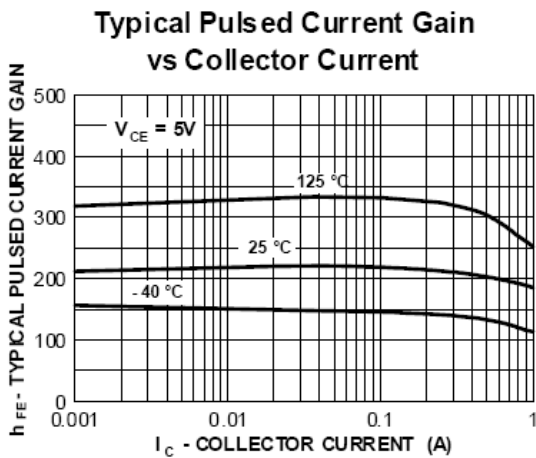
Small Signal Characteristics

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

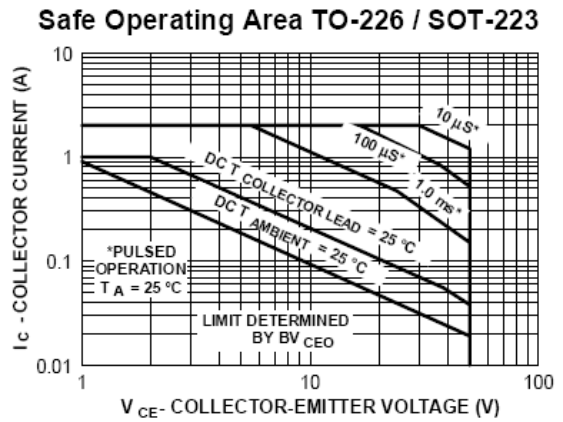
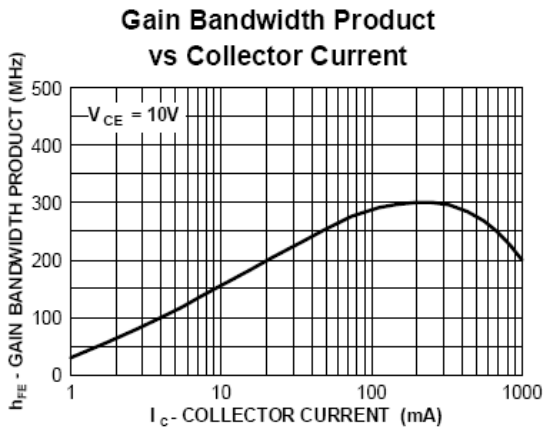
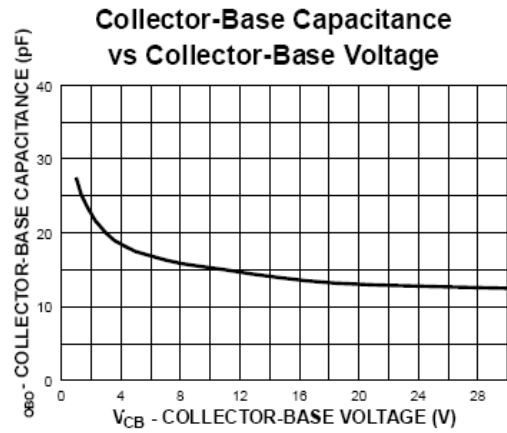
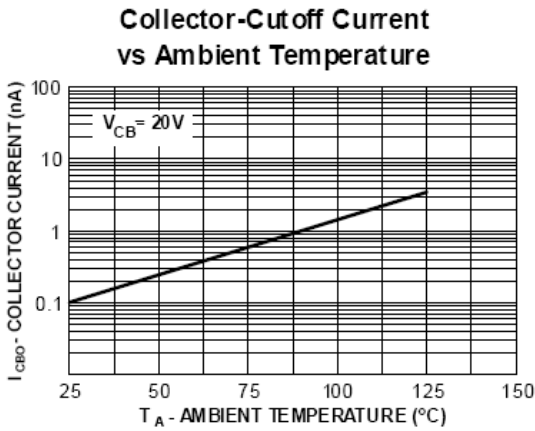
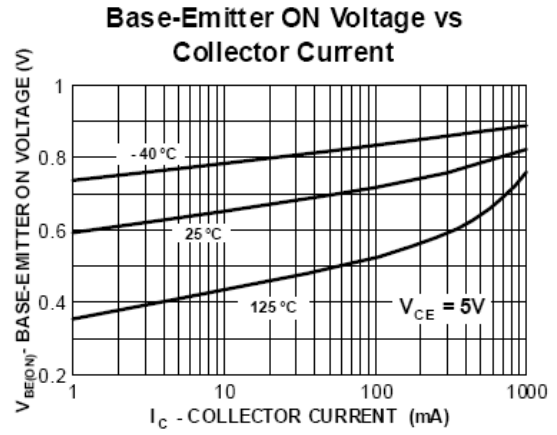
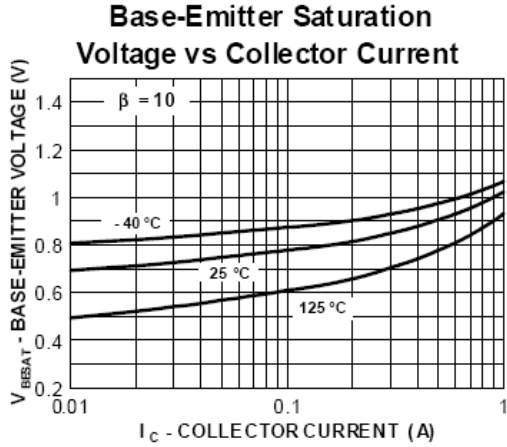
Note:

- 1) These ratings are based on a maximum junction temperature 150°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 $\leq 1.0\%$

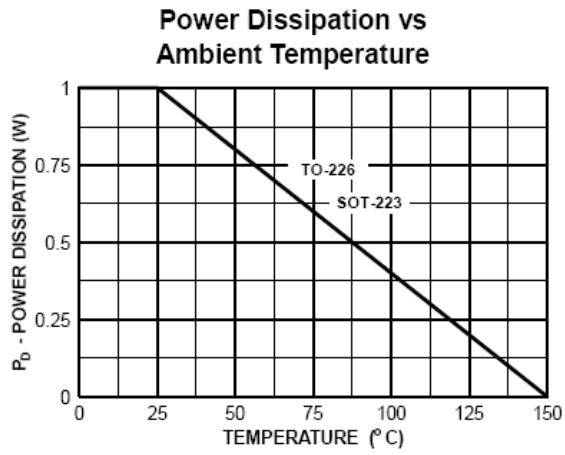
Typical Characteristics



Typical Characteristics (continued)



Typical Characteristics (continued)



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