

# MPSW92

## One Watt High Voltage Transistor

### PNP Silicon



ON Semiconductor®

<http://onsemi.com>

#### Features

- Pb-Free Packages are Available\*

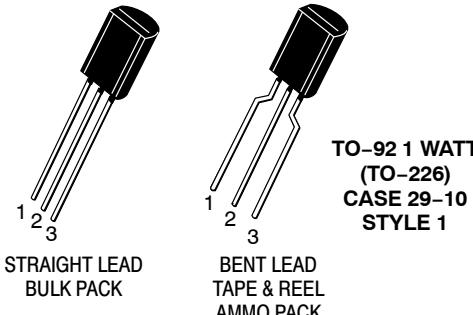
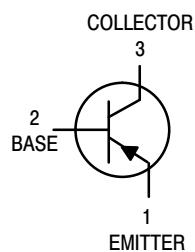
#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	-300	Vdc
Collector-Base Voltage	$V_{CBO}$	-300	Vdc
Emitter-Base Voltage	$V_{EBO}$	-5.0	Vdc
Collector Current - Continuous	$I_C$	-500	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.0 8.0	W mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	2.5 20	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

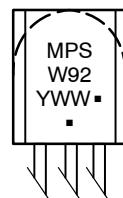
#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	50	$^\circ\text{C/W}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



#### MARKING DIAGRAM



MPSW45x = Device Code

x = 45A Devices

A = Assembly Location

Y = Year

WW = Work Week

▪ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

# MPSW92

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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## OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage (Note 1) ( $I_C = -1.0 \text{ mA}$ , $I_B = 0$ )	$V_{(\text{BR})\text{CEO}}$	-300	-	Vdc
Collector-Base Breakdown Voltage ( $I_C = -100 \mu\text{A}$ , $I_E = 0$ )	$V_{(\text{BR})\text{CBO}}$	-300	-	Vdc
Emitter-Base Breakdown Voltage ( $I_E = -100 \mu\text{A}$ , $I_C = 0$ )	$V_{(\text{BR})\text{EBO}}$	-5.0	-	Vdc
Collector Cutoff Current ( $V_{CB} = -200 \text{ V}$ , $I_E = 0$ )	$I_{\text{CBO}}$	-	-0.25	$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = -3.0 \text{ V}$ , $I_C = 0$ )	$I_{\text{EBO}}$	-	-0.1	$\mu\text{A}$

## ON CHARACTERISTICS (Note 1)

DC Current Gain ( $I_C = -1.0 \text{ mA}$ , $V_{CE} = -10 \text{ V}$ ) ( $I_C = -10 \text{ mA}$ , $V_{CE} = -10 \text{ V}$ ) ( $I_C = -30 \text{ mA}$ , $V_{CE} = -10 \text{ V}$ )	$h_{\text{FE}}$	25	-	-
Collector-Emitter Saturation Voltage ( $I_C = -20 \text{ mA}$ , $I_B = -2.0 \text{ mA}$ )	$V_{CE(\text{sat})}$	-	-0.5	Vdc
Base-Emitter Saturation Voltage ( $I_C = -20 \text{ mA}$ , $I_B = -2.0 \text{ mA}$ )	$V_{BE(\text{sat})}$	-	-0.9	Vdc

## SMALL-SIGNAL CHARACTERISTICS

Current-Gain - Bandwidth Product ( $I_C = -10 \text{ mA}$ , $V_{CE} = -20 \text{ V}$ , $f = 20 \text{ MHz}$ )	$f_T$	50	-	MHz
Collector-Base Capacitance ( $V_{CB} = -20 \text{ V}$ , $I_E = 0$ , $f = 1.0 \text{ MHz}$ )	$C_{cb}$	-	6.0	pF

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

## ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MPSW92	TO-92	5000 Units / Box
MPSW92G	TO-92 (Pb-Free)	5000 Units / Box
MPSW92RLREG	TO-92 (Pb-Free)	2000 / Tape & Reel

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MPSW92

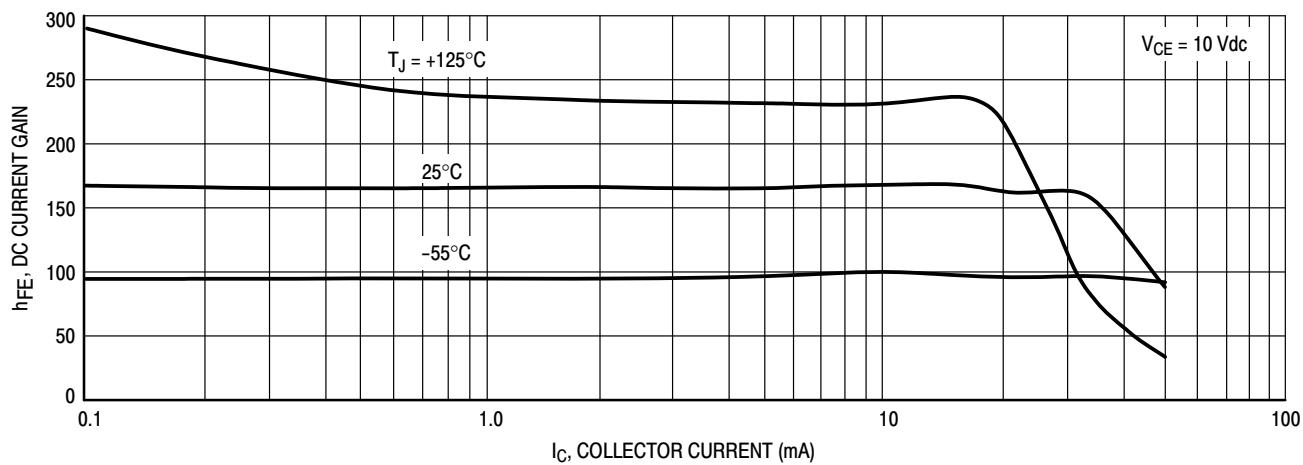


Figure 1. DC Current Gain

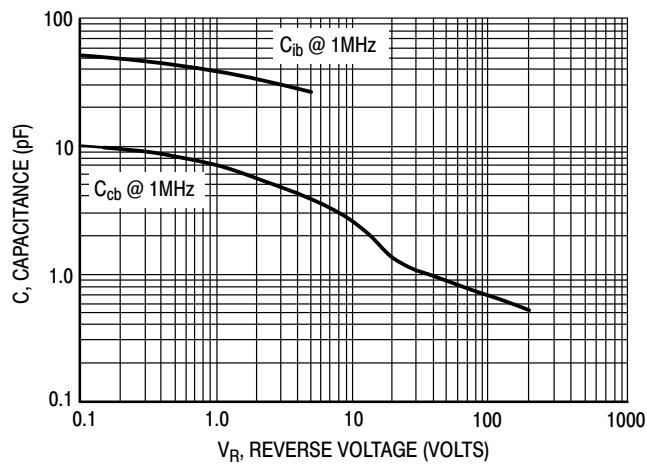


Figure 2. Capacitance

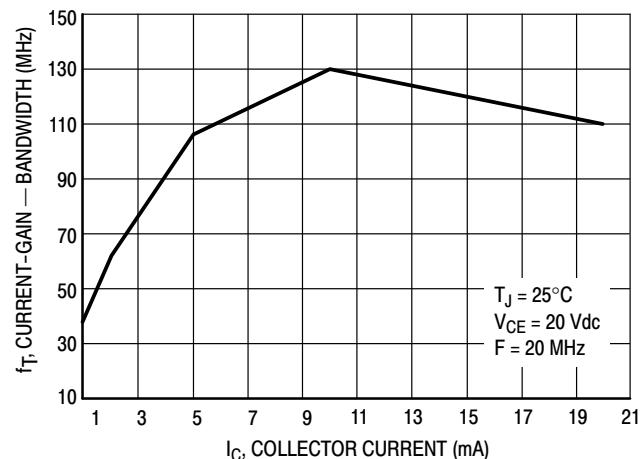


Figure 3. Current-Gain - Bandwidth

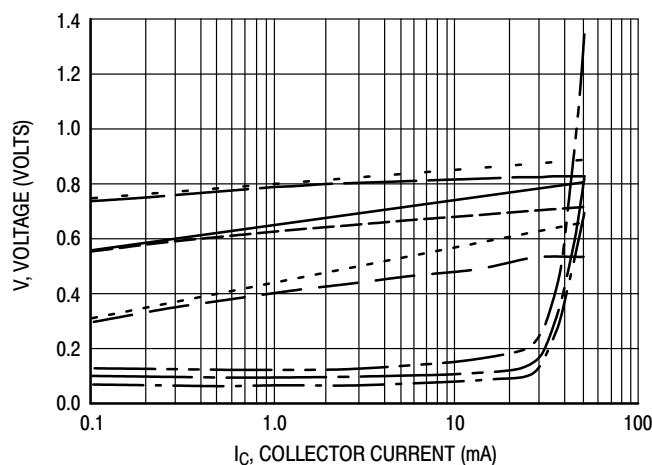
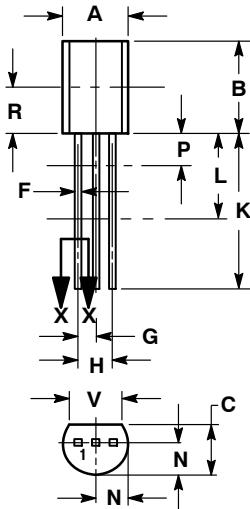


Figure 4. "ON" Voltages

- V<sub>CE(sat)</sub> @ 25°C, I<sub>C</sub>/I<sub>B</sub> = 10
- V<sub>CE(sat)</sub> @ 125°C, I<sub>C</sub>/I<sub>B</sub> = 10
- V<sub>CE(sat)</sub> @ -55°C, I<sub>C</sub>/I<sub>B</sub> = 10
- V<sub>BE(sat)</sub> @ 25°C, I<sub>C</sub>/I<sub>B</sub> = 10
- V<sub>BE(sat)</sub> @ 125°C, I<sub>C</sub>/I<sub>B</sub> = 10
- V<sub>BE(sat)</sub> @ -55°C, I<sub>C</sub>/I<sub>B</sub> = 10
- V<sub>BE(on)</sub> @ 25°C, V<sub>CE</sub> = 10 V
- V<sub>BE(on)</sub> @ 125°C, V<sub>CE</sub> = 10 V
- V<sub>BE(on)</sub> @ -55°C, V<sub>CE</sub> = 10 V

## PACKAGE DIMENSIONS

TO-92 (TO-226) 1 WATT  
CASE 29-10  
ISSUE OSTRAIGHT LEAD  
BULK PACK

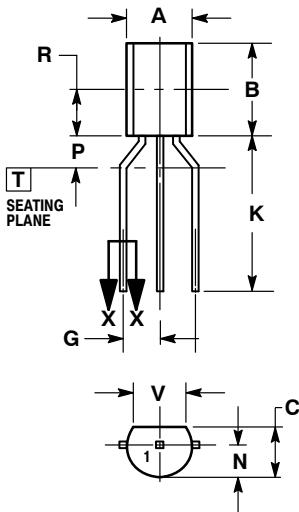
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN DIMENSIONS P AND L. DIMENSIONS D AND J APPLY BETWEEN DIMENSIONS L AND K MINIMUM. THE LEAD DIMENSIONS ARE UNCONTROLLED IN DIMENSION P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.44	5.21
B	0.290	0.310	7.37	7.87
C	0.125	0.165	3.18	4.19
D	0.018	0.021	0.46	0.53
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.018	0.024	0.46	0.61
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.135	---	3.43	---
V	0.135	---	3.43	---

STYLE 1:  
1. Emitter  
2. Base  
3. Collector

SECTION X-X

BENT LEAD  
TAPE & REEL  
AMMO PACK

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN DIMENSIONS P AND L. DIMENSIONS D AND J APPLY BETWEEN DIMENSIONS L AND K MINIMUM. THE LEAD DIMENSIONS ARE UNCONTROLLED IN DIMENSION P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.44	5.21
B	0.290	0.310	7.37	7.87
C	0.125	0.165	3.18	4.19
D	0.018	0.021	0.46	0.53
G	0.094	0.102	2.40	2.80
J	0.018	0.024	0.46	0.61
K	0.500	---	12.70	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.135	---	3.43	---
V	0.135	---	3.43	---

SECTION X-X

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