

# MPSA92, MPSA93

MPSA92 is a Preferred Device

## High Voltage Transistors

### PNP Silicon



ON Semiconductor®

<http://onsemi.com>

#### Features

- Pb-Free Packages are Available\*

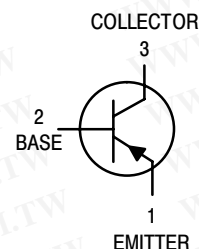
#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage MPSA93 MPSA92	$V_{CEO}$	–200 –300	Vdc
Collector–Base Voltage MPSA93 MPSA92	$V_{CBO}$	–200 –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 $25^\circ\text{C}$	$P_D$	625 5.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.5 12	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	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction–to–Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

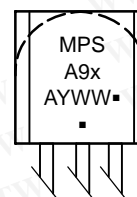
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.



#### MARKING DIAGRAM



TO-92  
(TO-226AA)  
CASE 29-11



x = 2 or 3  
 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 3 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-54151736  
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[Http://www.100y.com.tw](http://www.100y.com.tw)

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector–Emitter Breakdown Voltage (Note 1) (I <sub>C</sub> = -1.0 mA <sub>dc</sub> , I <sub>B</sub> = 0)	MPSA92 MPSA93	V <sub>(BR)CEO</sub>	-300 -200	-	V <sub>dc</sub>
Collector–Base Breakdown Voltage (I <sub>C</sub> = -100 μA <sub>dc</sub> , I <sub>E</sub> = 0)	MPSA92 MPSA93	V <sub>(BR)CBO</sub>	-300 -200	-	V <sub>dc</sub>
Emitter–Base Breakdown Voltage (I <sub>E</sub> = -100 μA <sub>dc</sub> , I <sub>C</sub> = 0)		V <sub>(BR)EBO</sub>	-5.0	-	V <sub>dc</sub>
Collector Cutoff Current (V <sub>CB</sub> = -200 V <sub>dc</sub> , I <sub>E</sub> = 0) (V <sub>CB</sub> = -160 V <sub>dc</sub> , I <sub>E</sub> = 0)	MPSA92 MPSA93	I <sub>CBO</sub>	-	-0.25 -0.25	μA <sub>dc</sub>
Emitter Cutoff Current (V <sub>EB</sub> = -3.0 V <sub>dc</sub> , I <sub>C</sub> = 0)		I <sub>EBO</sub>	-	-0.1	μA <sub>dc</sub>

## ON CHARACTERISTICS (Note 1)

DC Current Gain (I <sub>C</sub> = -1.0 mA <sub>dc</sub> , V <sub>CE</sub> = -10 V <sub>dc</sub> ) (I <sub>C</sub> = -10 mA <sub>dc</sub> , V <sub>CE</sub> = -10 V <sub>dc</sub> )  (I <sub>C</sub> = -30 mA <sub>dc</sub> , V <sub>CE</sub> = -10 V <sub>dc</sub> )	All Types All Types  MPSA92 MPSA93	h <sub>FE</sub>	25 40  25 25	- - - -	-
Collector–Emitter Saturation Voltage (I <sub>C</sub> = -20 mA <sub>dc</sub> , I <sub>B</sub> = -2.0 mA <sub>dc</sub> )	MPSA92 MPSA93	V <sub>CE(sat)</sub>	- -	-0.5 -0.4	V <sub>dc</sub>
Base–Emitter Saturation Voltage (I <sub>C</sub> = -20 mA <sub>dc</sub> , I <sub>B</sub> = -2.0 mA <sub>dc</sub> )		V <sub>BE(sat)</sub>	-	-0.9	V <sub>dc</sub>

## SMALL-SIGNAL CHARACTERISTICS

Current–Gain – Bandwidth Product (I <sub>C</sub> = -10 mA <sub>dc</sub> , V <sub>CE</sub> = -20 V <sub>dc</sub> , f = 100 MHz)		f <sub>T</sub>	50	-	MHz
Collector–Base Capacitance (V <sub>CB</sub> = -20 V <sub>dc</sub> , I <sub>E</sub> = 0, f = 1.0 MHz)	MPSA92 MPSA93	C <sub>cb</sub>	- -	6.0 8.0	pF

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

## MPSA92, MPSA93

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### ORDERING INFORMATION

Device	Package	Shipping†
MPSA92	TO-92	5000 Units / Box
MPSA92G	TO-92 (Pb-Free)	5000 Units / Box
MPSA92RL1	TO-92	2000 / Tape & Reel
MPSA92RL1G	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA92RLRA	TO-92	2000 / Tape & Reel
MPSA92RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA92RLRM	TO-92	2000 / Ammo Pack
MPSA92RLRMG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA92RLRP	TO-92	2000 / Ammo Pack
MPSA92RLRPG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA92ZL1	TO-92	2000 / Ammo Pack
MPSA92ZL1G	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA93	TO-92	5000 Units / Box
MPSA93G	TO-92 (Pb-Free)	5000 Units / Box
MPSA93RLRM	TO-92	2000 / Ammo Pack
MPSA93RLRMG	TO-92 (Pb-Free)	2000 / Ammo Pack

†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.

# MPSA92, MPSA93

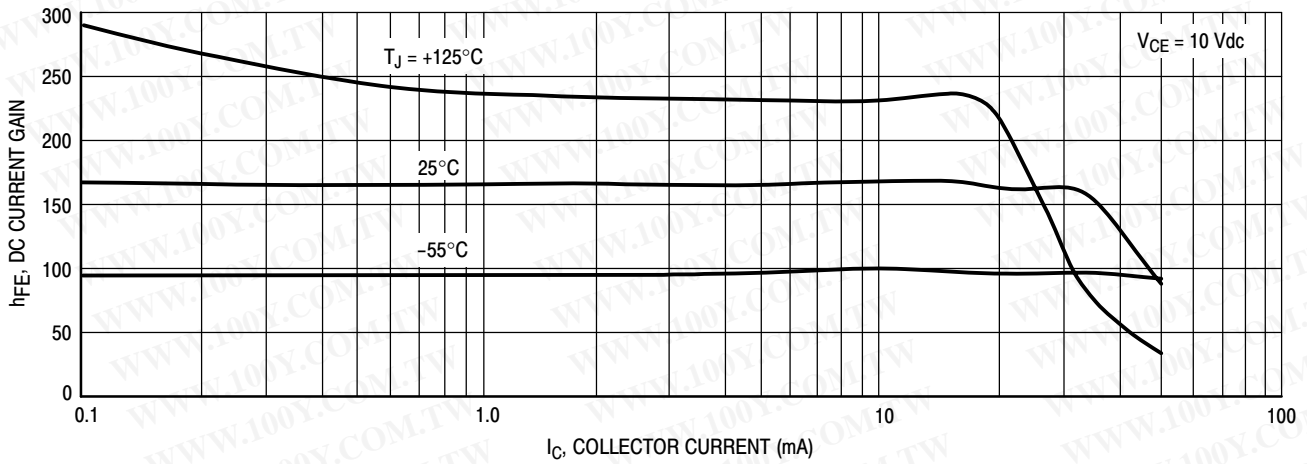


Figure 1. DC Current Gain

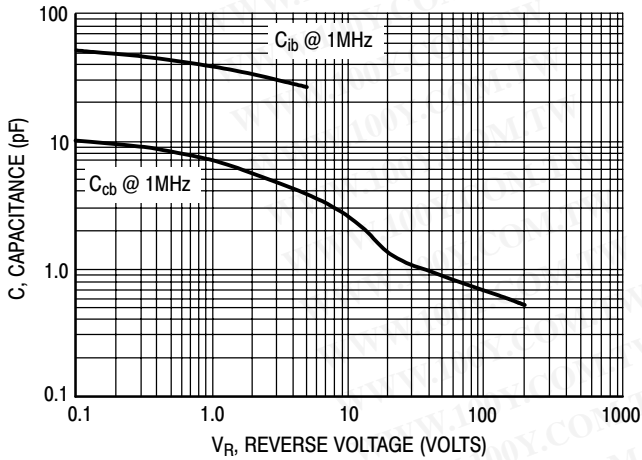


Figure 2. Capacitance

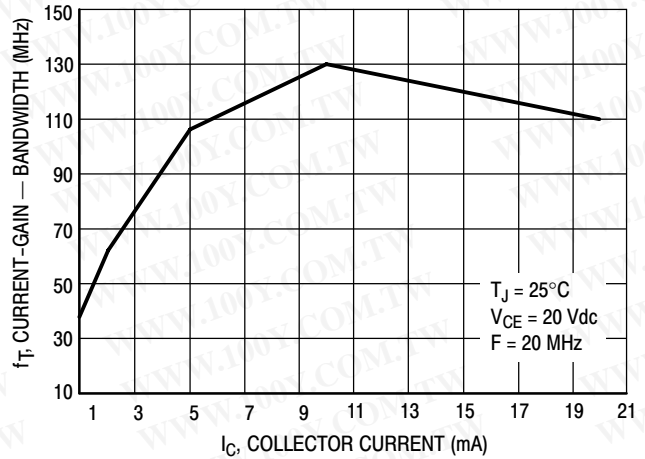


Figure 3. Current-Gain - Bandwidth

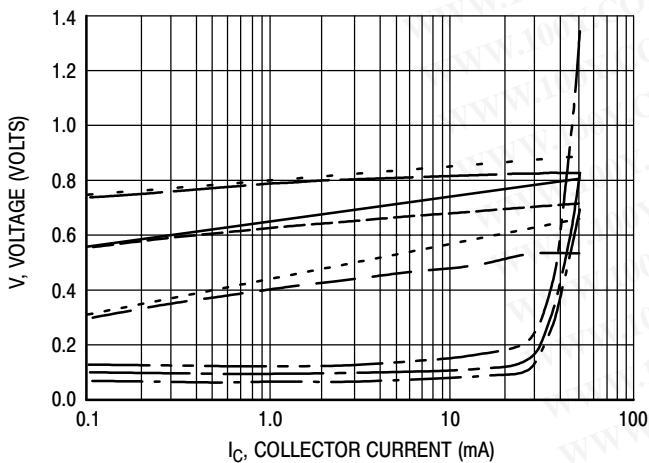


Figure 4. "ON" Voltages

- $V_{CE(sat)}$  @  $25^\circ\text{C}$ ,  $I_C/I_B = 10$
- - -  $V_{CE(sat)}$  @  $125^\circ\text{C}$ ,  $I_C/I_B = 10$
- · ·  $V_{CE(sat)}$  @  $-55^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @  $25^\circ\text{C}$ ,  $I_C/I_B = 10$
- - -  $V_{BE(sat)}$  @  $125^\circ\text{C}$ ,  $I_C/I_B = 10$
- · ·  $V_{BE(sat)}$  @  $-55^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(on)}$  @  $25^\circ\text{C}$ ,  $V_{CE} = 10 \text{ V}$
- - -  $V_{BE(on)}$  @  $125^\circ\text{C}$ ,  $V_{CE} = 10 \text{ V}$
- · ·  $V_{BE(on)}$  @  $-55^\circ\text{C}$ ,  $V_{CE} = 10 \text{ V}$

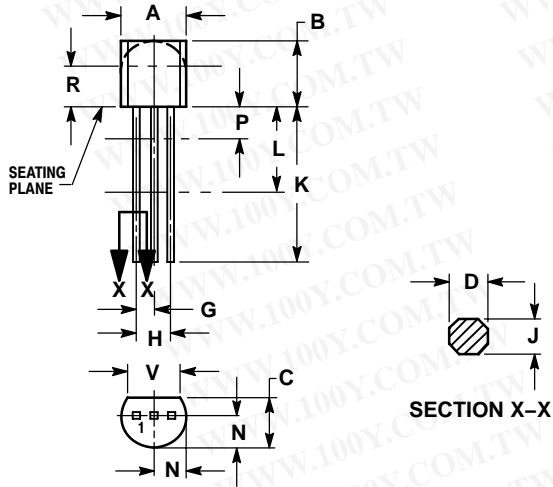
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# MPSA92, MPSA93

## PACKAGE DIMENSIONS

TO-92  
TO-226AA  
CASE 29-11  
ISSUE AL

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**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
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	0.115	---	2.93	---
V	0.135	---	3.43	---

**STYLE 1:**

- PIN 1. EMITTER
2. BASE
3. COLLECTOR

**STYLE 14:**

- PIN 1. EMITTER
2. COLLECTOR
3. BASE

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