

# MPSA92, MPSA93

MPSA92 is a Preferred Device

## High Voltage Transistors

### PNP Silicon

#### 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	mA dc
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	$^\circ\text{C}$

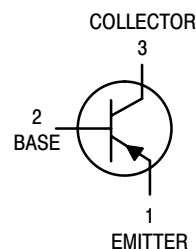
#### THERMAL CHARACTERISTICS

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	$^\circ\text{C}/\text{W}$

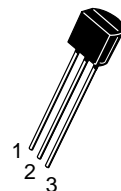


ON Semiconductor®

<http://onsemi.com>

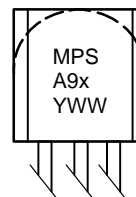


STYLE 1  
MPSA92, MPSA93



TO-92  
CASE 29  
STYLES 1, 14

#### MARKING DIAGRAM



MPSA9 = Specific Device Code  
x = 2 or 2  
Y = Year  
W = Work Week

#### ORDERING INFORMATION

Device	Package	Shipping
MPSA92	TO-92	5000 Units/Box
MPSA92RLRA	TO-92	2000/Tape & Reel
MPSA92RLRE	TO-92	2000/Tape & Reel
MPSA92RLRM	TO-92	2000/Ammo Pack
MPSA92RLRP	TO-92	2000/Ammo Pack
MPSA93	TO-92	5000 Units/Box
MPSA93RLRA	TO-92	2000/Tape & Reel
MPSA93RLRM	TO-92	2000/Ammo Pack

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

# MPSA92, MPSA93

## 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>
<b>ON CHARACTERISTICS (Note 1)</b>					
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>
<b>SMALL–SIGNAL CHARACTERISTICS</b>					
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

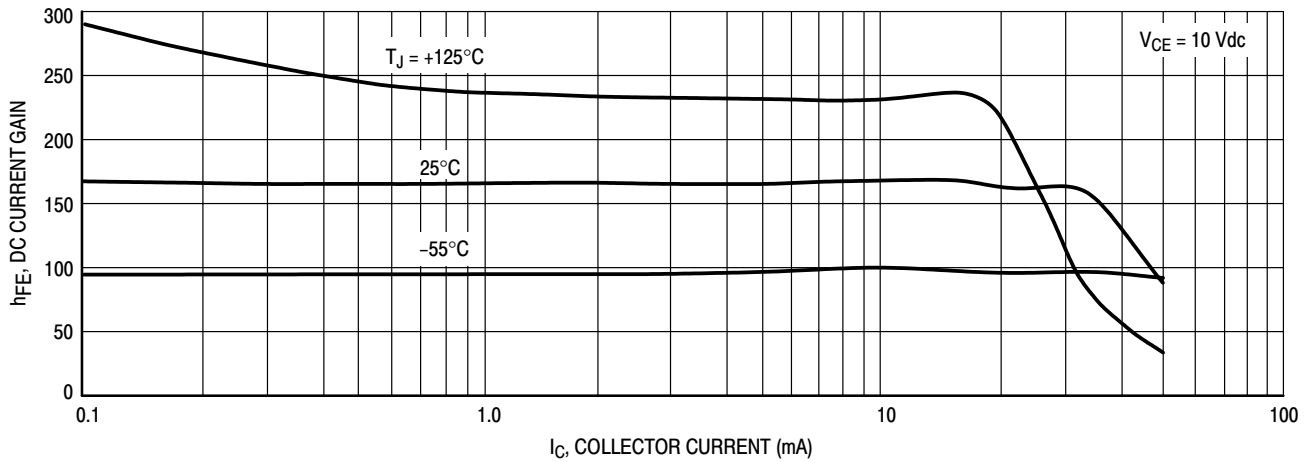


Figure 1. DC Current Gain

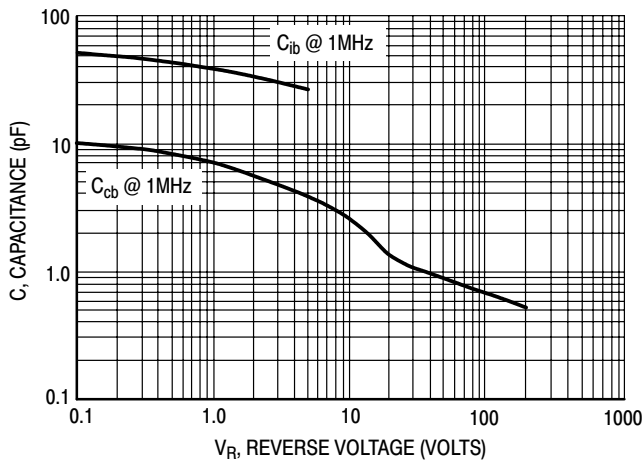


Figure 2. Capacitance

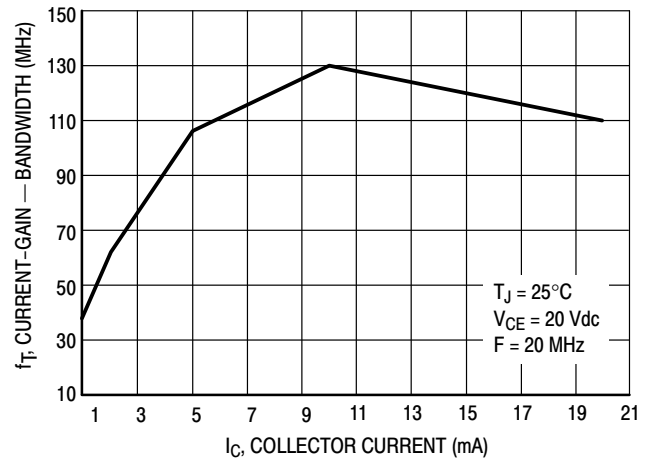


Figure 3. Current-Gain - Bandwidth

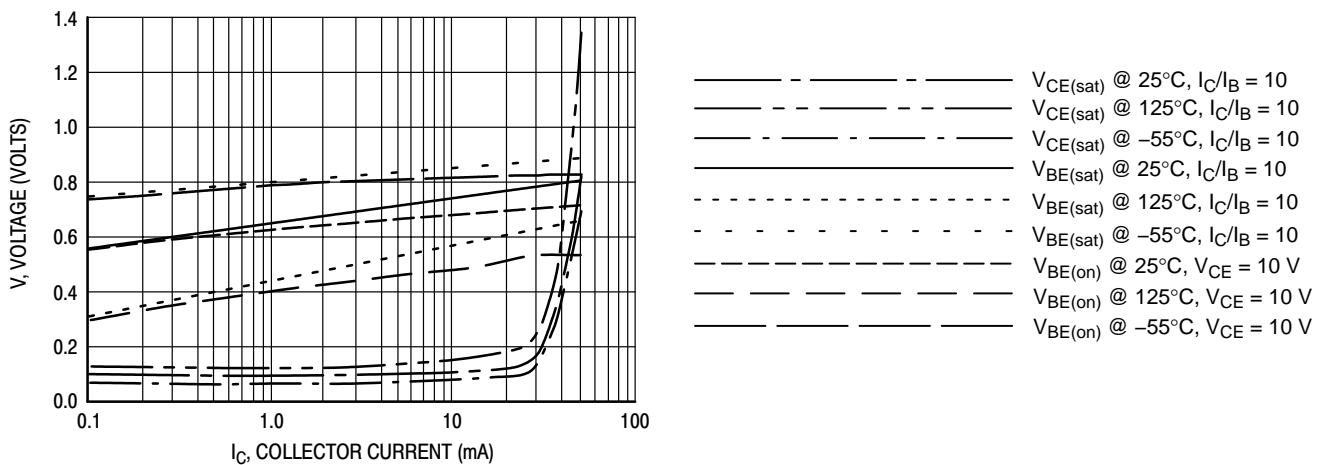
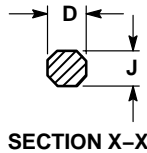
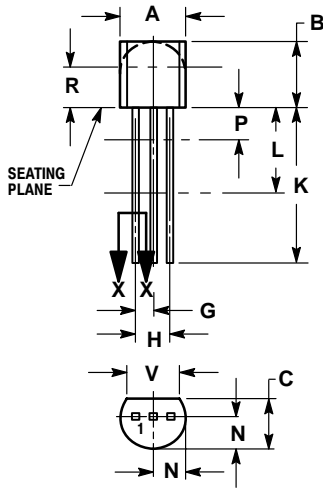


Figure 4. "ON" Voltages

# MPSA92, MPSA93

## PACKAGE DIMENSIONS

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



### 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
E	0.045	0.055	1.15	1.39
F	0.095	0.105	2.42	2.66
G	0.015	0.020	0.39	0.50
H	0.500	---	12.70	---
I	0.250	---	6.35	---
J	0.080	0.105	2.04	2.66
K	---	0.100	---	2.54
L	0.115	---	2.93	---
M	0.135	---	3.43	---

### STYLE 1:

1. EMITTER
2. BASE
3. COLLECTOR

### STYLE 14:

1. EMITTER
2. COLLECTOR
3. BASE

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