MPSA42, MPSA43

MPSA42 is a Preferred Device

High Voltage Transistors

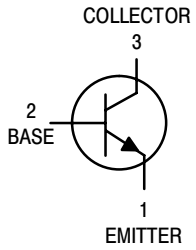
NPN Silicon

ON Semiconductor®

http://onsemi.com

Features

- Pb−Free Packages are Available*



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector−Emitter Voltage MPSA43 MPSA42	V_{CEO}	 200 300	Vdc
Collector−Base Voltage MPSA43 MPSA42	V_{CBO}	 200 300	Vdc
Emitter−Base Voltage	V_{EBO}	6.0	Vdc
Collector Current − Continuous	I_C	500	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	 625 5.0	 mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	 1.5 12	 W mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°C

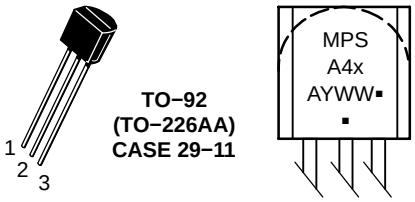
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	200	°C/mW
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	83.3	°C/mW

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.

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

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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage (Note 1)		$V_{(BR)CEO}$			Vdc
(I_C = 1.0 mAdc, I_B = 0)	MPSA42		300	−	
	MPSA43		200	−	
Collector−Base Breakdown Voltage		$V_{(BR)CBO}$			Vdc
(I_C = 100 μAdc, I_E = 0)	MPSA42		300	−	
	MPSA43		200	−	
Emitter−Base Breakdown Voltage		$V_{(BR)EBO}$	6.0	−	Vdc
(I_E = 100 μAdc, I_C = 0)					
Collector Cutoff Current		I_{CBO}			μAdc
(V_{CB} = 200 Vdc, I_E = 0)	MPSA42		−	0.1	
(V_{CB} = 160 Vdc, I_E = 0)	MPSA43		−	0.1	
Emitter Cutoff Current		I_{EBO}			μAdc
(V_{EB} = 6.0 Vdc, I_C = 0)	MPSA42		−	0.1	
(V_{EB} = 4.0 Vdc, I_C = 0)	MPSA43		−	0.1	
ON CHARACTERISTICS (Note 1)					
DC Current Gain		h_{FE}			−
(I_C = 1.0 mAdc, V_{CE} = 10 Vdc)			25	−	
(I_C = 10 mAdc, V_{CE} = 10 Vdc)			40	−	
(I_C = 30 mAdc, V_{CE} = 10 Vdc)			40	−	
Collector−Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = 20 mAdc, I_B = 2.0 mAdc)	MPSA42		−	0.5	
	MPSA43		−	0.4	
Base−Emitter Saturation Voltage		$V_{BE(sat)}$	−	0.9	Vdc
(I_C = 20 mAdc, I_B = 2.0 mAdc)					
SMALL−SIGNAL CHARACTERISTICS					
Current−Gain − Bandwidth Product		f_T	50	−	MHz
(I_C = 10 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)					
Collector−Base Capacitance		C_{cb}			pF
(V_{CB} = 20 Vdc, I_E = 0, f = 1.0 MHz)	MPSA42		−	3.0	
	MPSA43		−	4.0	

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

ORDERING INFORMATION

Device	Package	Shipping†
MPSA42	TO−92	5000 Units / Box
MPSA42G	TO−92 (Pb−Free)	5000 Units / Box
MPSA42RL1	TO−92	2000 / Tape & Reel
MPSA42RL1G	TO−92 (Pb−Free)	2000 / Tape & Reel
MPSA42RLRA	TO−92	5000 Units / Box
MPSA42RLRAG	TO−92 (Pb−Free)	5000 Units / Box
MPSA42RLRF	TO−92	5000 Units / Box
MPSA42RLRFG	TO−92 (Pb−Free)	5000 Units / Box
MPSA42RLRM	TO−92	2000 / Ammo Pack
MPSA42RLRMG	TO−92 (Pb−Free)	2000 / Ammo Pack
MPSA42RLRP	TO−92	2000 / Ammo Pack
MPSA42RLRPG	TO−92 (Pb−Free)	2000 / Ammo Pack
MPSA42ZL1	TO−92	2000 / Ammo Pack
MPSA42ZL1G	TO−92 (Pb−Free)	2000 / Ammo Pack
MPSA43	TO−92	5000 Units / Box
MPSA43G	TO−92 (Pb−Free)	5000 Units / Box
MPSA43RLRA	TO−92	2000 / Tape & Reel
MPSA43RLRAG	TO−92 (Pb−Free)	2000 / Tape & Reel
MPSA43ZL1	TO−92	2000 / Ammo Pack
MPSA43ZL1G	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.

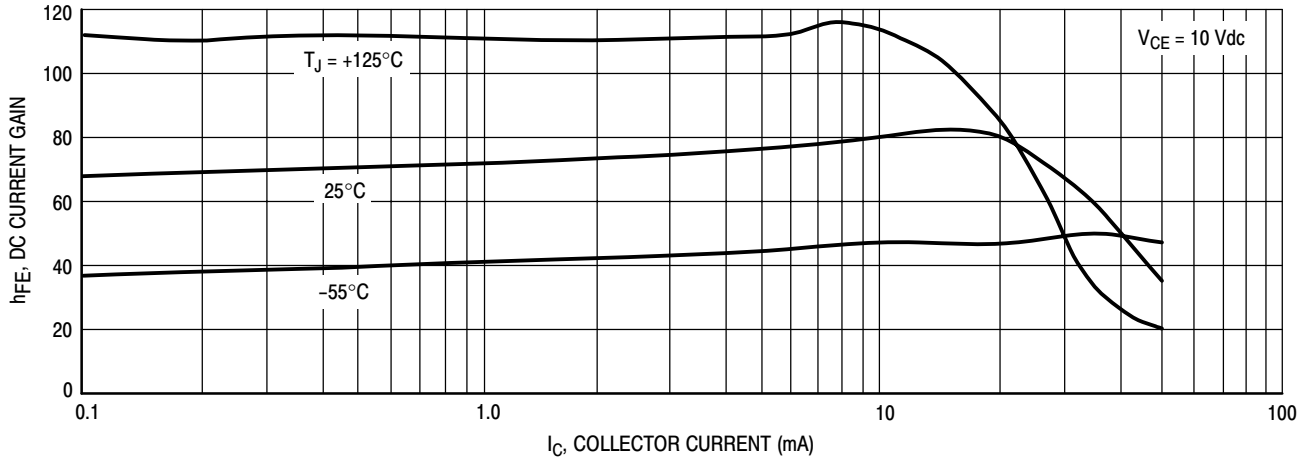


Figure 1. DC Current Gain

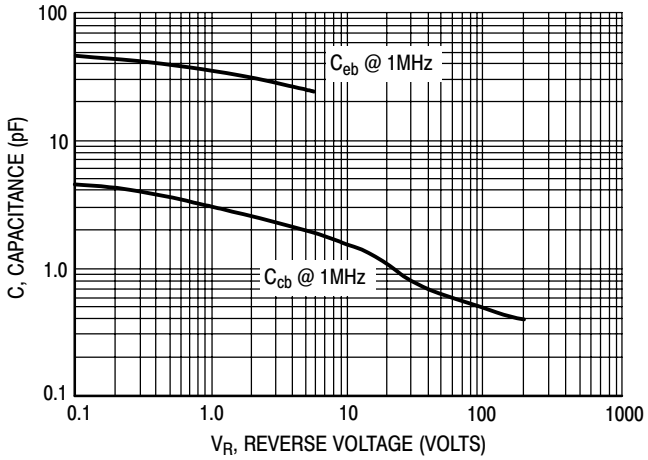


Figure 2. Capacitance

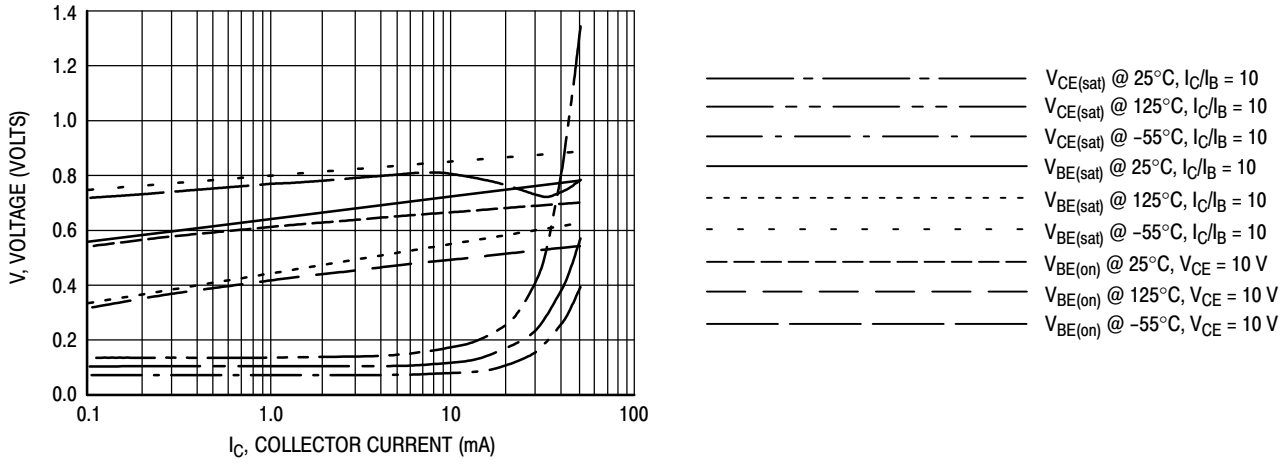
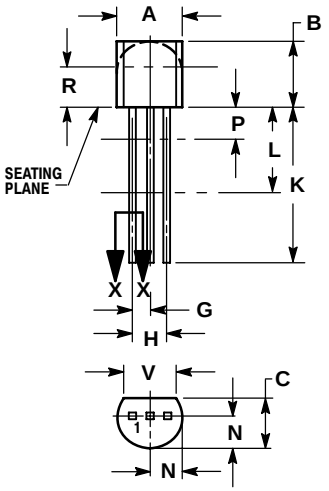
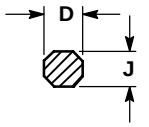


Figure 3. “ON” Voltages

PACKAGE DIMENSIONS

TO−92
TO−226AA
CASE 29−11
ISSUE AL





SECTION X−X

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.

	INCHES		MILLIMETERS	
DIM	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

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
Phone: 480−829−7710 or 800−344−3860 Toll Free USA/Canada
Fax: 480−829−7709 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
Phone: 81−3−5773−3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.