

MPSA42, MPSA43

MPSA42 is a Preferred Device

High Voltage Transistors

NPN Silicon

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

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

THERMAL CHARACTERISTICS

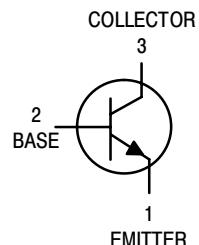
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	°C/mW
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	°C/mW

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.

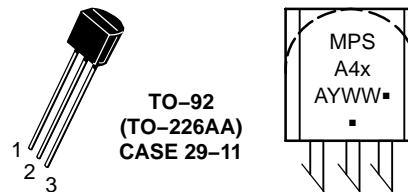


ON Semiconductor®

<http://onsemi.com>



MARKING DIAGRAM



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

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

1. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.

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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.

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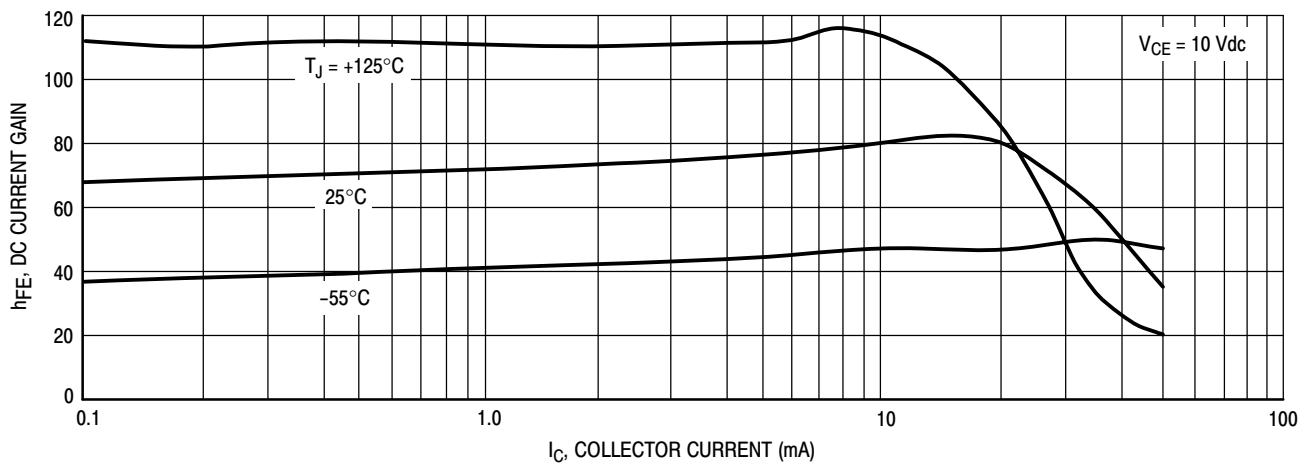


Figure 1. DC Current Gain

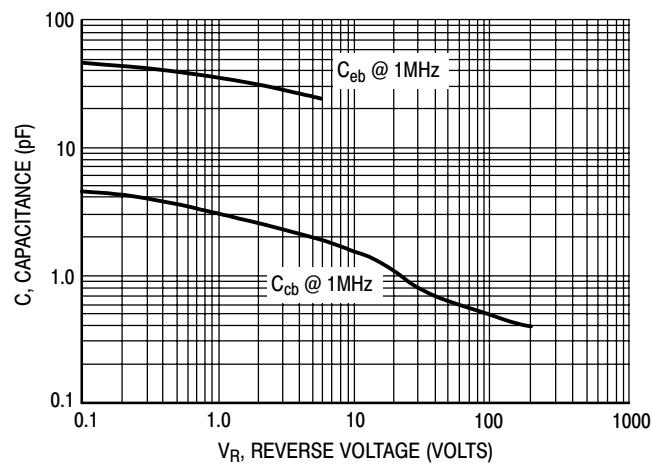


Figure 2. Capacitance

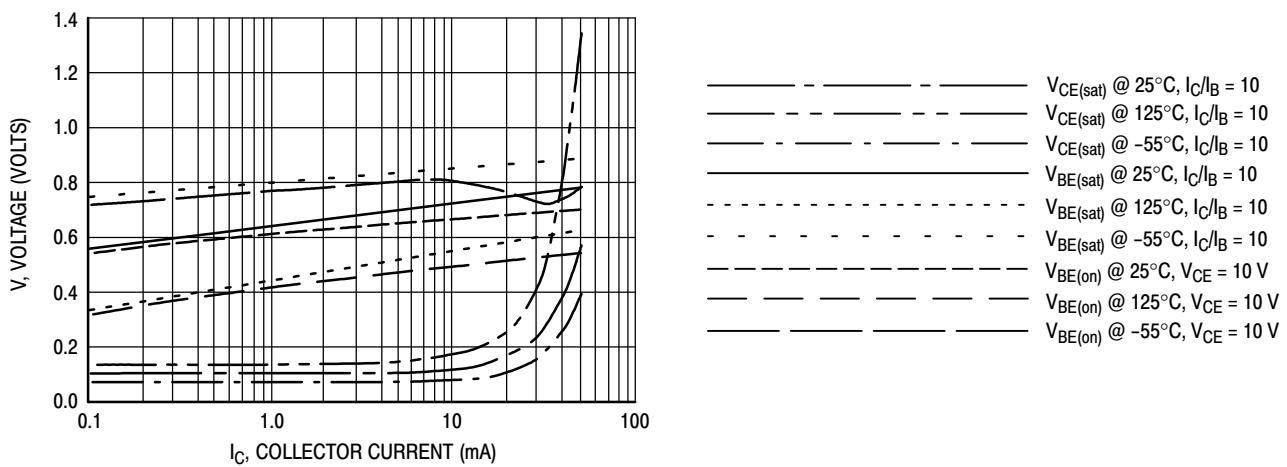
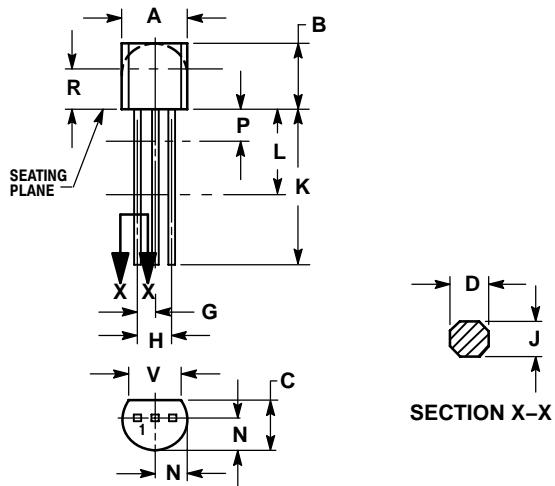


Figure 3. "ON" Voltages

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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
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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