

MPSA42, MPSA43

High Voltage Transistors

NPN Silicon

Features

- These are Pb-Free Devices*

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 @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°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

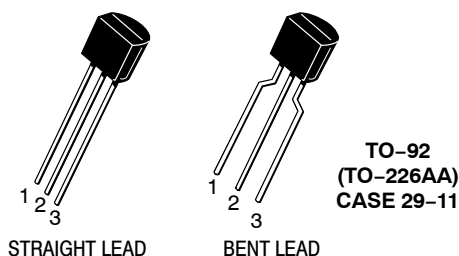
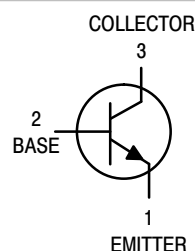
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

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.

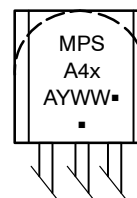


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MARKING DIAGRAM



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.

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

MPSA42, MPSA43

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) ($I_C = 1.0\text{ mAdc}$, $I_B = 0$)	MPSA42 MPSA43	$V_{(BR)CEO}$	300 200	– –	Vdc
Collector–Base Breakdown Voltage ($I_C = 100\text{ }\mu\text{Adc}$, $I_E = 0$)	MPSA42 MPSA43	$V_{(BR)CBO}$	300 200	– –	Vdc
Emitter–Base Breakdown Voltage ($I_E = 100\text{ }\mu\text{Adc}$, $I_C = 0$)		$V_{(BR)EBO}$	6.0	–	Vdc
Collector Cutoff Current ($V_{CB} = 200\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 160\text{ Vdc}$, $I_E = 0$)	MPSA42 MPSA43	I_{CBO}	– –	0.1 0.1	μAdc
Emitter Cutoff Current ($V_{EB} = 6.0\text{ Vdc}$, $I_C = 0$) ($V_{EB} = 4.0\text{ Vdc}$, $I_C = 0$)	MPSA42 MPSA43	I_{EBO}	– –	0.1 0.1	μAdc

ON CHARACTERISTICS (Note 1)

DC Current Gain ($I_C = 1.0\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 10\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$) ($I_C = 30\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$)		h_{FE}	25 40 40	– – –	–
Collector–Emitter Saturation Voltage ($I_C = 20\text{ mAdc}$, $I_B = 2.0\text{ mAdc}$)	MPSA42 MPSA43	$V_{CE(sat)}$	– –	0.5 0.4	Vdc
Base–Emitter Saturation Voltage ($I_C = 20\text{ mAdc}$, $I_B = 2.0\text{ mAdc}$)		$V_{BE(sat)}$	–	0.9	Vdc

SMALL–SIGNAL CHARACTERISTICS

Current–Gain – Bandwidth Product ($I_C = 10\text{ mAdc}$, $V_{CE} = 20\text{ Vdc}$, $f = 100\text{ MHz}$)		f_T	50	–	MHz
Collector–Base Capacitance ($V_{CB} = 20\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	MPSA42 MPSA43	C_{cb}	– –	3.0 4.0	pF

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

MPSA42, MPSA43

ORDERING INFORMATION

Device	Package	Shipping [†]
MPSA42G	TO-92 (Pb-Free)	5000 Units / Box
MPSA42RL1G	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA42RLRAG	TO-92 (Pb-Free)	2000 / Tape & Reel
MPSA42RLRMG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA42RLRPG	TO-92 (Pb-Free)	2000 / Ammo Pack
MPSA42ZL1G	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.

MPSA42, MPSA43

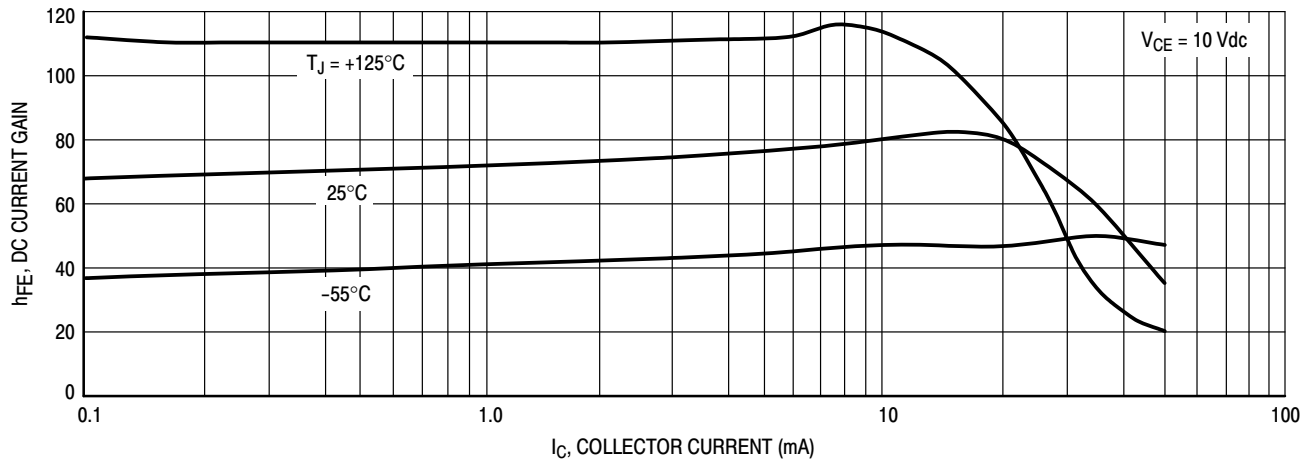


Figure 1. DC Current Gain

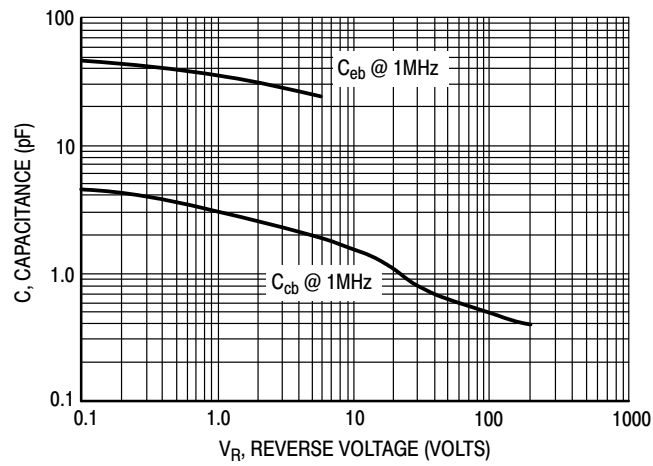


Figure 2. Capacitance

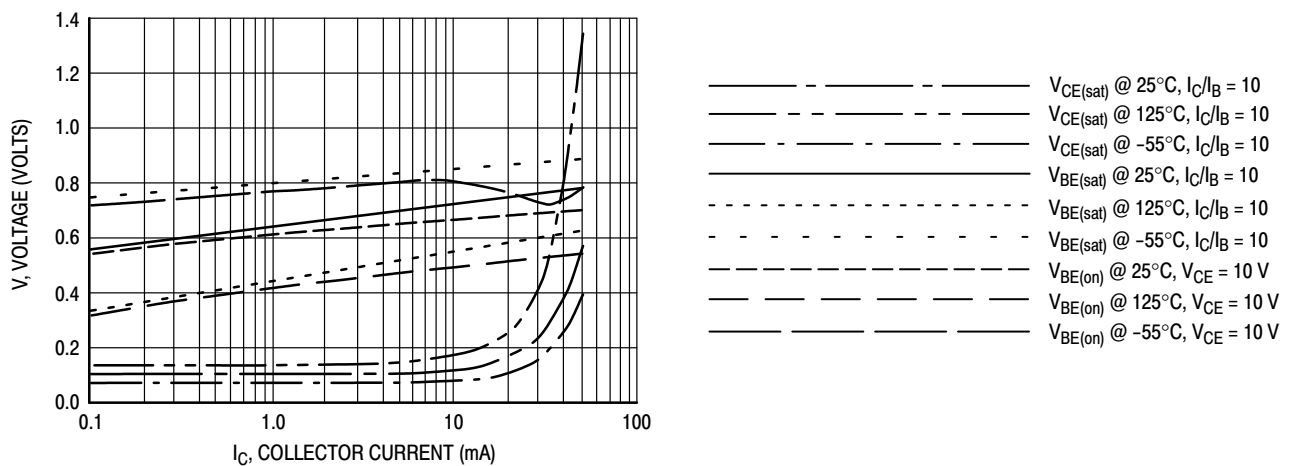


Figure 3. "ON" Voltages

MPSA42, MPSA43

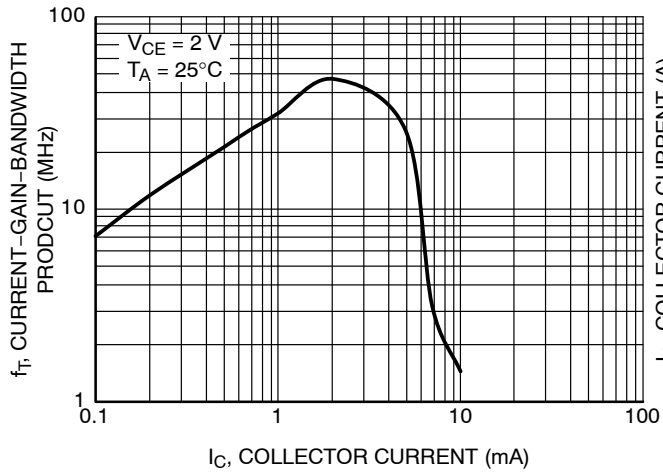


Figure 4. Current-Gain-Bandwidth Product

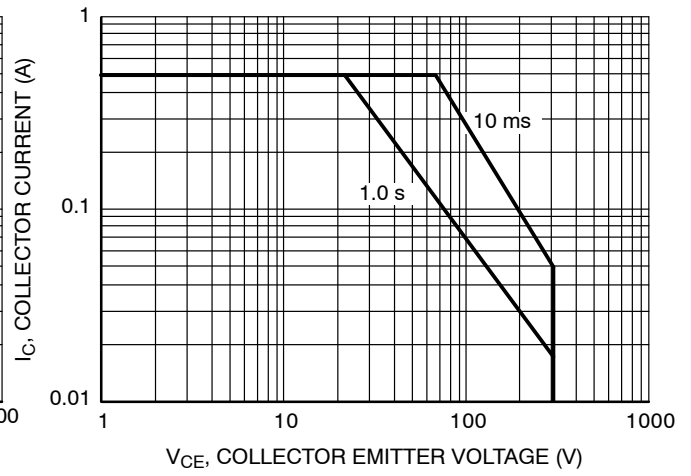
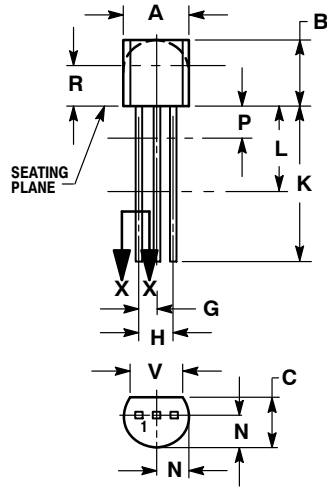


Figure 5. Safe Operating Area

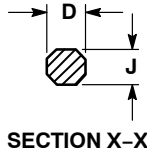
MPSA42, MPSA43

PACKAGE DIMENSIONS

TO-92 (TO-226)
CASE 29-11
ISSUE AN



STRAIGHT LEAD



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	---

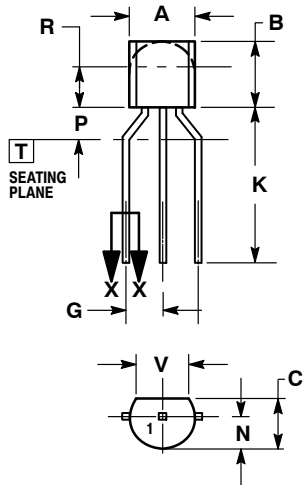
STYLE 1:

1. PIN 1. EMITTER
2. BASE
3. COLLECTOR

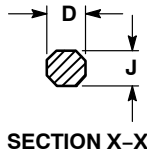
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS	
	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---



BENT LEAD



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