

# 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	mA <sub>dc</sub>
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

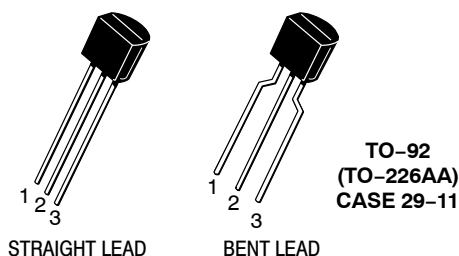
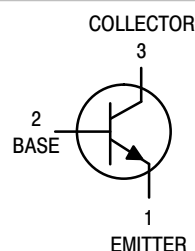
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

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.

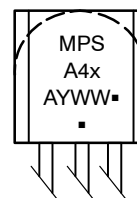


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#### MARKING DIAGRAM



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) ( $I_C = 1.0\text{ mA}$ , $I_B = 0$ )	MPSA42 MPSA43	$V_{(BR)CEO}$	300 200	– –	Vdc
Collector–Base Breakdown Voltage ( $I_C = 100\text{ }\mu\text{A}$ , $I_E = 0$ )	MPSA42 MPSA43	$V_{(BR)CBO}$	300 200	– –	Vdc
Emitter–Base Breakdown Voltage ( $I_E = 100\text{ }\mu\text{A}$ , $I_C = 0$ )		$V_{(BR)EBO}$	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	$\mu\text{A}$
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	$\mu\text{A}$

### ON CHARACTERISTICS (Note 1)

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

### SMALL–SIGNAL CHARACTERISTICS

Current–Gain – Bandwidth Product ( $I_C = 10\text{ mA}$ , $V_{CE} = 20\text{ Vdc}$ , $f = 100\text{ MHz}$ )		$f_T$	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 <sup>†</sup>
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

<sup>†</sup>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.