

# DATA SHEET



## **MPSA42; MPSA43** NPN high-voltage transistors

Product specification  
Supersedes data of 1997 Sep 04

1999 Apr 12

# NPN high-voltage transistors

# MPSA42; MPSA43

### FEATURES

- Low current (max. 100 mA)
- High voltage (max. 300 V).

### APPLICATIONS

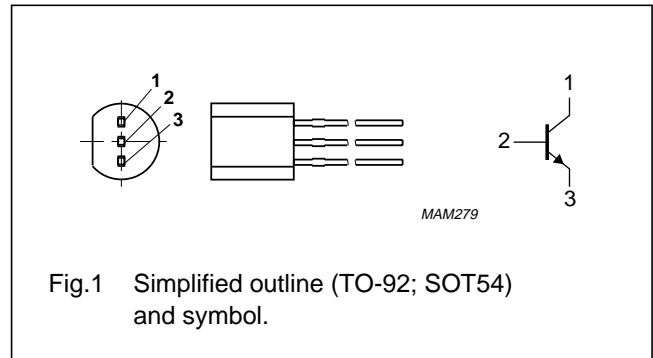
- Video
- Telephony
- Professional communication equipment.

### DESCRIPTION

NPN high-voltage transistor in a TO-92; SOT54 plastic package. PNP complement: MPSA92.

### PINNING

PIN	DESCRIPTION
1	collector
2	base
3	emitter



### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	MPSA42		–	300	V
	MPSA43		–	200	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	MPSA42		–	300	V
	MPSA43		–	200	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	6	V
I <sub>C</sub>	collector current (DC)		–	100	mA
I <sub>CM</sub>	peak collector current		–	200	mA
I <sub>BM</sub>	peak base current		–	100	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	500	mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

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## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	250	K/W

## Note

1. Transistor mounted on an FR4 printed-circuit board.

## CHARACTERISTICS

$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector cut-off current				
	MPSA42	$I_E = 0; V_{CB} = 200\text{ V}$	–	100	nA
	MPSA43	$I_E = 0; V_{CB} = 160\text{ V}$	–	100	nA
$I_{EBO}$	emitter cut-off current				
	MPSA42	$I_C = 0; V_{EB} = 6\text{ V}$	–	100	nA
	MPSA43	$I_C = 0; V_{EB} = 4\text{ V}$	–	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 10\text{ V}$ ; note 1			
		$I_C = 1\text{ mA}$	25	–	
		$I_C = 10\text{ mA}$	40	–	
		$I_C = 30\text{ mA}$	40	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 20\text{ mA}; I_B = 2\text{ mA}$ ; note 1	–	500	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 20\text{ mA}; I_B = 2\text{ mA}$ ; note 1	–	900	mV
$C_c$	collector capacitance	$I_E = i_e = 0; V_{CB} = 20\text{ V}; f = 1\text{ MHz}$			
	MPSA42		–	3	pF
	MPSA43		–	4	pF
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 20\text{ V}; f = 100\text{ MHz}$	50	–	MHz

## Note

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .

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PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b <sub>1</sub>	c	D	d	E	e	e <sub>1</sub>	L	L <sub>1</sub> <sup>(1)</sup>
mm	5.2 5.0	0.48 0.40	0.66 0.56	0.45 0.40	4.8 4.4	1.7 1.4	4.2 3.6	2.54	1.27	14.5 12.7	2.5

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT54		TO-92	SC-43		97-02-28

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**DEFINITIONS**

<b>Data sheet status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
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**NOTES**

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