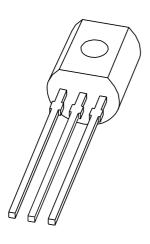
## DISCRETE SEMICONDUCTORS

# DATA SHEET



## MPSA42; MPSA43 NPN high-voltage transistors

Product specification Supersedes data of 1999 Apr 12

2004 Oct 11





## **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

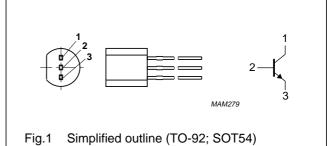


Fig.1 Simplified outline (TO-92; SOT54) and symbol.

#### **ORDERING INFORMATION**

TYPE NUMBER		PACKAGE			
TIPE NUMBER	NAME DESCRIPTION VERS				
MPSA42	SC-43A	plastic single-ended leaded (through hole) package; 3 leads	SOT54		
MPSA43					

#### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

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	٧
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
Tj	junction temperature		_	150	°C
T <sub>amb</sub>	ambient temperature		-65	+150	°C

## NPN high-voltage transistors

MPSA42; MPSA43

#### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	note 1	250	K/W

#### Note

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

#### **CHARACTERISTICS**

 $T_{amb}$  = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I <sub>CBO</sub>	collector-base cut-off current				
	MPSA42	V <sub>CB</sub> = 200 V; I <sub>E</sub> = 0 A	_	100	nA
	MPSA43	V <sub>CB</sub> = 160 V; I <sub>E</sub> = 0 A	_	100	nA
I <sub>EBO</sub>	emitter-base cut-off current				
	MPSA42	$V_{EB} = 6 \text{ V}; I_{C} = 0 \text{ A}$	_	100	nA
	MPSA43	$V_{EB} = 4 \text{ V}; I_{C} = 0 \text{ A}$	_	100	nA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = 10 V; note 1			
		I <sub>C</sub> = 1 mA	25	_	
		I <sub>C</sub> = 10 mA	40	_	
		I <sub>C</sub> = 30 mA	40	_	
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = 20 mA; I <sub>B</sub> = 2 mA; note 1	_	500	mV
V <sub>BEsat</sub>	base-emitter saturation voltage	I <sub>C</sub> = 20 mA; I <sub>B</sub> = 2 mA; note 1	_	900	mV
C <sub>c</sub>	collector capacitance	$V_{CB} = 20 \text{ V}; I_E = i_e = 0 \text{ A}; f = 1 \text{ MHz}$			
	MPSA42		_	3	pF
	MPSA43		_	4	pF
f <sub>T</sub>	transition frequency	$V_{CE} = 20 \text{ V}; I_{C} = 10 \text{ mA}; f = 100 \text{ MHz}$	50	_	MHz

#### Note

1. Pulse test:  $t_p \le 300 \ \mu s; \ \delta \le 0.02.$ 

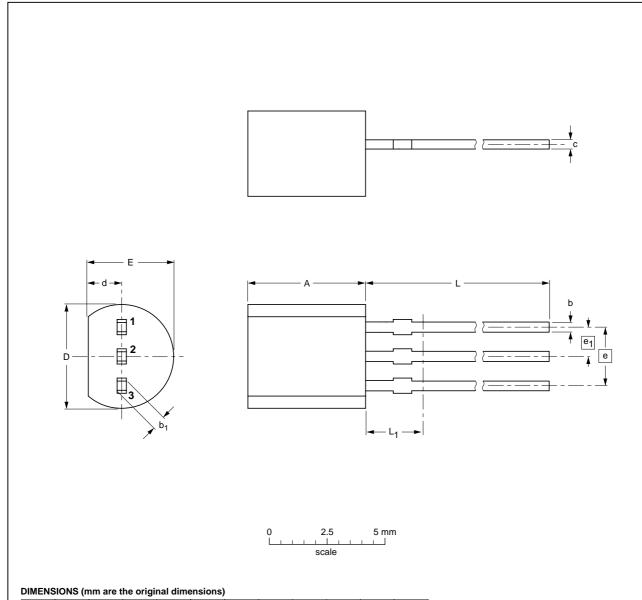
## NPN high-voltage transistors

## MPSA42; MPSA43

#### **PACKAGE OUTLINE**

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

SOT54



UNIT	A	b	b <sub>1</sub>	С	D	d	E	е	e <sub>1</sub>	L	L <sub>1</sub> <sup>(1)</sup> max.
mm	5.2 5.0	0.48 0.40	0.66 0.55	0.45 0.38	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 REFERENCES					EUROPEAN	ISSUE DATE
VERSION	IEC	JEDEC	JEITA			
SOT54		TO-92	SC-43A			<del>97-02-28</del> 04-06-28

## NPN high-voltage transistors

MPSA42; MPSA43

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LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS(2)(3)	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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