

# DATA SHEET



## **PN3439; PN3440** NPN high-voltage transistors

Product specification  
Supersedes data of 1997 Jun 17  
File under Discrete Semiconductors, SC04

1997 Sep 04

# NPN high-voltage transistors

# PN3439; PN3440

### FEATURES

- Low current (max. 100 mA)
- High voltage (max. 350 V).

### APPLICATIONS

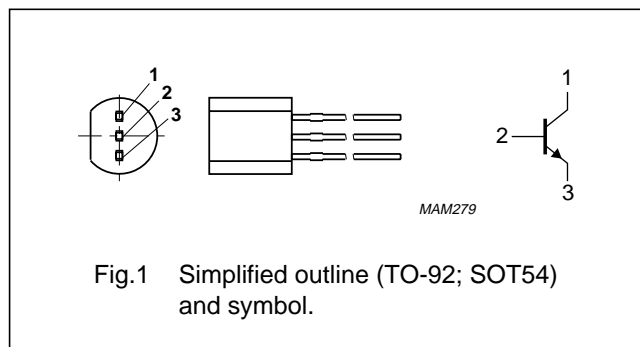
- Telephony and professional communication equipment.

### DESCRIPTION

NPN high-voltage transistor in a TO-92; SOT54 plastic package.

### PINNING

PIN	DESCRIPTION
1	collector
2	base
3	emitter



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage PN3439 PN3440	open emitter	–	400	V
			–	300	V
V <sub>CEO</sub>	collector-emitter voltage PN3439 PN3440	open base	–	350	V
			–	250	V
I <sub>CM</sub>	peak collector current		–	200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	500	mW
h <sub>FE</sub>	DC current gain PN3439	I <sub>C</sub> = 2 mA; V <sub>CE</sub> = 10 V	30	–	
h <sub>FE</sub>	DC current gain PN3440	I <sub>C</sub> = 20 mA; V <sub>CE</sub> = 10 V	40	–	
f <sub>T</sub>	transition frequency	I <sub>C</sub> = 10 mA; V <sub>CE</sub> = 10 V; f = 100 MHz	70	–	MHz

## NPN high-voltage transistors

## PN3439; PN3440

**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			
	PN3439		–	400	V
	PN3440		–	300	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	PN3439		–	350	V
	PN3440		–	250	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	5	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

**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.

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## PN3439; PN3440

**CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector cut-off current PN3439	$I_E = 0; V_{CB} = 360\text{ V}$	–	100	nA
$I_{CBO}$	collector cut-off current PN3440	$I_E = 0; V_{CB} = 250\text{ V}$	–	100	nA
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	100	nA
$h_{FE}$	DC current gain PN3439	$I_C = 2\text{ mA}; V_{CE} = 10\text{ V}$	30	–	
$h_{FE}$	DC current gain PN3440	$I_C = 20\text{ mA}; V_{CE} = 10\text{ V}$	40	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 50\text{ mA}; I_B = 4\text{ mA}$	–	500	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 50\text{ mA}; I_B = 4\text{ mA}$	–	1.3	V
$C_c$	collector capacitance	$I_E = i_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	2	pF
$C_e$	emitter capacitance	$I_C = i_c = 0; V_{EB} = 5\text{ V}; f = 1\text{ MHz}$	–	20	pF
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	70	–	MHz

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PN3439; PN3440

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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PN3439; PN3440

**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>	
Where application information is given, it is advisory and does not form part of the specification.	

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NPN high-voltage transistors

PN3439; PN3440

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