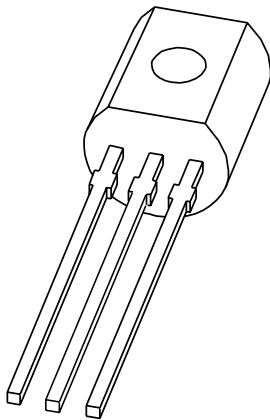


DATA SHEET



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

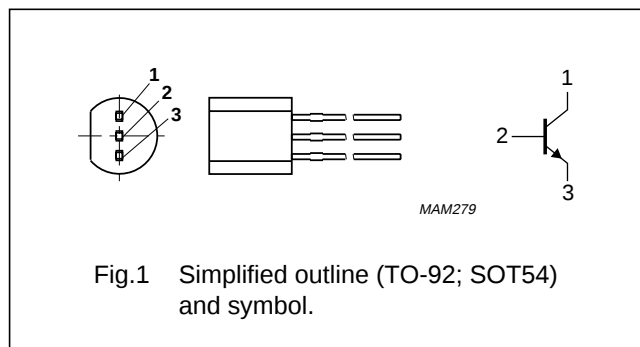
- Telephony and professional communication equipment.

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_{CBO}	collector-base voltage	open emitter	—	400	V
	PN3439		—	300	V
	PN3440				
V_{CEO}	collector-emitter voltage	open base	—	350	V
	PN3439		—	250	V
	PN3440				
I_{CM}	peak collector current		—	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	—	500	mW
h_{FE}	DC current gain	$I_C = 2\text{ mA}; V_{CE} = 10\text{ V}$	30	—	
	PN3439				
h_{FE}	DC current gain	$I_C = 20\text{ mA}; V_{CE} = 10\text{ V}$	40	—	
	PN3440				
f_T	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	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 _{CBO}	collector-base voltage	open emitter			
	PN3439		–	400	V
	PN3440		–	300	V
V _{CEO}	collector-emitter voltage	open base			
	PN3439		–	350	V
	PN3440		–	250	V
V _{EBO}	emitter-base voltage	open collector	–	5	V
I _C	collector current (DC)		–	100	mA
I _{CM}	peak collector current		–	200	mA
I _{BM}	peak base current		–	100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	–	500	mW
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	operating ambient temperature		–65	+150	°C

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.

NPN high-voltage transistors

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

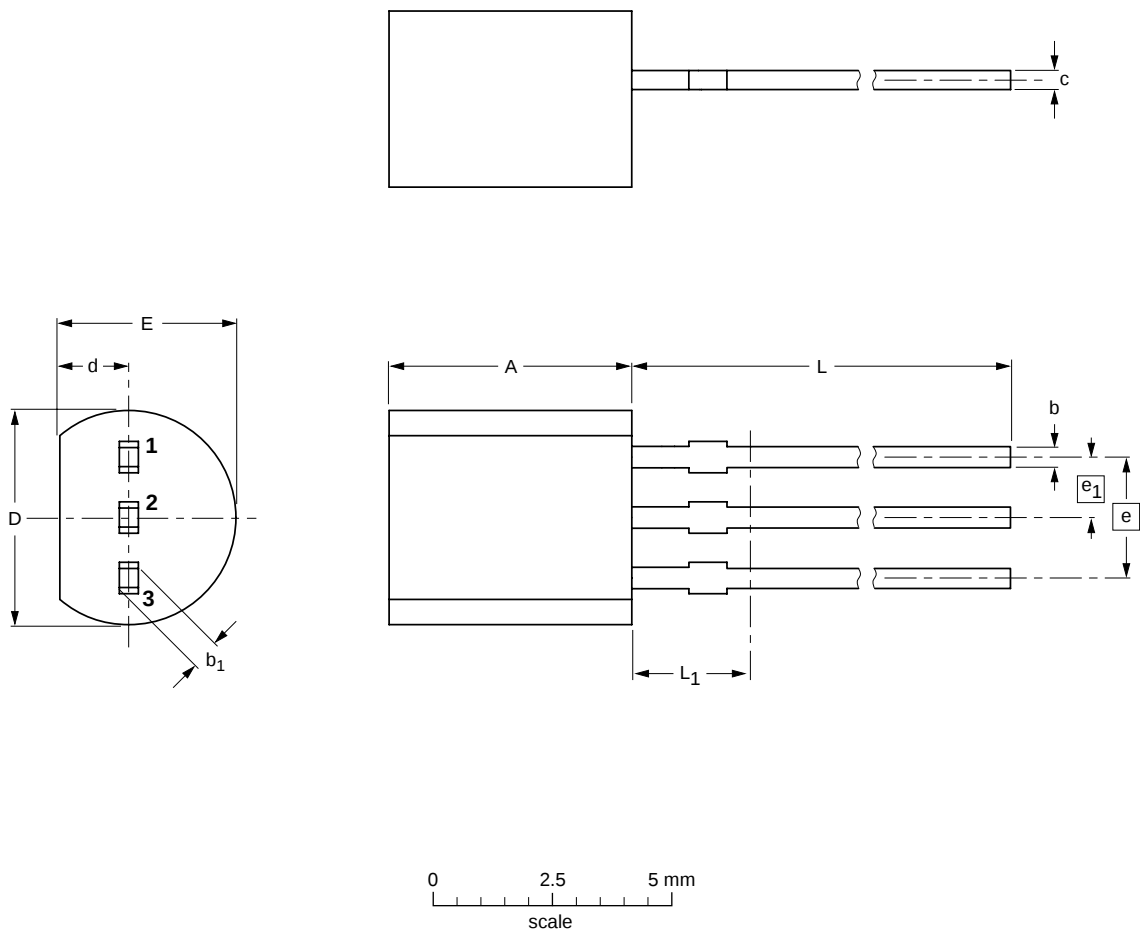
NPN high-voltage transistors

PN3439; PN3440

PACKAGE OUTLINE

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

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b ₁	c	D	d	E	e	e ₁	L	L ₁ ⁽¹⁾
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

NPN high-voltage transistors

PN3439; PN3440

DEFINITIONS

Data sheet status	
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.
Limiting values	
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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

NPN high-voltage transistors

PN3439; PN3440

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Printed in The Netherlands

117047/00/03/pp8

Date of release: 1997 Sep 04

Document order number: 9397 750 02797

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