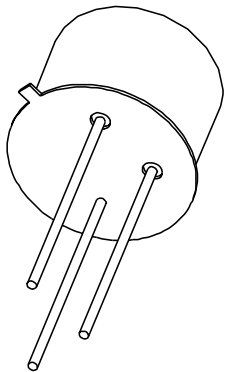


DATA SHEET



2N5415; 2N5416 PNP high-voltage transistors

Product specification
Supersedes data of September 1994
File under Discrete Semiconductors, SC04

1997 May 21

PNP high-voltage transistors

2N5415; 2N5416

FEATURES

- Low current (max. 200 mA)
- High voltage (max. 300 V).

APPLICATIONS

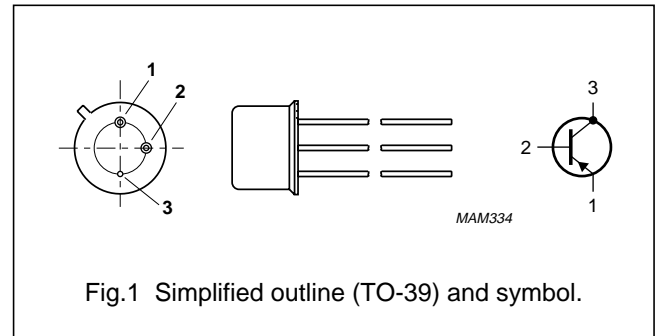
- Switching and linear amplification in military, industrial and consumer equipment.

DESCRIPTION

PNP high-voltage transistor in a TO-39 metal package.

PINNING

PIN	DESCRIPTION
1	emitter
2	base
3	collector, connected to case



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter			
	2N5415		–	–200	V
	2N5416		–	–350	V
V_{CEO}	collector-emitter voltage	open base			
	2N5415		–	–200	V
	2N5416		–	–300	V
I_{CM}	peak collector current		–	400	mA
P_{tot}	total power dissipation	$T_{amb} \leq 50\text{ }^{\circ}\text{C}$	–	1	W
h_{FE}	DC current gain	$I_C = -50\text{ mA}; V_{CE} = -10\text{ V}$			
	2N5415		30	150	
	2N5416		30	120	
f_T	transition frequency	$I_C = -10\text{ mA}; V_{CE} = -10\text{ V}; f = 5\text{ MHz}$	15	–	MHz

PNP high-voltage transistors

2N5415; 2N5416

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CBO}	collector-base voltage 2N5415 2N5416	open emitter	–	–200	V
			–	–350	V
V _{CEO}	collector-emitter voltage 2N5415 2N5416	open base	–	–200	V
			–	–300	V
V _{EBO}	emitter-base voltage 2N5415 2N5416	open collector	–	–4	V
			–	–6	V
I _C	collector current (DC)		–	–200	mA
I _{CM}	peak collector current		–	–400	mA
I _{BM}	peak base current		–	–200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 50 °C	–	1	W
		T _{case} ≤ 25 °C	–	10	W
T _{stg}	storage temperature		–65	+200	°C
T _j	junction temperature		–	200	°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	in free air	150	K/W
R _{th j-c}	thermal resistance from junction to case		17.5	K/W

PNP high-voltage transistors

2N5415; 2N5416

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current 2N5415 2N5416	$I_{\text{E}} = 0; V_{\text{CB}} = -175\text{ V}$	–	–50	μA
		$I_{\text{E}} = 0; V_{\text{CB}} = -280\text{ V}$	–	–50	μA
I_{EBO}	emitter cut-off current 2N5415 2N5416	$I_{\text{C}} = 0; V_{\text{EB}} = -4\text{ V}$	–	–20	μA
		$I_{\text{C}} = 0; V_{\text{EB}} = -6\text{ V}$	–	–20	μA
h_{FE}	DC current gain 2N5415 2N5416	$I_{\text{C}} = -50\text{ mA}; V_{\text{CE}} = -10\text{ V}$	30	150	
			30	120	
V_{CEsat}	collector-emitter saturation voltage	$I_{\text{C}} = -50\text{ mA}; I_{\text{B}} = -5\text{ mA}$	–	–500	mV
C_{c}	collector capacitance	$I_{\text{E}} = i_{\text{e}} = 0; V_{\text{CB}} = -10\text{ V}; f = 1\text{ MHz}$	–	15	pF
C_{e}	emitter capacitance	$I_{\text{C}} = i_{\text{c}} = 0; V_{\text{EB}} = -6\text{ V}; f = 1\text{ MHz}$	–	75	pF
f_{T}	transition frequency	$I_{\text{C}} = -10\text{ mA}; V_{\text{CE}} = -10\text{ V}; f = 5\text{ MHz}$	15	–	MHz

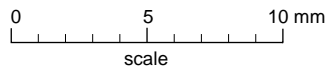
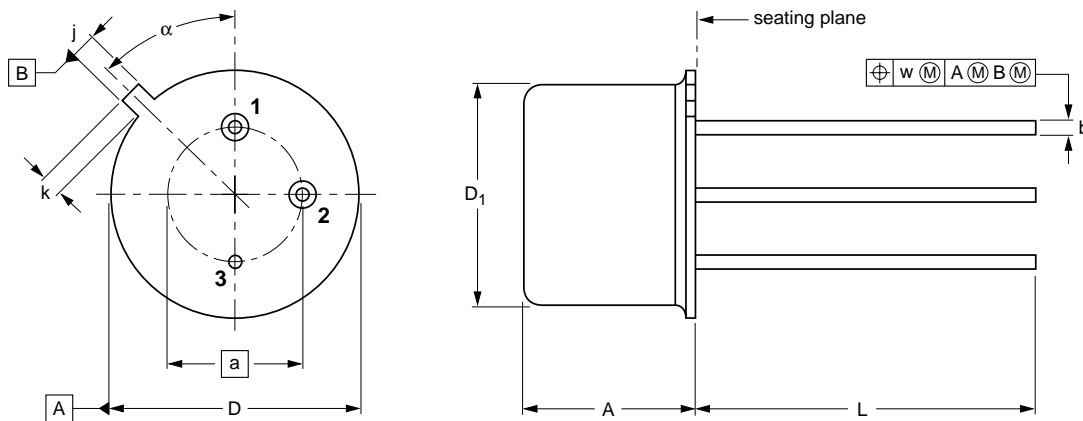
PNP high-voltage transistors

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PACKAGE OUTLINE

Metal-can cylindrical single-ended package; 3 leads

SOT5/11



DIMENSIONS (mm are the original dimensions)

UNIT	A	a	b	D	D ₁	j	k	L	w	α
mm	6.60 6.35	5.08	0.48 0.41	9.39 9.08	8.33 8.18	0.85 0.75	0.95 0.75	14.2 12.7	0.2	45°

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT5/11		TO-39				97-04-11

PNP high-voltage transistors

2N5415; 2N5416

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.

PNP high-voltage transistors

2N5415; 2N5416

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