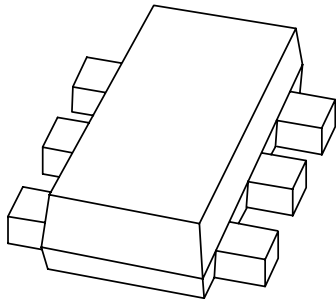


DATA SHEET



PEMF21 12 V PNP loadswitch

Product specification

2004 Jan 12

12 V PNP loadswitch

PEMF21

FEATURES

- Low V_{CEsat} transistor and resistor-equipped transistor in one package
- Very small 1.6×1.2 mm ultra thin package
- Reduced component count.

APPLICATIONS

- Line switches
- Battery charger switches
- Power supply switches
- Drive switches
- General purpose analog switches.

DESCRIPTION

Low V_{CEsat} PNP transistor and NPN resistor-equipped transistor in a SOT666 plastic package (see "Ordering information" for package details).

MARKING

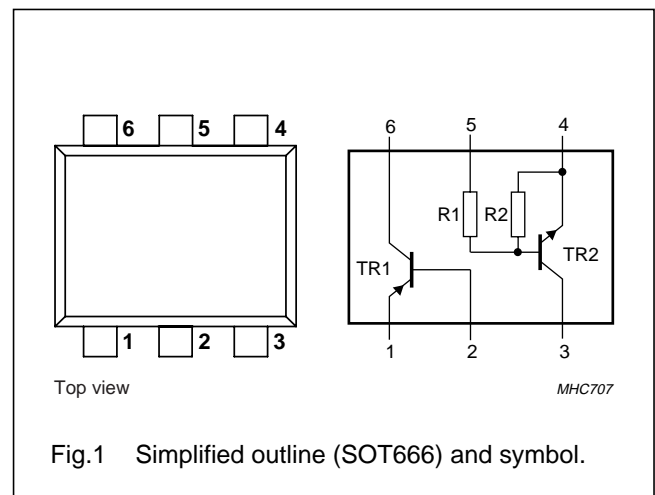
TYPE NUMBER	MARKING CODE
PEMF21	2F

QUICK REFERENCE DATA

SYMBOL	PARAMETER	TYP.	MAX.	UNIT
TR1; PNP; low V_{CEsat} transistor				
V_{CEO}	collector-emitter voltage	–	–12	V
I_C	collector current (DC)	–	–500	mA
R_{CEsat}	equivalent on-resistance	–	500	$m\Omega$
TR2; NPN; resistor-equipped transistor				
V_{CEO}	collector-emitter voltage	–	50	V
I_O	output current (DC)	–	100	mA
R1	bias resistor	10	–	$k\Omega$
R2	bias resistor	10	–	$k\Omega$

PINNING

PIN	DESCRIPTION
1	emitter TR1
2	base TR1
3	collector TR2
4	emitter TR2
5	base TR2
6	collector TR1



ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PEMF21	–	plastic surface mounted package; 6 leads	SOT666

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LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Transistor TR1					
V _{CBO}	collector-base voltage	open emitter	–	–15	V
V _{CEO}	collector-emitter voltage	open base	–	–12	V
V _{EBO}	emitter-base voltage	open collector	–	–6	V
I _C	collector current (DC)		–	–500	mA
I _{CM}	peak collector current		–	–1	A
I _{BM}	peak base current		–	–100	mA
P _{tot}	total power dissipation	T _{amb} = 25 °C; note 1	–	200	mW
Transistor TR2					
V _{CBO}	collector-base voltage	open emitter	–	50	V
V _{CEO}	collector-emitter voltage	open base	–	50	V
V _{EBO}	emitter-base voltage	open collector	–	10	V
V _i	input voltage				
	positive		–	+40	V
	negative		–	–10	V
I _O	output current (DC)		–	100	mA
I _{CM}	peak collector current		–	100	mA
P _{tot}	total power dissipation	T _{amb} = 25 °C; note 1	–	200	mW
Per device					
P _{tot}	total power dissipation	T _{amb} = 25 °C; note 1	–	300	mW
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	operating ambient temperature		–65	+150	°C

Note

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

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
Per device				
R _{th(j-a)}	thermal resistance from junction to ambient	notes 1 and 2	416	K/W

Notes

1. Transistor mounted on an FR4 printed-circuit board.
2. Reflow soldering is the only recommended soldering method.

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CHARACTERISTICS

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

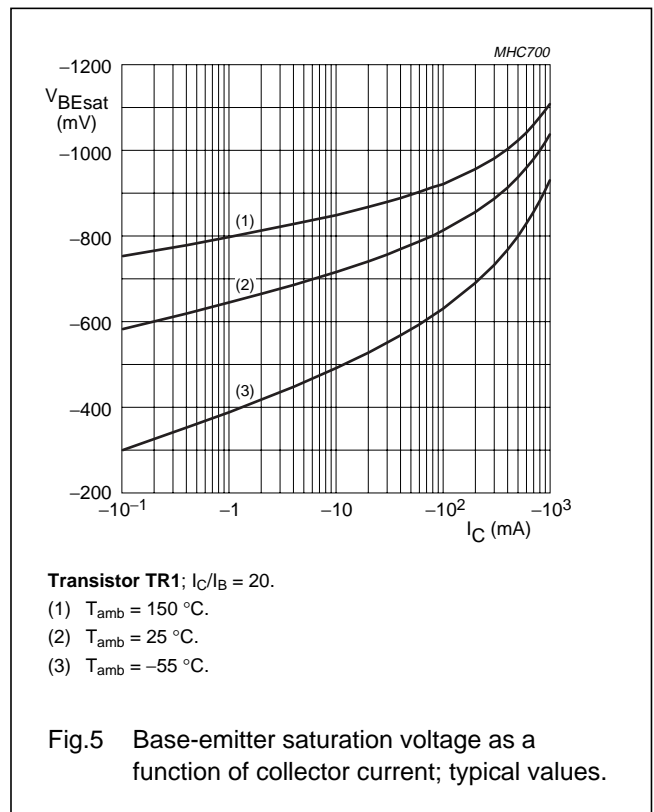
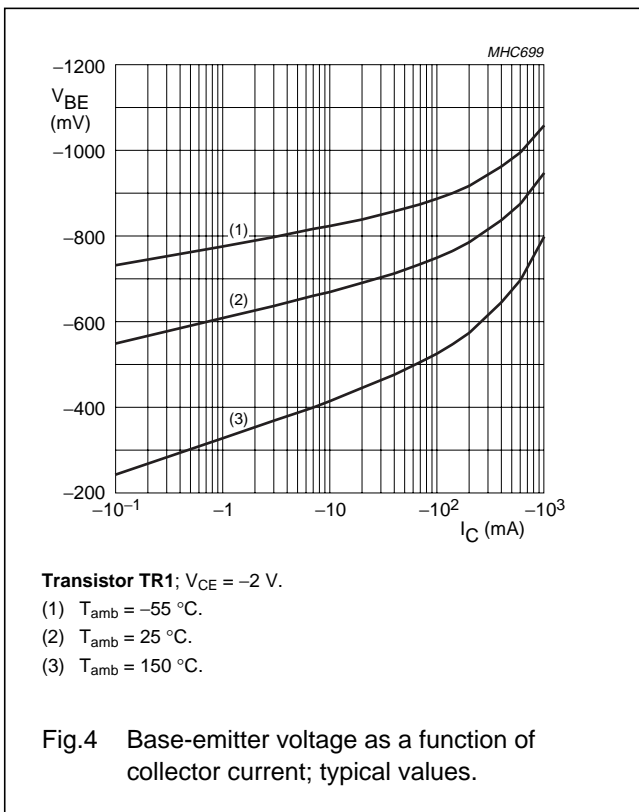
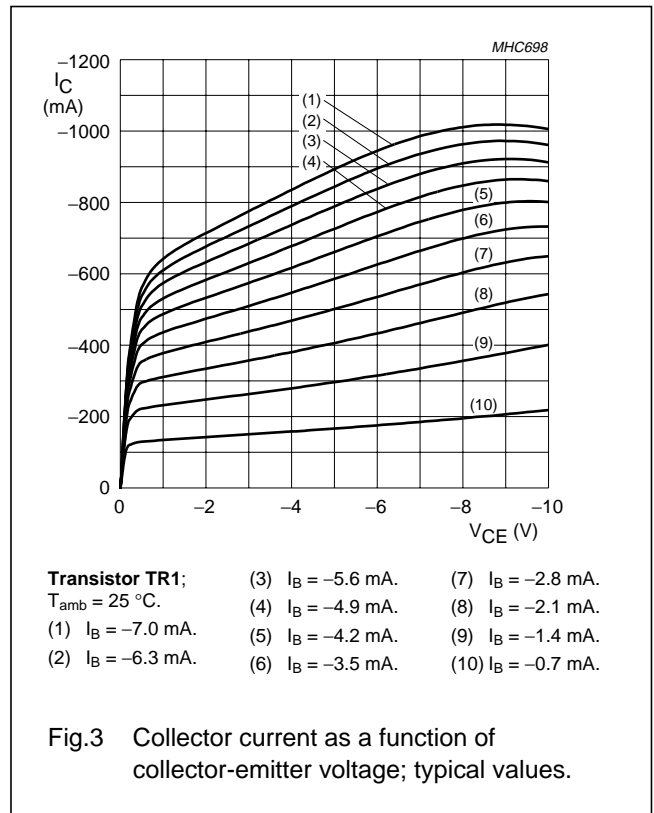
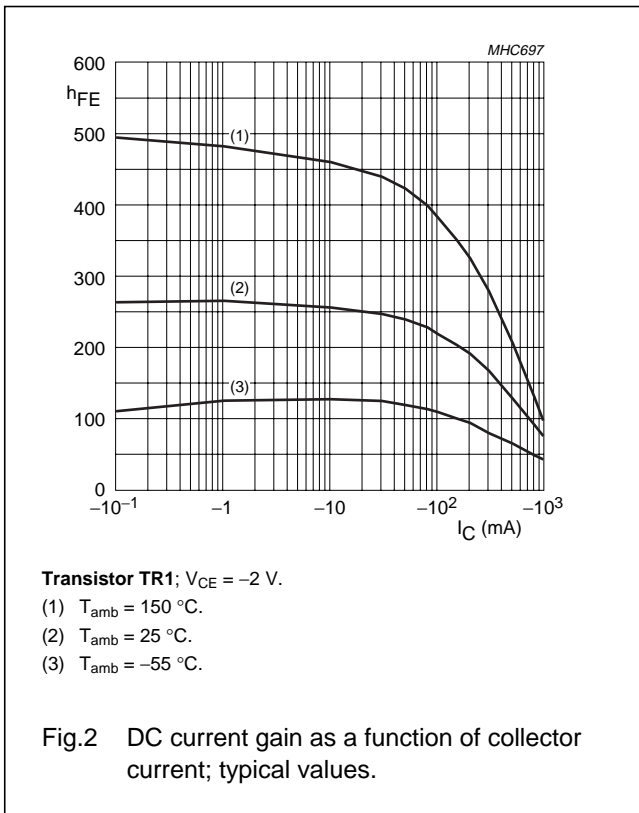
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Transistor TR1						
I_{CBO}	collector-base cut-off current	$V_{CB} = -15\text{ V}; I_E = 0$	–	–	–100	nA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -5\text{ V}; I_C = 0$	–	–	–100	nA
h_{FE}	DC current gain	$V_{CE} = -2\text{ V}; I_C = -10\text{ mA}$	200	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -200\text{ mA}; I_B = -10\text{ mA}$	–	–	–250	mV
R_{CEsat}	equivalent on-resistance	$I_C = -500\text{ mA}; I_B = -50\text{ mA}; \text{note 1}$	–	300	500	$\text{m}\Omega$
V_{BEsat}	base-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -50\text{ mA}; \text{note 1}$	–	–	–1.1	V
V_{BEon}	base-emitter turn-on voltage	$V_{CE} = -2\text{ V}; I_C = -100\text{ mA}; \text{note 1}$	–	–	–0.9	V
f_T	transition frequency	$I_C = -100\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$	100	280	–	MHz
C_c	collector capacitance	$V_{CB} = -10\text{ V}; I_E = i_e = 0; f = 1\text{ MHz}$	–	–	10	pF
Transistor TR2						
I_{CBO}	collector-base cut-off current	$V_{CB} = 50\text{ V}; I_E = 0$	–	–	100	nA
I_{CEO}	collector-emitter cut-off current	$V_{CE} = 30\text{ V}; I_B = 0$	–	–	1	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	–	–	400	μA
h_{FE}	DC current gain	$V_{CE} = 5\text{ V}; I_C = 5\text{ mA}$	30	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	–	300	mV
$V_{i(off)}$	input-off voltage	$V_{CE} = 5\text{ V}; I_C = 100\text{ }\mu\text{A}$	–	–	0.5	V
$V_{i(on)}$	input-on voltage	$V_{CE} = 0.3\text{ V}; I_C = 10\text{ mA}$	3	–	–	V
R1	input resistor		7	10	13	$\text{k}\Omega$
$\frac{R2}{R1}$	resistor ratio		0.8	1	1.2	
C_c	collector capacitance	$V_{CB} = 10\text{ V}; I_E = i_e = 0; f = 1\text{ MHz}$	–	–	2.5	pF

Note

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

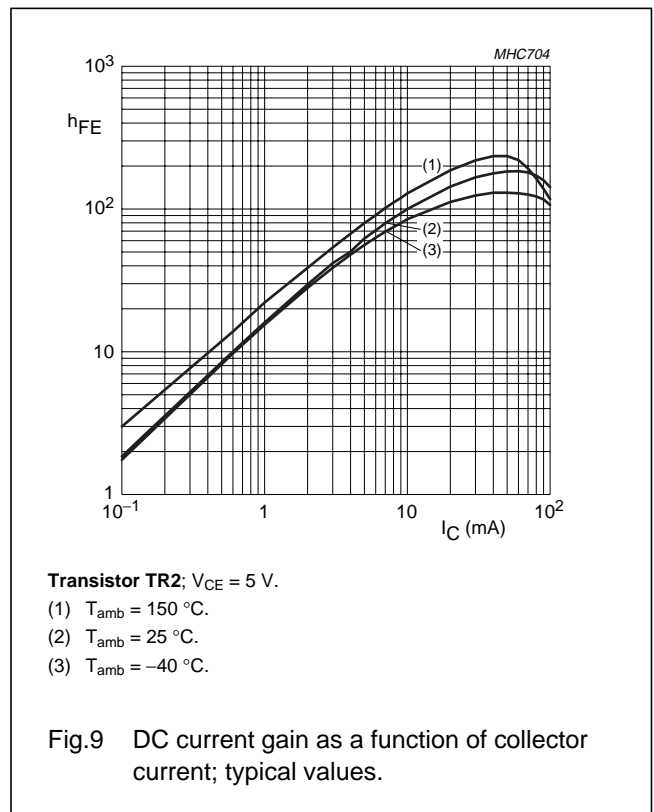
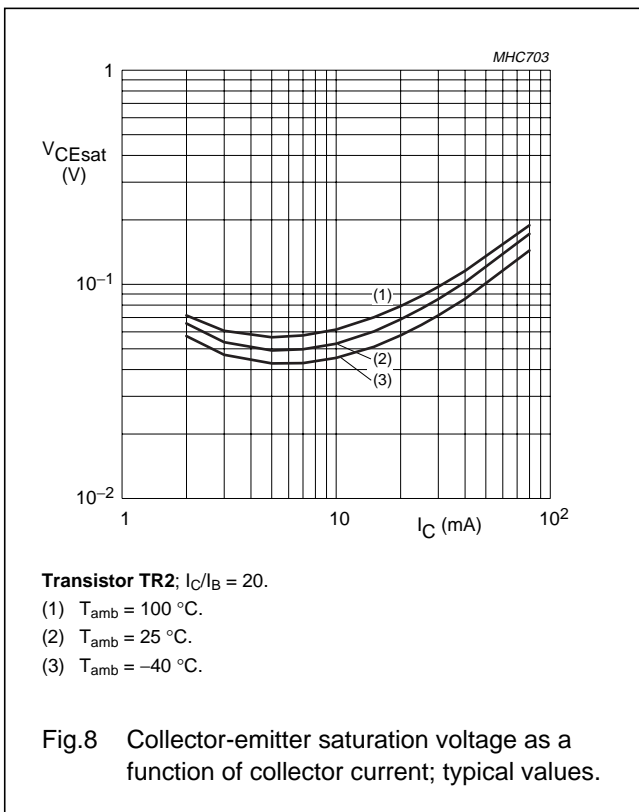
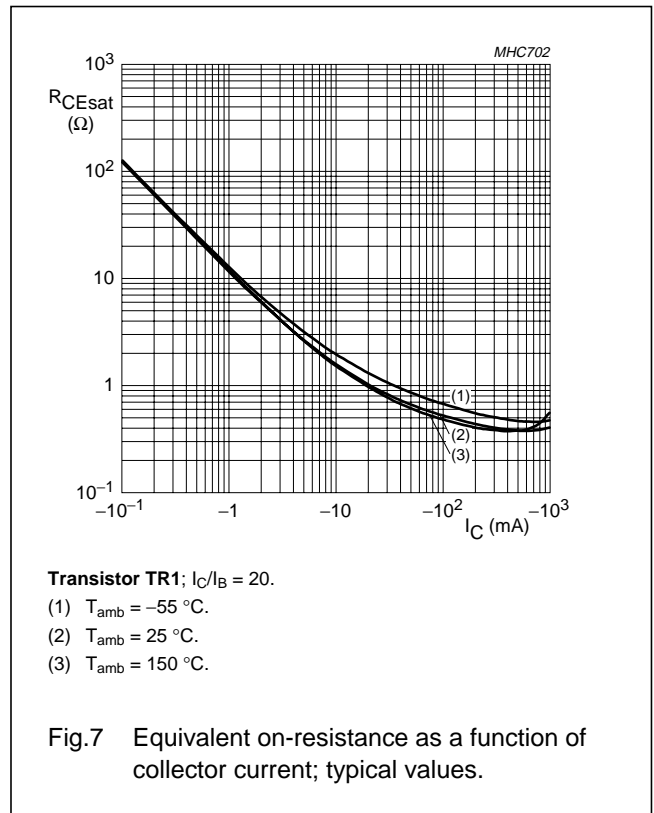
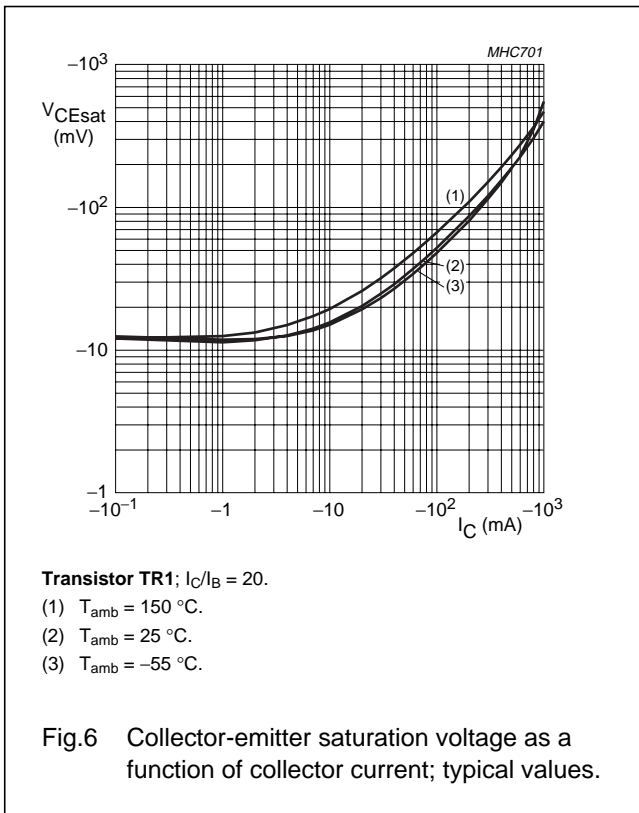
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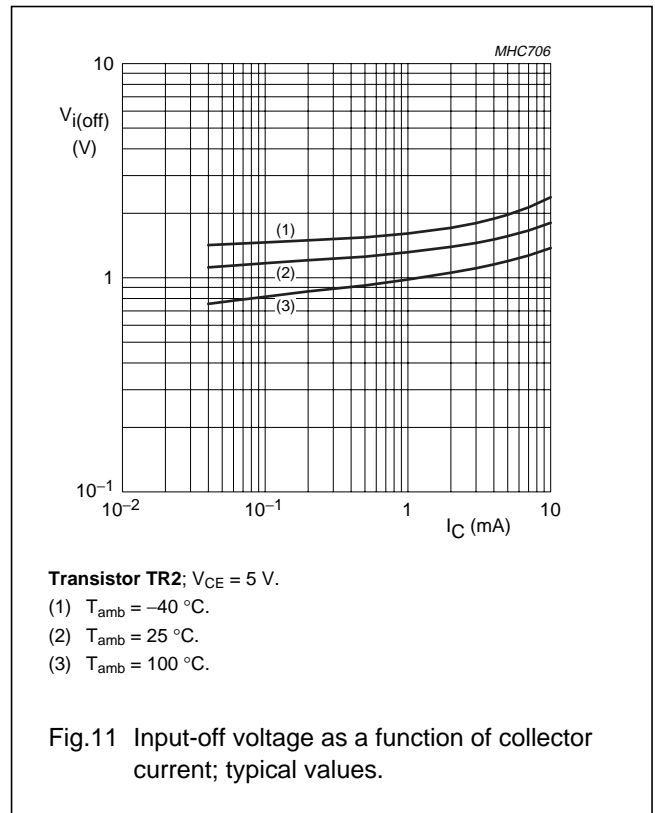
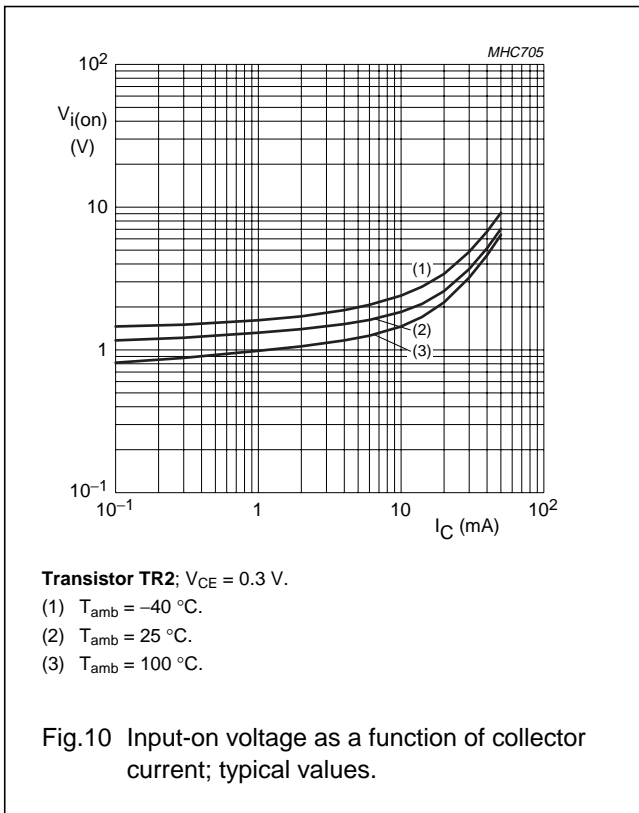
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12 V PNP loadswitch

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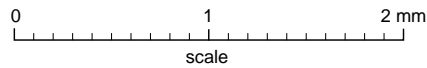
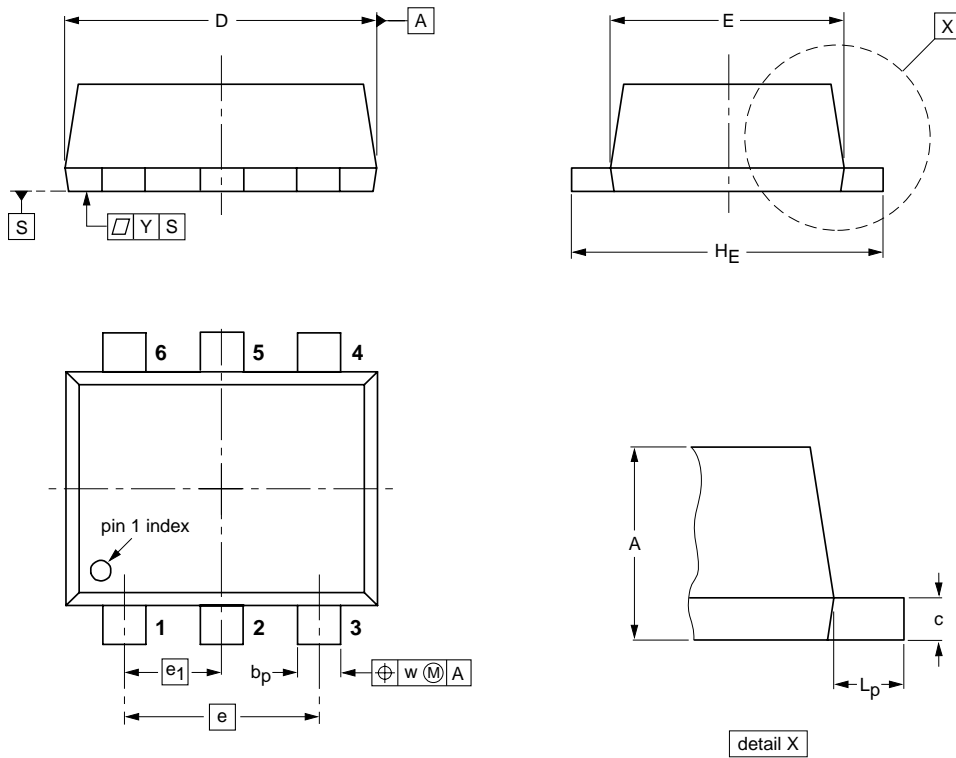
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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT666



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_p	c	D	E	e	e_1	H_E	L_p	w	y
mm	0.6 0.5	0.27 0.17	0.18 0.08	1.7 1.5	1.3 1.1	1.0	0.5	1.7 1.5	0.3 0.1	0.1	0.1

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT666					01-01-04 01-08-27

12 V PNP loadswitch

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DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	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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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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