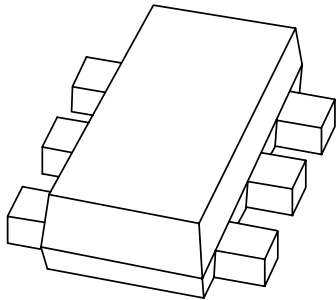


DATA SHEET



PEFM21 12 V PNP loadswitch

Product data sheet

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

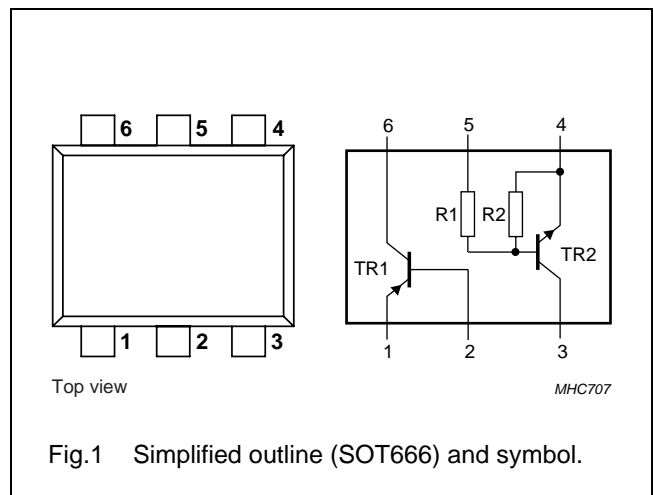


Fig.1 Simplified outline (SOT666) and symbol.

ORDERING INFORMATION

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

12 V PNP loadswitch

PEMF21

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 negative		–	+40	V
			–	–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.

12 V PNP loadswitch

PEMF21

CHARACTERISTICS

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

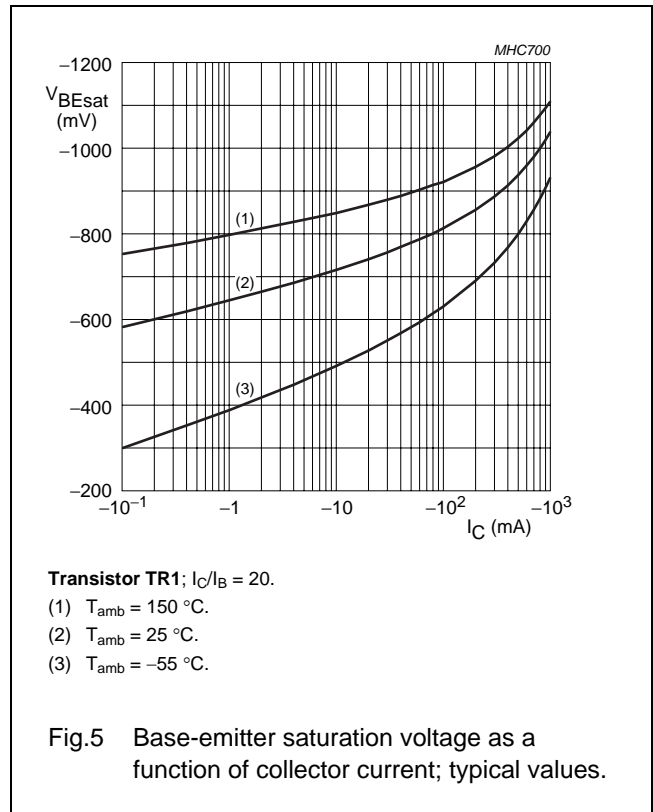
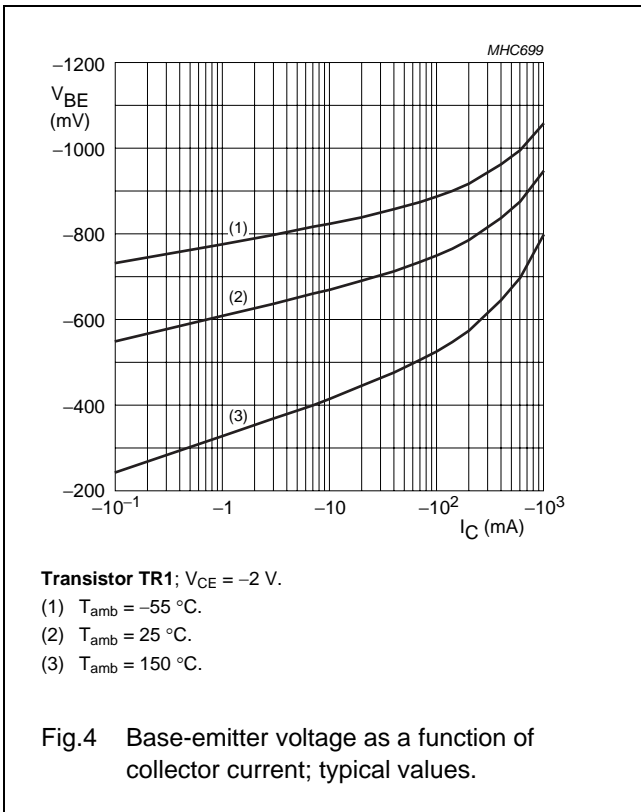
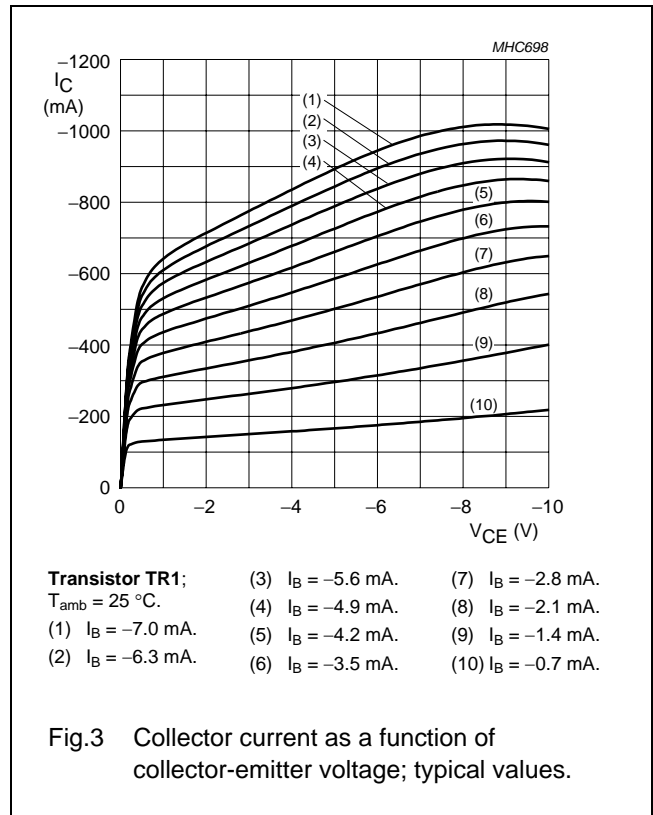
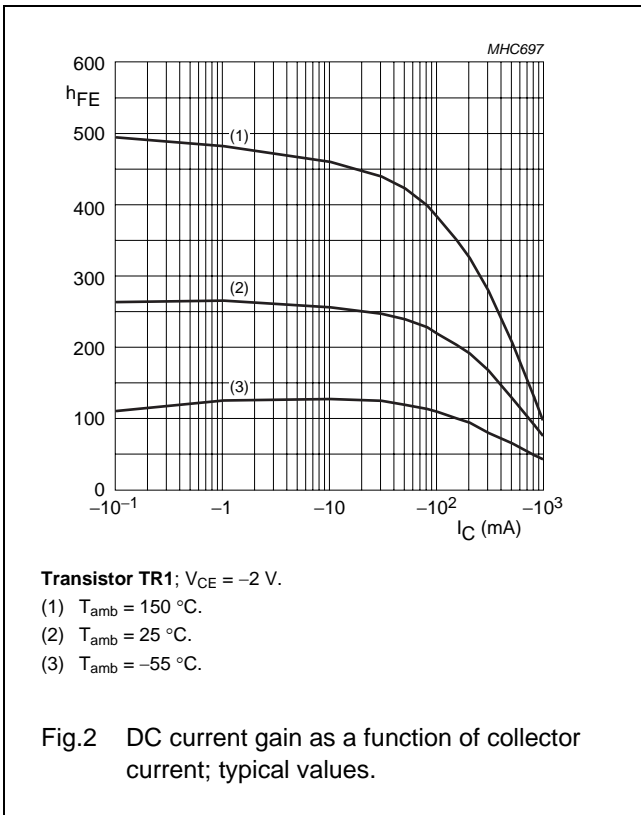
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Transistor TR1						
I_{CBO}	collector-base cut-off current	$V_{CB} = -15\text{ V}; I_E = 0$	–	–	–100	nA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -5\text{ V}; I_C = 0$	–	–	–100	nA
h_{FE}	DC current gain	$V_{CE} = -2\text{ V}; I_C = -10\text{ mA}$	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	m Ω
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	k Ω
$\frac{R2}{R1}$	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: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$.

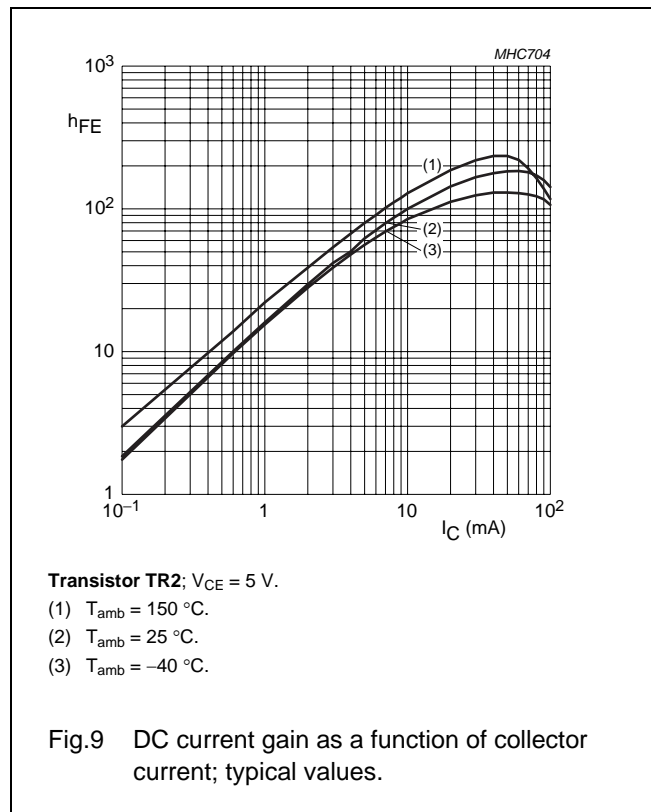
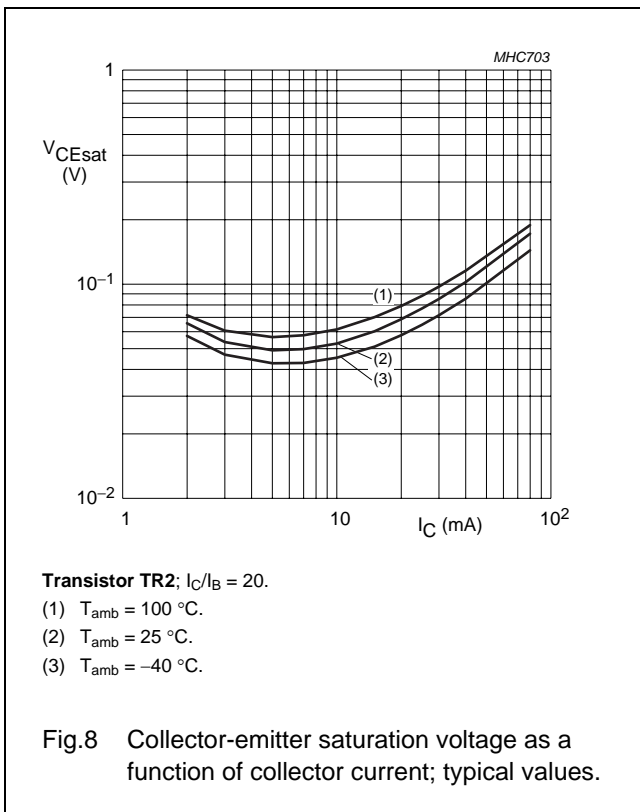
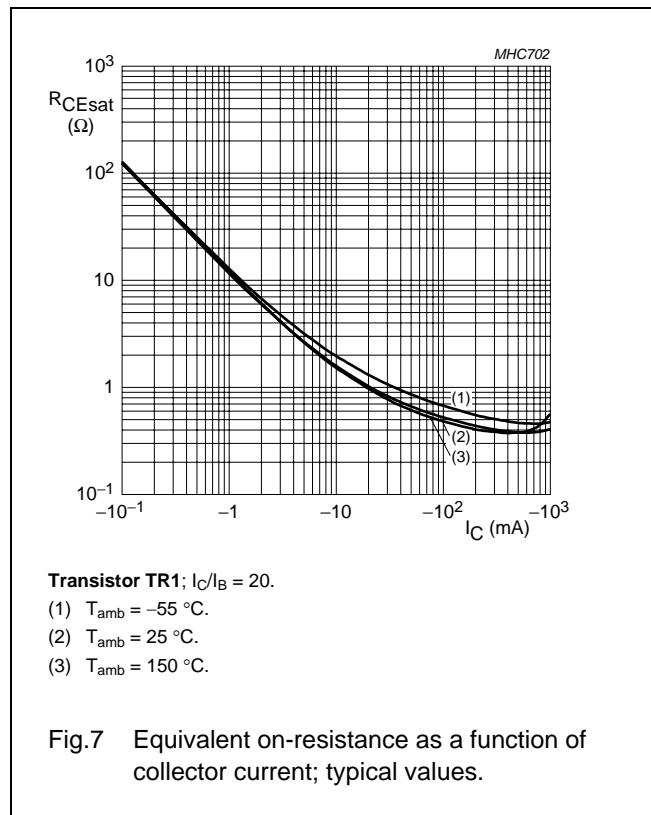
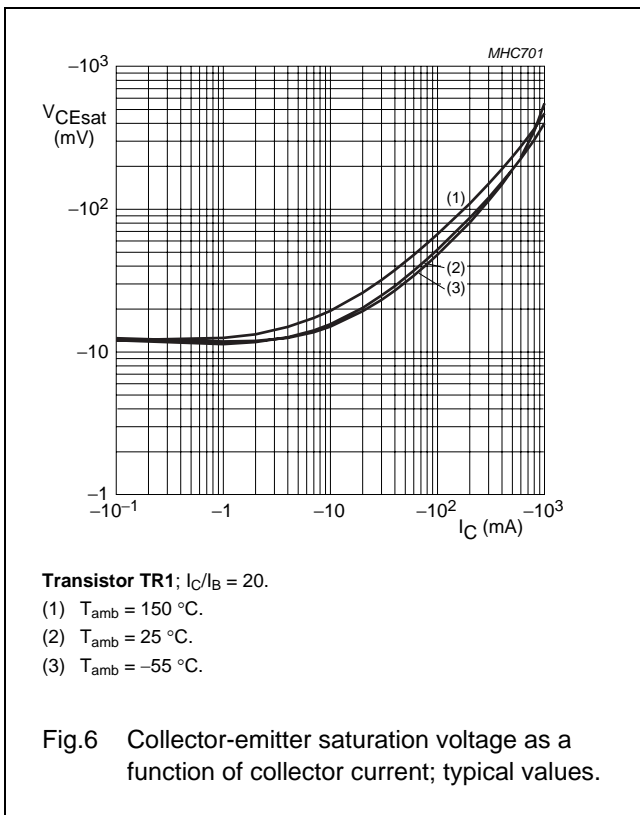
12 V PNP loadswitch

PEMF21



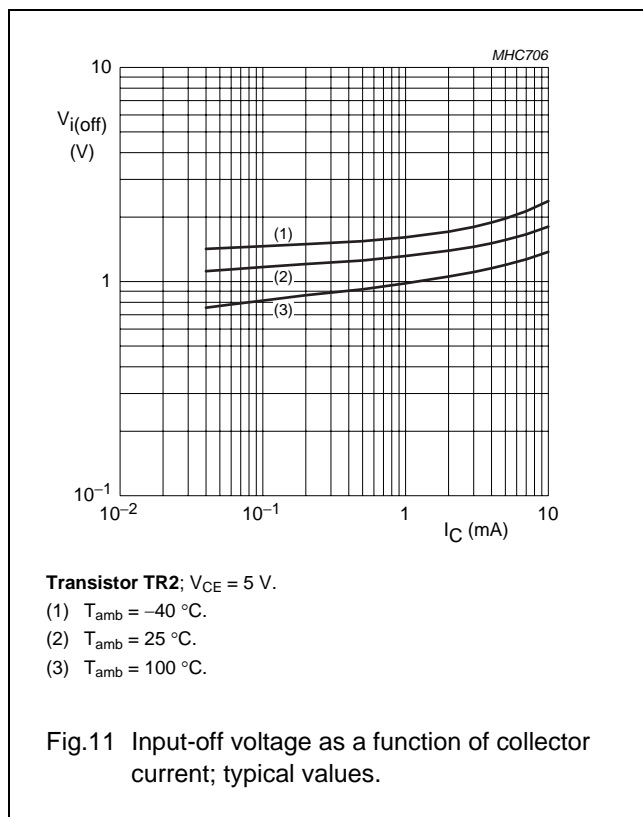
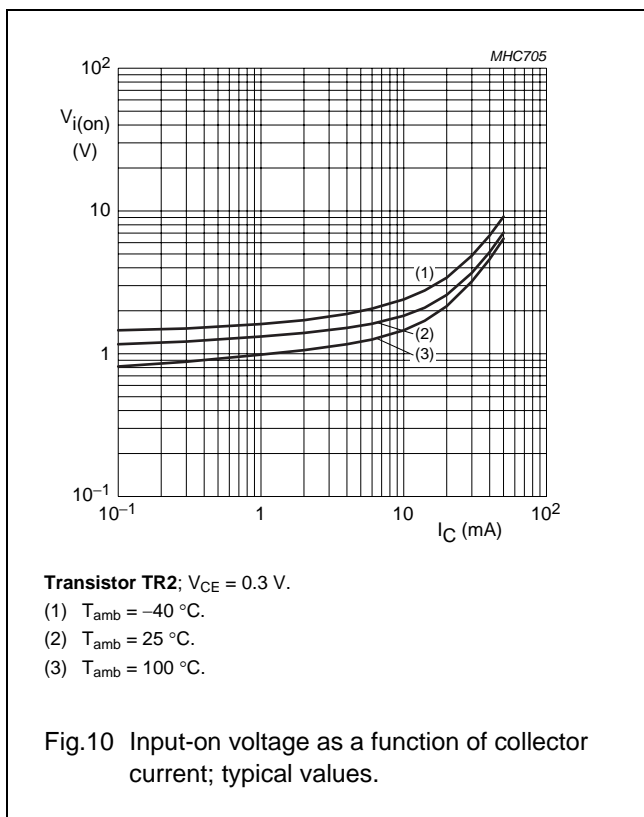
12 V PNP loadswitch

PEMF21



12 V PNP loadswitch

PEMF21



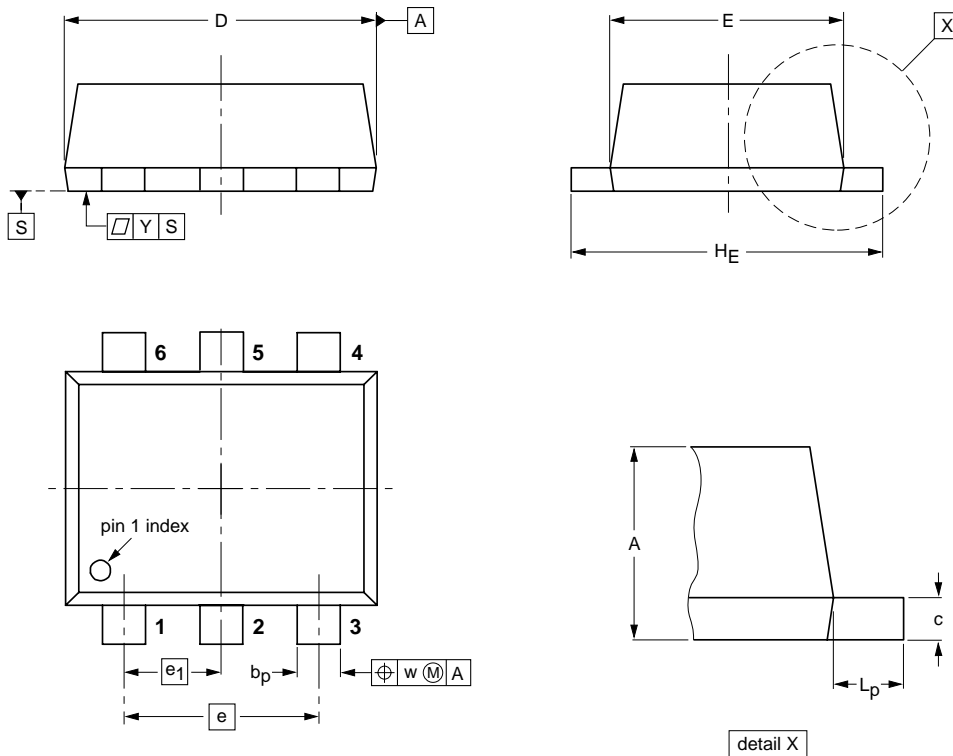
12 V PNP loadswitch

PEMF21

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	JEITA			
SOT666						04-11-08 06-03-16

12 V PNP loadswitch

PEMF21

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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Customer notification

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

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