

DATA SHEET



PEMD48

**NPN/PNP resistor-equipped
transistors; R1, R2 = 47 k Ω , 47 k Ω
and 2.2 k Ω , 47 k Ω**

Product specification
Supersedes data of 2001 Sep 24

2001 Nov 07

NPN/PNP resistor-equipped transistors; R1, R2 = 47 kΩ, 47 kΩ and 2.2 kΩ, 47 kΩ

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FEATURES

- 300 mW total power dissipation
- Very small 1.6 mm × 1.2 mm × 0.55 mm ultra thin package
- Reduces number of components as replacement of two SC-75/SC-89 packaged transistors
- Reduces required board space
- Reduces pick and place costs
- Self alignment during soldering due to straight leads.

APPLICATIONS

- General purpose switching and amplification
- Inverter and interface circuits
- Circuit driver.

DESCRIPTION

NPN/PNP resistor-equipped transistors in a SOT666 plastic package.

MARKING

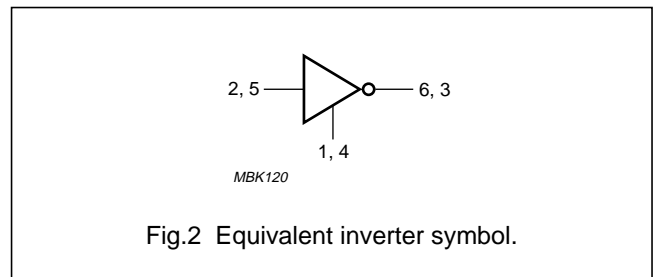
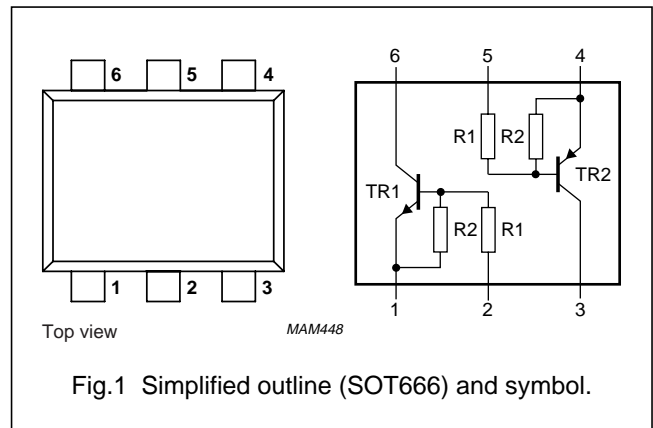
TYPE NUMBER	MARKING CODE
PEMD48	48

PINNING

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

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V _{CEO}	collector-emitter voltage	50	V
I _{CM}	peak collector current	100	mA
Transistor TR1 (NPN)			
R1	bias resistor	47	kΩ
R2	bias resistor	47	kΩ
Transistor TR2 (PNP)			
R1	bias resistor	2.2	kΩ
R2	bias resistor	47	kΩ



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LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per transistor; for the PNP transistor with negative polarity					
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 TR1				
	positive		–	+40	V
	negative		–	–10	V
	input voltage TR2				
	positive		–	+5	V
	negative		–	–12	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
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	operating ambient temperature		–65	+150	°C
Per device					
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C; note 1	–	300	mW

Note

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

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
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. The only recommended soldering method is reflow soldering.

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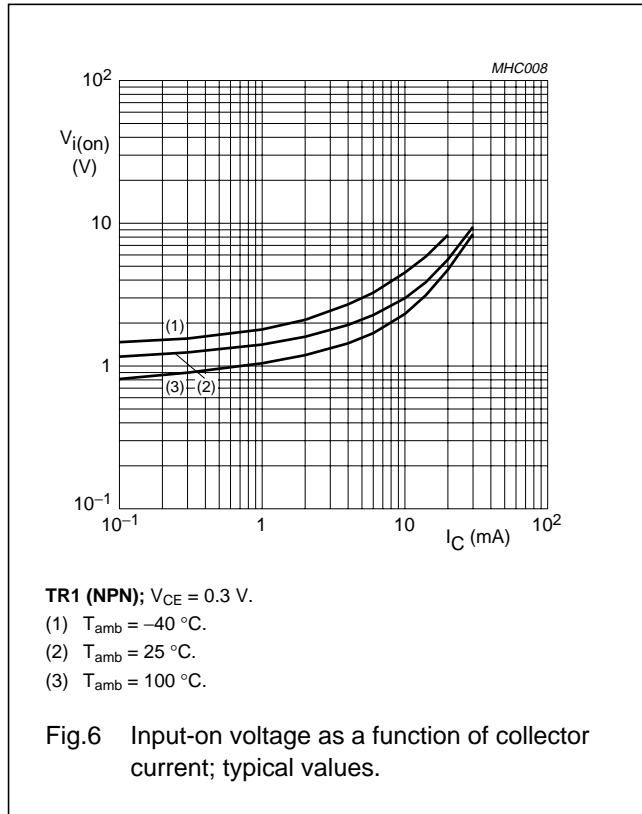
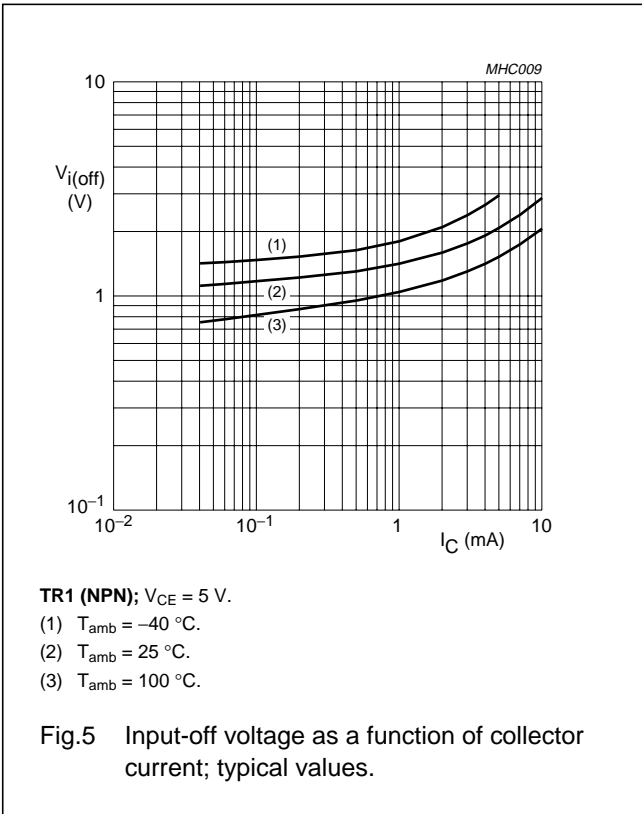
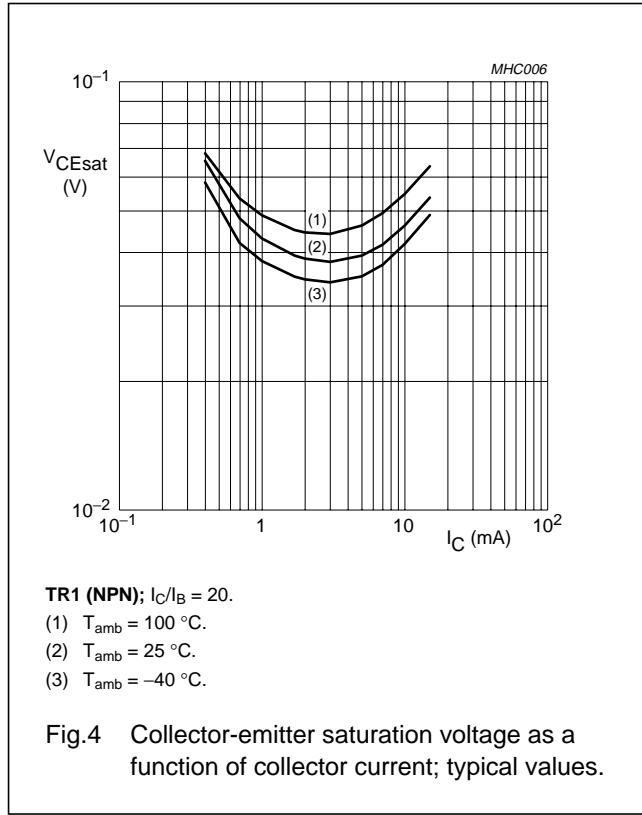
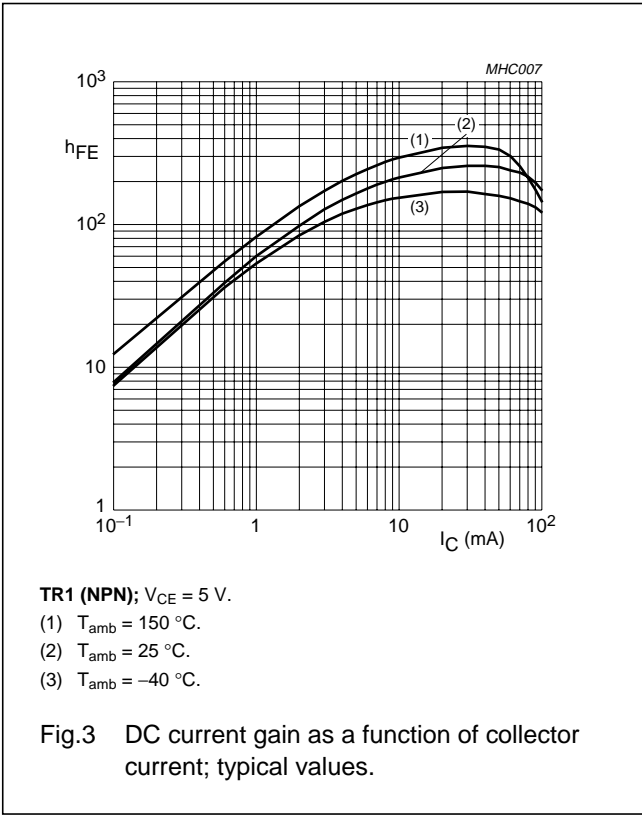
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CHARACTERISTICST_{amb} = 25 °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Per transistor; for the PNP transistor with negative polarity						
I _{CBO}	collector cut-off current	I _E = 0; V _{CB} = 50 V	–	–	100	nA
I _{CEO}	collector cut-off current	I _B = 0; V _{CE} = 50 V	–	–	1	μ A
		I _B = 0; V _{CE} = 30 V; T _j = 150 °C	–	–	50	μ A
Transistor TR1 (NPN)						
I _{EBO}	emitter cut-off current	I _C = 0; V _{EB} = 5 V	–	–	90	μ A
h _{FE}	DC current gain	I _C = 5 mA; V _{CE} = 5 V	80	–	–	
V _{CEsat}	collector-emitter saturation voltage	I _C = 10 mA; I _B = 0.5 mA	–	–	150	mV
V _{i(off)}	input off voltage	I _C = 100 μ A; V _{CE} = 5 V	–	1.2	0.8	V
V _{i(on)}	input on voltage	I _C = 2 mA; V _{CE} = 0.3 V	3	0.6	–	V
R1	input resistor		33	47	61	k Ω
$\frac{R2}{R1}$	resistor ratio		0.8	1	1.2	
C _c	collector capacitance	I _E = I _e = 0; V _{CB} = 10 V; f = 1 MHz	–	–	2.5	pF
Transistor TR2 (PNP)						
I _{EBO}	emitter cut-off current	I _C = 0; V _{EB} = –5 V	–	–	–180	μ A
h _{FE}	DC current gain	I _C = –10 mA; V _{CE} = –5 V	100	–	–	
V _{CEsat}	collector-emitter saturation voltage	I _C = –5 mA; I _B = –0.25 mA	–	–	–100	mV
V _{i(off)}	input off voltage	I _C = –100 μ A; V _{CE} = –5 V	–	–0.6	–0.5	V
V _{i(on)}	input on voltage	I _C = –5 mA; V _{CE} = –0.3 V	–1.1	–0.75	–	V
R1	input resistor		1.54	2.2	2.86	k Ω
$\frac{R2}{R1}$	resistor ratio		17	21	26	
C _c	collector capacitance	I _E = I _e = 0; V _{CB} = –10 V; f = 1 MHz	–	–	3	pF

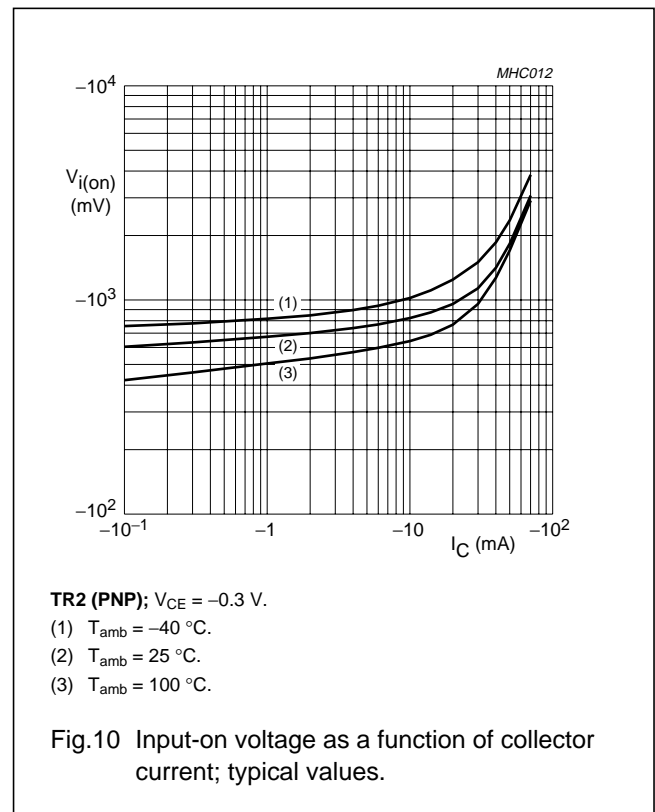
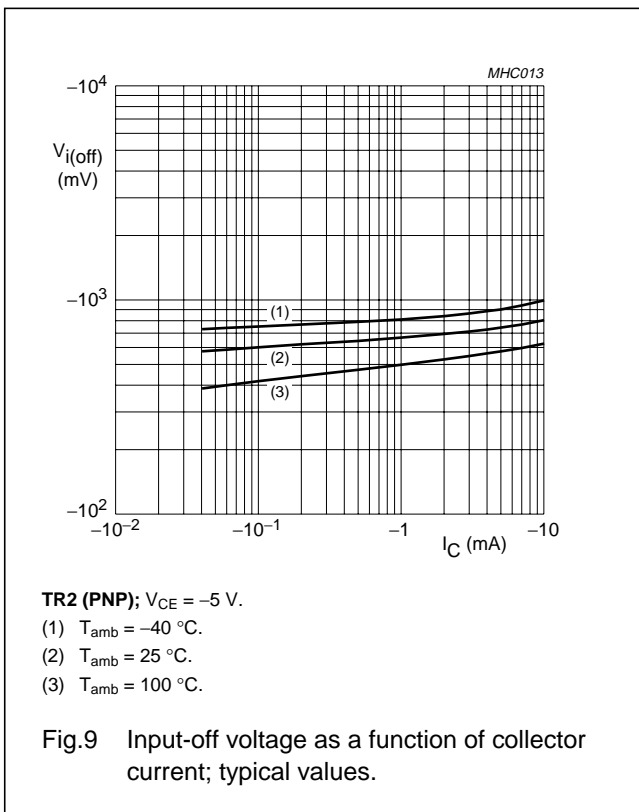
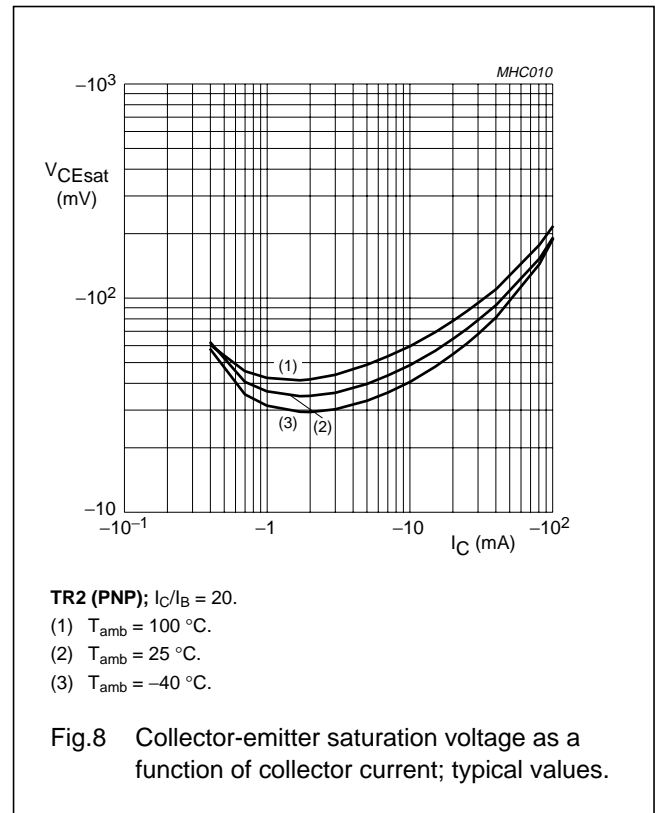
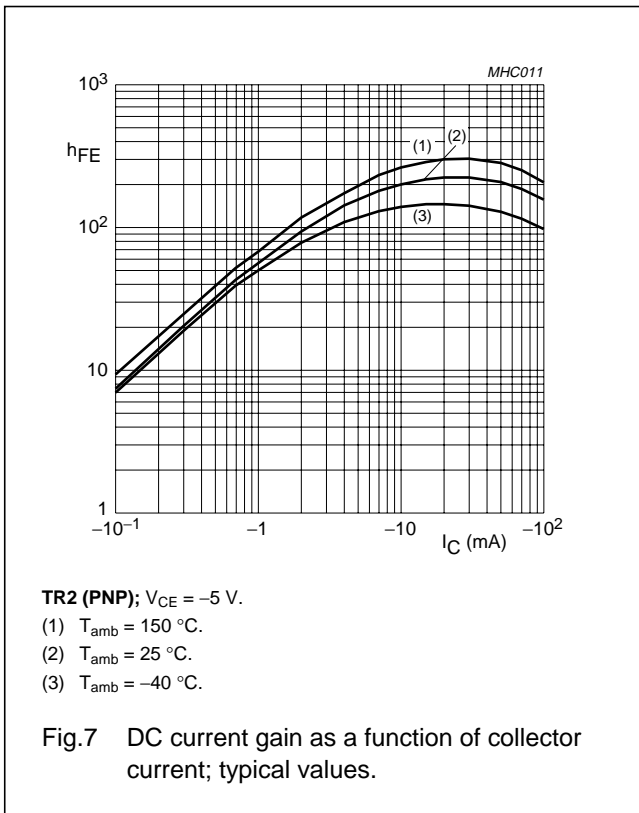
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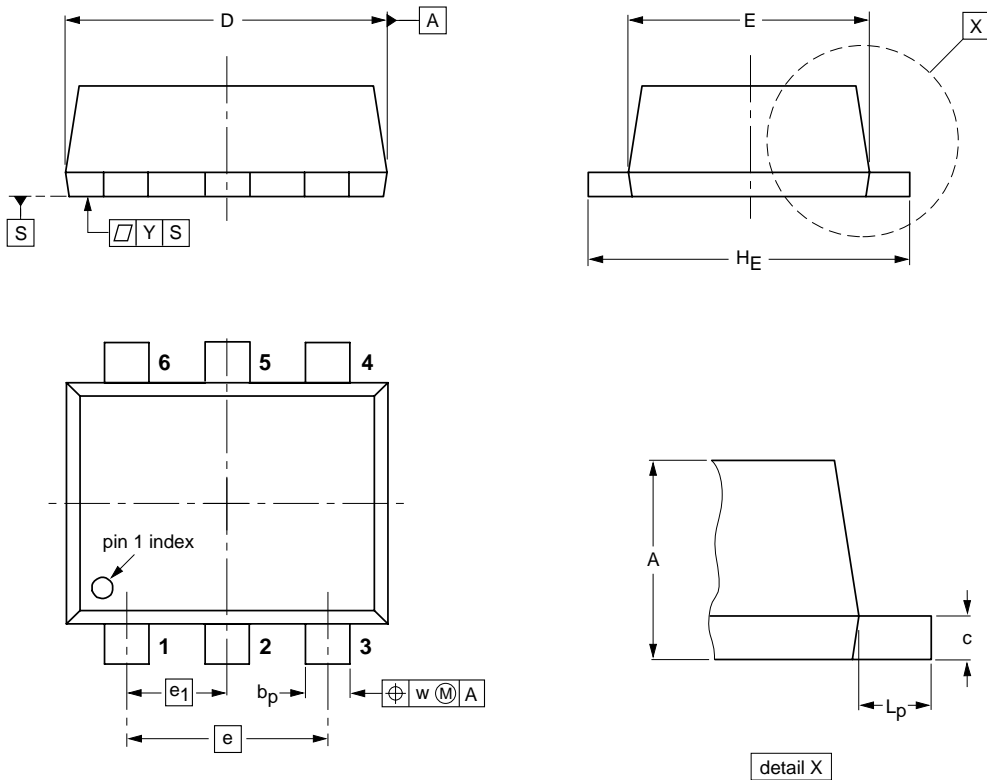
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PACKAGE OUTLINE

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

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DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
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NOTES

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