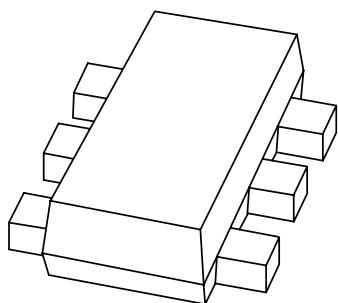


DATA SHEET



PEMH9 NPN resistor-equipped transistors; $R1 = 10 \text{ k}\Omega$, $R2 = 47 \text{ k}\Omega$

Product specification
Supersedes data of 2001 Oct 22

2001 Nov 07

NPN resistor-equipped transistors; R1 = 10 kΩ, R2 = 47 kΩ

PEMH9

FEATURES

- 300 mW total power dissipation
- Very small 1.6 × 1.2 mm ultra thin package
- Self alignment during soldering due to straight leads
- Replaces two SC-75/SC-89 packaged transistors on same PCB area
- Reduces required PCB area
- Reduced pick and place costs.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{CEO}	collector-emitter voltage	50	V
I_{CM}	peak collector current	100	mA
TR1	NPN	—	—
TR2	NPN	—	—
R1	bias resistor	10	kΩ
R2	bias resistor	47	kΩ

APPLICATIONS

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

PINNING

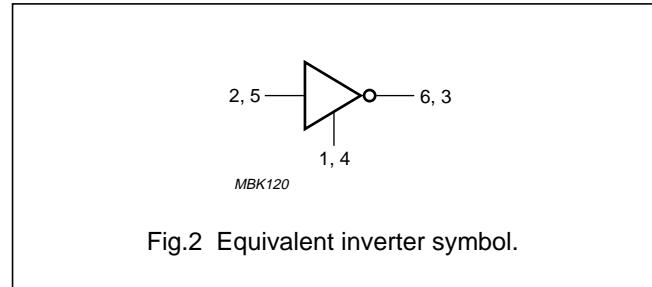
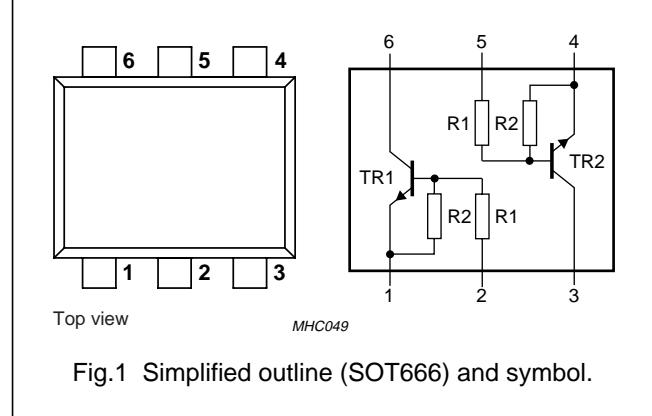
PIN	DESCRIPTION
1, 4	emitter TR1; TR2
2, 5	base TR1; TR2
6, 3	collector TR1; TR2

DESCRIPTION

NPN resistor-equipped transistors in a SOT666 plastic package.

MARKING

TYPE NUMBER	MARKING CODE
PEMH9	H9



NPN resistor-equipped transistors;
 R1 = 10 kΩ, R2 = 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					
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
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.

NPN resistor-equipped transistors;
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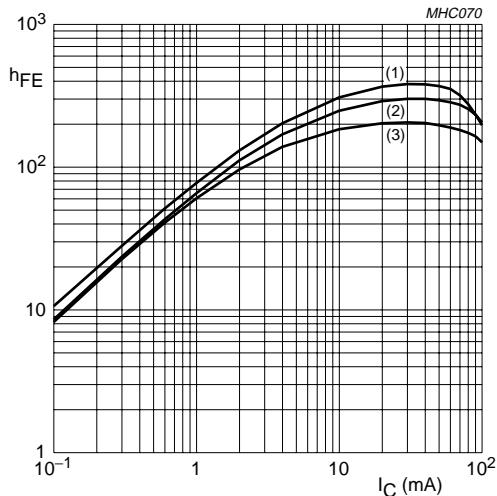
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CHARACTERISTICS $T_{\text{amb}} = 25 \text{ }^{\circ}\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Per transistor						
I_{CBO}	collector-base cut-off current	$V_{\text{CB}} = 50 \text{ V}$; $I_E = 0$	—	—	100	nA
I_{CEO}	collector-emitter cut-off current	$V_{\text{CE}} = 50 \text{ V}$; $I_B = 0$	—	—	1	μA
		$V_{\text{CE}} = 30 \text{ V}$; $I_B = 0$; $T_j = 150 \text{ }^{\circ}\text{C}$	—	—	50	μA
I_{EBO}	emitter-base cut-off current	$V_{\text{EB}} = 5 \text{ V}$; $I_C = 0$	—	—	150	μA
h_{FE}	DC current gain	$V_{\text{CE}} = 5 \text{ V}$; $I_C = 5 \text{ mA}$	100	—	—	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 5 \text{ mA}$; $I_B = 0.25 \text{ mA}$	—	—	100	mV
$V_{i(\text{off})}$	input off voltage	$V_{\text{CE}} = 5 \text{ V}$; $I_C = 100 \mu\text{A}$	—	0.7	0.5	V
$V_{i(\text{on})}$	input on voltage	$V_{\text{CE}} = 0.3 \text{ V}$; $I_C = 1 \text{ mA}$	1.4	0.8	—	V
$R1$	input resistor		7	10	13	$\text{k}\Omega$
$\frac{R2}{R1}$	resistor ratio		3.7	4.7	5.7	
C_c	collector capacitance	$I_E = i_e = 0$; $V_{\text{CB}} = 10 \text{ V}$; $f = 1 \text{ MHz}$	—	—	2.5	pF

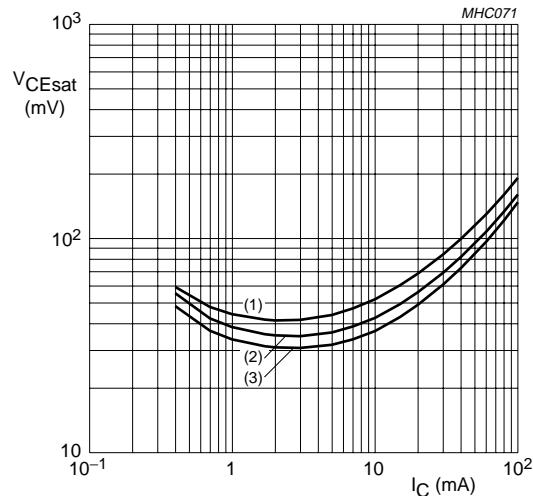
NPN resistor-equipped transistors;
 R1 = 10 k Ω , R2 = 47 k Ω

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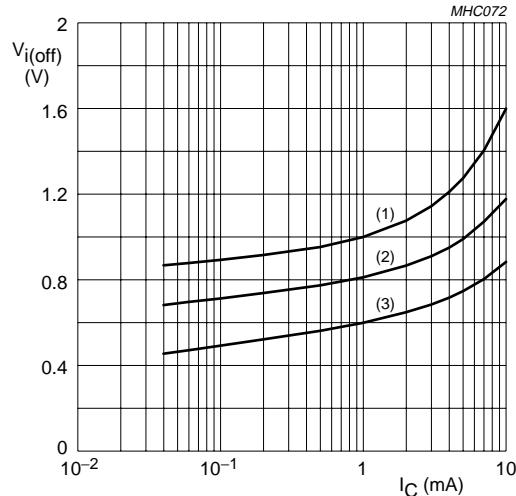
$V_{CE} = 5$ V.
 (1) $T_{amb} = 100$ °C.
 (2) $T_{amb} = 25$ °C.
 (3) $T_{amb} = -40$ °C.

Fig.3 DC current gain as a function of collector current; typical values.



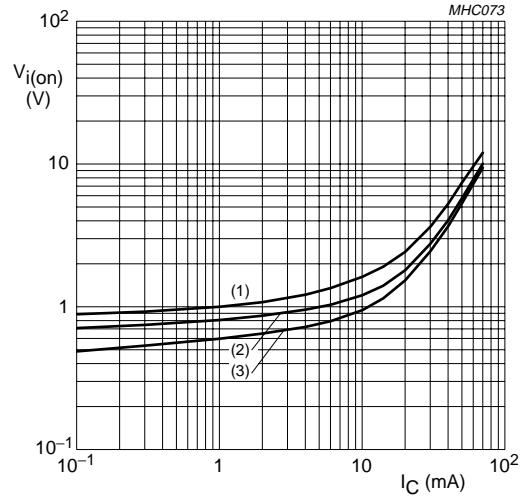
$I_C/I_B = 20$.
 (1) $T_{amb} = 100$ °C.
 (2) $T_{amb} = 25$ °C.
 (3) $T_{amb} = -40$ °C.

Fig.4 Collector-emitter saturation voltage as a function of collector current; typical values.



$V_{CE} = 5$ V.
 (1) $T_{amb} = -40$ °C.
 (2) $T_{amb} = 25$ °C.
 (3) $T_{amb} = 100$ °C.

Fig.5 Input-off voltage as a function of collector current; typical values.



$V_{CE} = 0.3$ V.
 (1) $T_{amb} = -40$ °C.
 (2) $T_{amb} = 25$ °C.
 (3) $T_{amb} = 100$ °C.

Fig.6 Input-on voltage as a function of collector current; typical values.

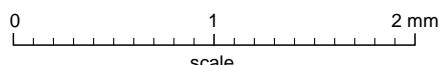
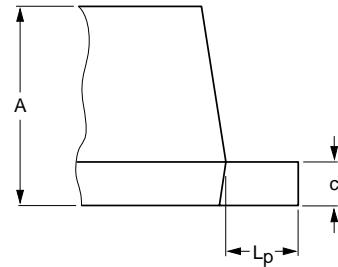
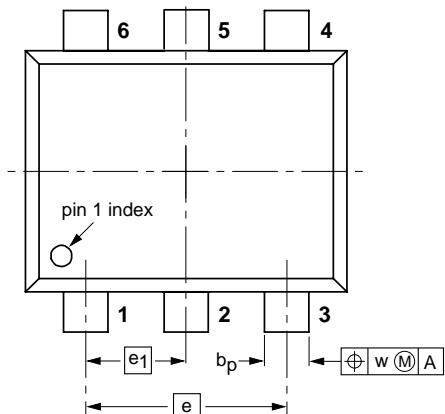
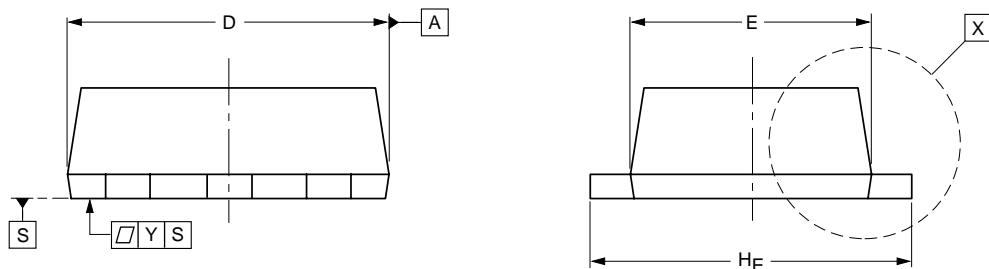
NPN resistor-equipped transistors;
 R1 = 10 k Ω , R2 = 47 k Ω

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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	0.27	0.18	1.7	1.3	1.0	0.5	1.7	0.3	0.1	0.1
	0.5	0.17	0.08	1.5	1.1			1.5	0.1		

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

NPN resistor-equipped transistors;
 R1 = 10 kΩ, R2 = 47 kΩ

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Printed in The Netherlands

613514/02/008

Date of release: 2001 Nov 07

Document order number: 9397 750 09049

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