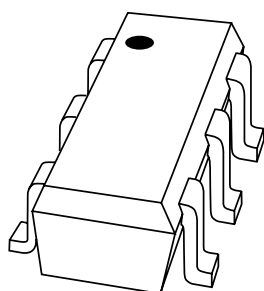


DATA SHEET



PUMB9

PNP resistor-equipped double
transistor; $R1 = 10\text{ k}\Omega$, $R2 = 47\text{ k}\Omega$

Objective specification

2003 Feb 03

PNP resistor-equipped double transistor;
R1 = 10 kΩ, R2 = 47 kΩ

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FEATURES

- Built-in bias resistors: R1 (typ. 10 kΩ); R2 (typ. 47 kΩ)
- Simplification of circuit design
- Reduces number of components and board space.

APPLICATIONS

- Interface circuits
- Load driver in digital circuits.

DESCRIPTION

PNP resistor-equipped double transistor in an SC-88 (SOT363) plastic package.

MARKING

TYPE NUMBER	MARKING CODE ⁽¹⁾
PUMB9	B*9

Note

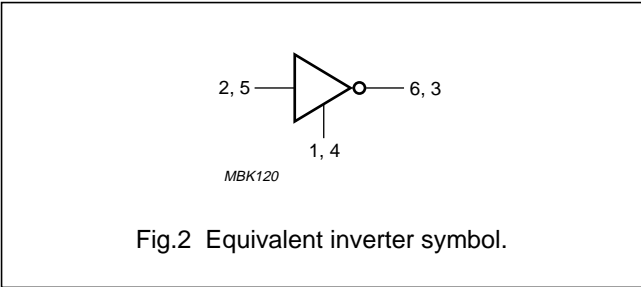
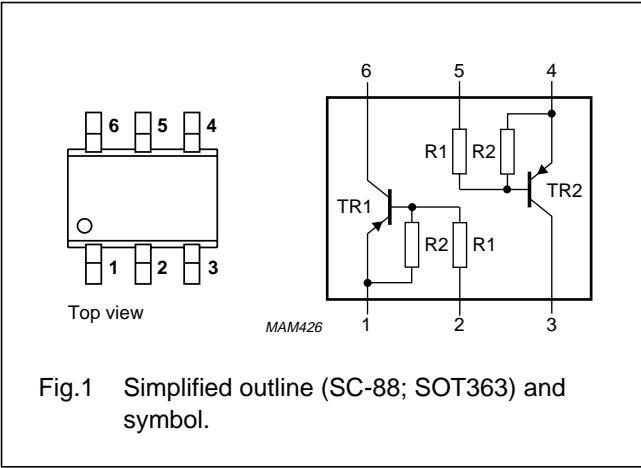
1. * = p: Made in Hong Kong.
* = t: Made in Malaysia.

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
TR1	PNP	−	−
TR2	PNP	−	−
R1	bias resistor	10	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					
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		–	+6	V
	negative		–	–40	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, single-sided copper, tinplated and standard footprint.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-a}	thermal resistance from junction to ambient	note 1	416	K/W

Note

1. Transistor mounted on an FR4 printed-circuit board, single-sided copper, tinplated and standard footprint.

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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	$V_{\text{CB}} = -50\text{ V}$; $I_{\text{E}} = 0$	–	–	–100	nA
I_{CEO}	collector-emitter cut-off current	$V_{\text{CE}} = -30\text{ V}$; $I_{\text{B}} = 0$	–	–	–1	μA
		$V_{\text{CE}} = -30\text{ V}$; $I_{\text{B}} = 0$; $T_{\text{j}} = 150\text{ }^{\circ}\text{C}$	–	–	–50	μA
I_{EBO}	emitter-base cut-off current	$V_{\text{EB}} = -5\text{ V}$; $I_{\text{C}} = 0$	–	–	–150	μA
h_{FE}	DC current gain	$V_{\text{CE}} = -5\text{ V}$; $I_{\text{C}} = -5\text{ mA}$	100	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_{\text{C}} = -5\text{ mA}$; $I_{\text{B}} = -0.25\text{ mA}$	–	–	–100	mV
$V_{\text{i(off)}}$	input-off voltage	$V_{\text{CE}} = -5\text{ V}$; $I_{\text{C}} = -100\text{ }\mu\text{A}$	–	–	–0.5	V
$V_{\text{i(on)}}$	input-on voltage	$V_{\text{CE}} = -0.3\text{ V}$; $I_{\text{C}} = -1\text{ mA}$	–1.4	–	–	V
R_1	input resistor		7	10	13	$\text{k}\Omega$
$\frac{R_2}{R_1}$	resistor ratio		3.7	4.7	5.7	
C_{c}	collector capacitance	$I_{\text{E}} = i_{\text{e}} = 0$; $V_{\text{CB}} = -10\text{ V}$; $f = 1\text{ MHz}$	–	–	3	pF

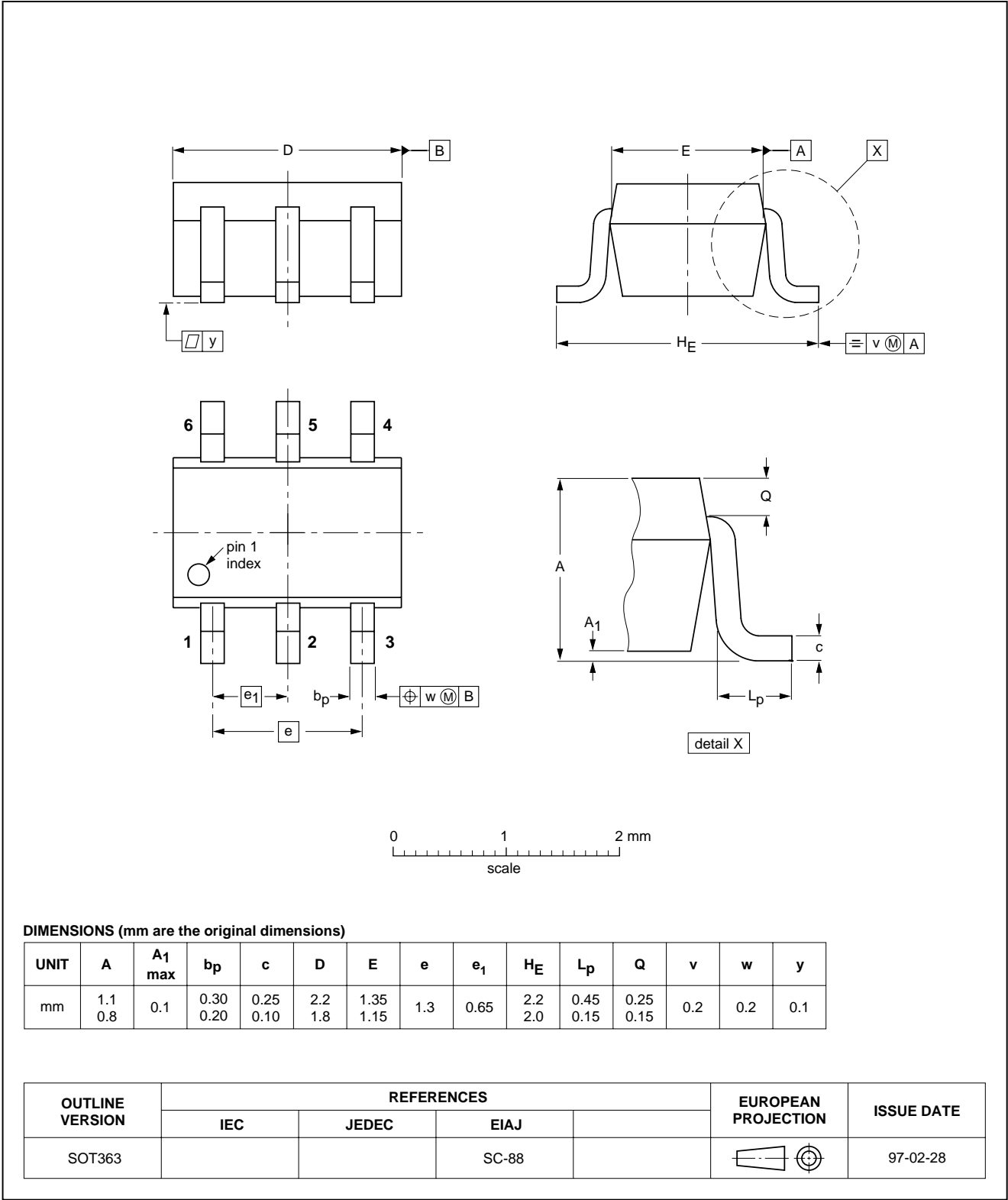
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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT363



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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.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
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Notes

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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

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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NOTES

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