

## Important notice

Dear Customer,

On 7 February 2017 the former NXP Standard Product business became a new company with the tradename **Nexperia**. Nexperia is an industry leading supplier of Discrete, Logic and PowerMOS semiconductors with its focus on the automotive, industrial, computing, consumer and wearable application markets

In data sheets and application notes which still contain NXP or Philips Semiconductors references, use the references to Nexperia, as shown below.

Instead of <http://www.nxp.com>, <http://www.philips.com/> or <http://www.semiconductors.philips.com/>, use <http://www.nexperia.com>

Instead of [sales.addresses@www.nxp.com](mailto:sales.addresses@www.nxp.com) or [sales.addresses@www.semiconductors.philips.com](mailto:sales.addresses@www.semiconductors.philips.com), use [salesaddresses@nexperia.com](mailto:salesaddresses@nexperia.com) (email)

Replace the copyright notice at the bottom of each page or elsewhere in the document, depending on the version, as shown below:

- © NXP N.V. (year). All rights reserved or © Koninklijke Philips Electronics N.V. (year). All rights reserved

Should be replaced with:

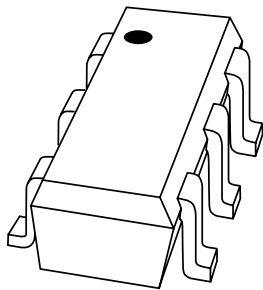
- © **Nexperia B.V. (year). All rights reserved.**

If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via [salesaddresses@nexperia.com](mailto:salesaddresses@nexperia.com)). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

# DATA SHEET



## **PUMF11**

**NPN resistor-equipped transistor;  
PNP general purpose transistor**

# NPN resistor-equipped transistor; PNP general purpose transistor

PUMF11

## FEATURES

- Resistor-equipped transistor and general purpose transistor in one package
- 100 mA collector current
- 50 V collector-emitter voltage
- 300 mW total power dissipation
- SOT363 package; replaces two SOT323 (SC-70) packaged devices on same PCB area
- Reduced pick and place costs.

## APPLICATIONS

- Power management switch for portable equipment, e.g. cellular phone and CD player
- Switch for regulator.

## DESCRIPTION

NPN resistor-equipped transistor and a PNP general purpose transistor in a SOT363 (SC-88) plastic package.

## MARKING

TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PUMF11	R1*

### Note

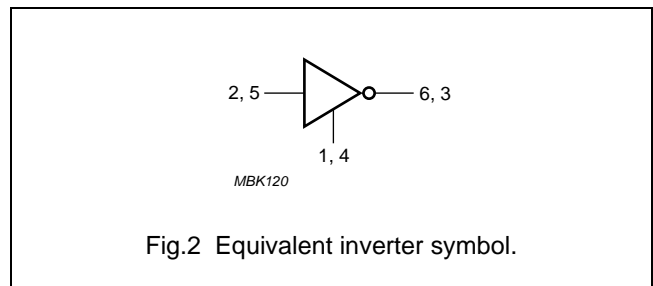
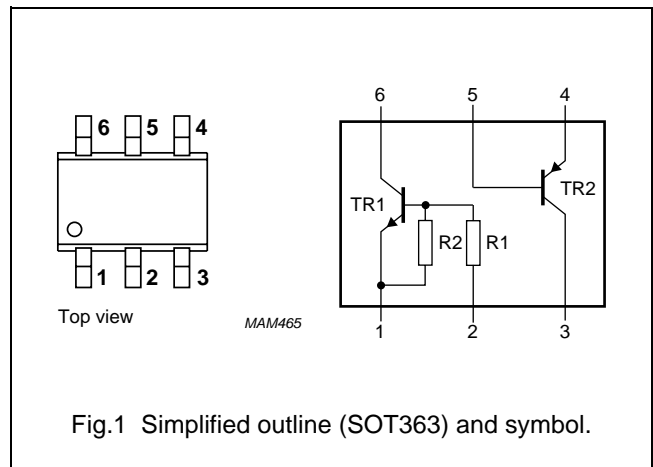
- \* = p: Made in Hong Kong.  
\* = t: Made in Malaysia.

## QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
<b>TR1 (NPN)</b>			
$V_{CEO}$	collector-emitter voltage	50	V
$I_O$	output current (DC)	100	mA
R1	bias resistor	22	k $\Omega$
R2	bias resistor	47	k $\Omega$
<b>TR2 (PNP)</b>			
$V_{CEO}$	collector-emitter voltage	50	V
$I_C$	collector current (DC)	100	mA
$I_{CM}$	peak collector current	200	mA

## PINNING

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



# NPN resistor-equipped transistor; PNP general purpose transistor

PUMF11

## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
<b>Per transistor</b>					
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; 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
<b>TR1 (NPN)</b>					
$V_{CBO}$	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
<b>TR2 (PNP)</b>					
$V_{CBO}$	collector-base voltage	open emitter	–	–50	V
$V_{CEO}$	collector-emitter voltage	open base	–	–40	V
$V_{EBO}$	emitter-base voltage	open collector	–	–5	V
$I_c$	collector current (DC)		–	–100	mA
$I_{CM}$	peak collector current		–	–200	mA
<b>Per device</b>					
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; note 1	–	300	mW

### Note

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

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	in free air; note 1	416	K/W

### Note

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

NPN resistor-equipped transistor; PNP  
general purpose transistor

PUMF11

**CHARACTERISTICS**

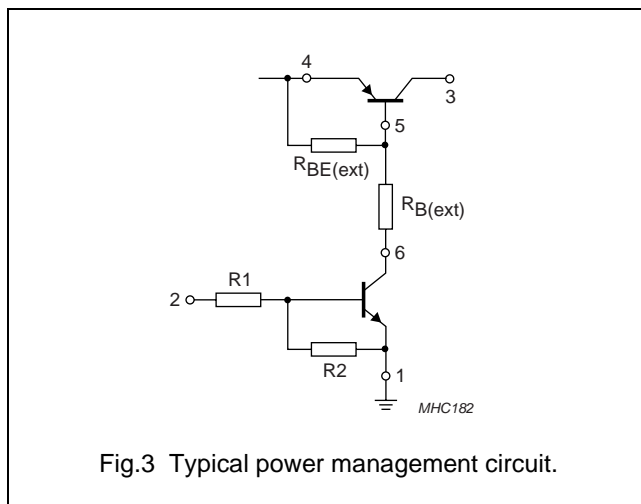
T<sub>amb</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>TR1 (NPN)</b>						
I <sub>CBO</sub>	collector-base cut-off current	V <sub>CB</sub> = 50 V; I <sub>E</sub> = 0	–	–	100	nA
I <sub>CEO</sub>	collector-emitter cut-off current	V <sub>CE</sub> = 30 V; I <sub>B</sub> = 0	–	–	1	μA
		V <sub>CE</sub> = 30 V; I <sub>B</sub> = 0; T <sub>j</sub> = 150 °C	–	–	50	μA
I <sub>EBO</sub>	emitter-base cut-off current	V <sub>EB</sub> = 5 V; I <sub>C</sub> = 0	–	–	0.12	mA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = 5 V; I <sub>C</sub> = 5 mA	80	–	–	
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = 10 mA; I <sub>B</sub> = 0.5 mA	–	–	150	mV
V <sub>i(off)</sub>	input off voltage	V <sub>CE</sub> = 5 V; I <sub>C</sub> = 100 μA	–	0.9	0.5	V
V <sub>i(on)</sub>	input on voltage	V <sub>CE</sub> = 0.3 V; I <sub>C</sub> = 2 mA	2	1.1	–	V
R1	input resistor		15.4	22	28.6	kΩ
$\frac{R2}{R1}$	resistor ratio		1.7	2.1	2.6	
C <sub>c</sub>	collector capacitance	V <sub>CB</sub> = 10 V; I <sub>E</sub> = i <sub>e</sub> = 0; f = 1 MHz	–	–	2.5	pF
<b>TR2 (PNP)</b>						
I <sub>CBO</sub>	collector-base cut-off current	V <sub>CB</sub> = –30 V; I <sub>E</sub> = 0	–	–	–100	nA
I <sub>CEO</sub>	collector-emitter cut-off current	V <sub>CB</sub> = –30 V; I <sub>B</sub> = 0; T <sub>j</sub> = 150 °C	–	–	–10	μA
I <sub>EBO</sub>	emitter-base cut-off current	V <sub>EB</sub> = –4 V; I <sub>C</sub> = 0	–	–	–100	nA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = –6 V; I <sub>C</sub> = –1 mA	120	–	–	
V <sub>CEsat</sub>	saturation voltage	I <sub>C</sub> = –50 mA; I <sub>B</sub> = –5 mA; note 1	–	–	–200	mV
C <sub>c</sub>	collector capacitance	V <sub>CB</sub> = –12 V; I <sub>E</sub> = i <sub>e</sub> = 0; f = 1 MHz	–	–	2.2	pF
f <sub>T</sub>	transition frequency	V <sub>CE</sub> = –12 V; I <sub>C</sub> = –2 mA; f = 100 MHz	100	–	–	MHz

**Note**

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

**APPLICATION INFORMATION**



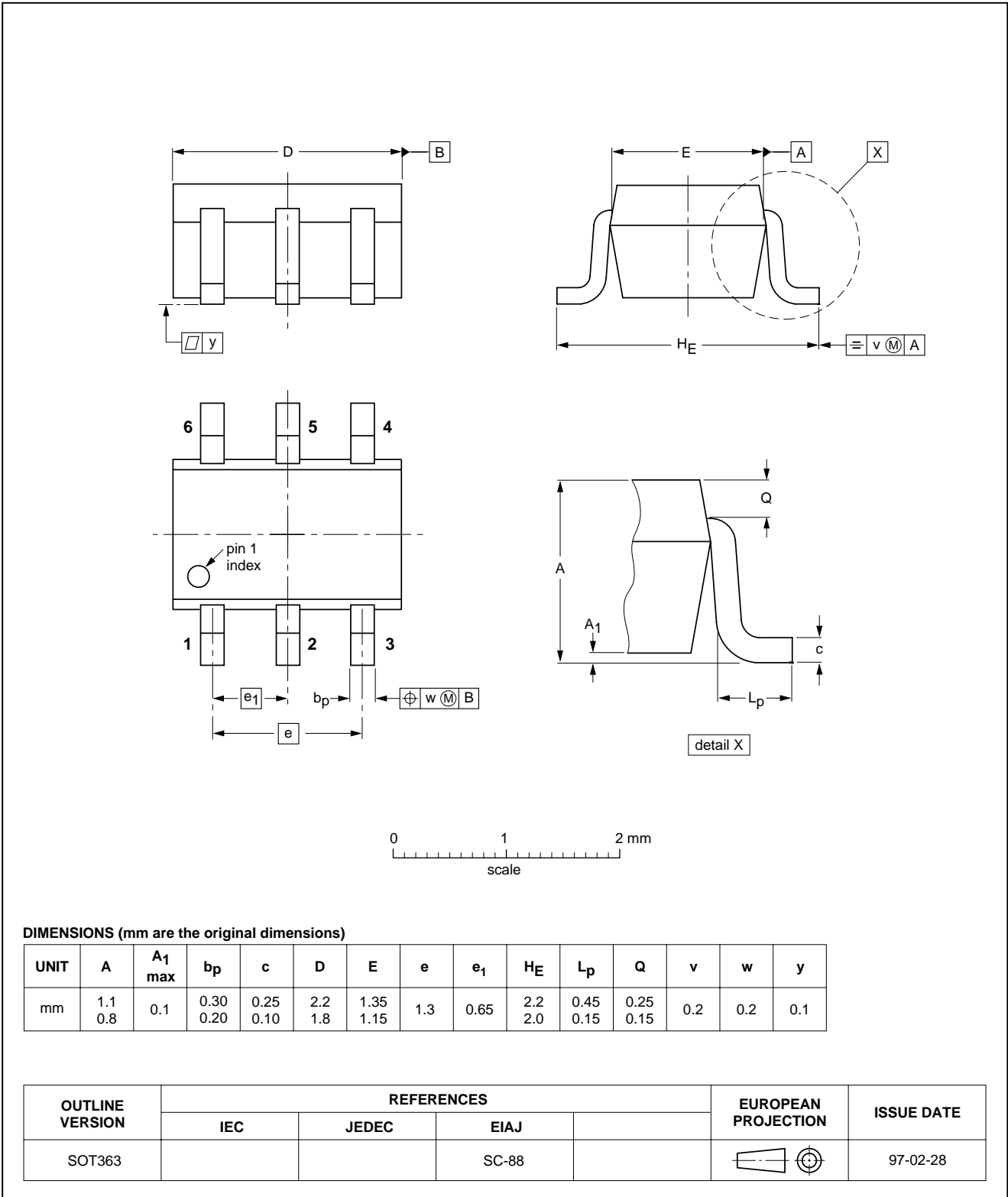
NPN resistor-equipped transistor; PNP  
general purpose transistor

PUMF11

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT363



# NPN resistor-equipped transistor; PNP general purpose transistor

PUMF11

## DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	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.

## Notes

1. Please consult the most recently issued document before initiating or completing a design.
2. The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

## DISCLAIMERS

**General** — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

**Right to make changes** — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

**Suitability for use** — NXP Semiconductors products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of an NXP Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental damage. NXP Semiconductors accepts no liability for inclusion and/or use of NXP Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

**Applications** — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

**Limiting values** — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) may cause permanent damage to the device. Limiting values are stress ratings only and operation of the device at these or any other conditions

above those given in the Characteristics sections of this document is not implied. Exposure to limiting values for extended periods may affect device reliability.

**Terms and conditions of sale** — NXP Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at <http://www.nxp.com/profile/terms>, including those pertaining to warranty, intellectual property rights infringement and limitation of liability, unless explicitly otherwise agreed to in writing by NXP Semiconductors. In case of any inconsistency or conflict between information in this document and such terms and conditions, the latter will prevail.

**No offer to sell or license** — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

**Export control** — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from national authorities.

**Quick reference data** — The Quick reference data is an extract of the product data given in the Limiting values and Characteristics sections of this document, and as such is not complete, exhaustive or legally binding.

# ***NXP Semiconductors***

## **Customer notification**

This data sheet was changed to reflect the new company name NXP Semiconductors. No changes were made to the content, except for the legal definitions and disclaimers.

## **Contact information**

For additional information please visit: **<http://www.nxp.com>**

For sales offices addresses send e-mail to: **[salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)**

© NXP B.V. 2009

All rights are reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.

The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Printed in The Netherlands

613514/01/pp7

Date of release: 2002 Apr 09

Document order number: 9397 750 09388







Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.