**Product data sheet** 

## 1. General description

NPN/PNP double transistor in a SOT666 ultra small and flat lead Surface-Mounted Device (SMD) plastic package.

### 2. Features and benefits

- 300 mW total power dissipation
- Very small 1.6 x 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
- · Reduced required PCB area
- Reduced pick and place costs.

## 3. Applications

- · General purpose switching and amplification
- Complementary MOSFET driver for switch mode power supply
- · Complementary driver for audio amplifiers.

### 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Тур	Max	Unit	
Per transistor; for the PNP transistor with negative polarity								
V <sub>CEO</sub>	collector-emitter voltage	open base		-	-	40	V	
I <sub>C</sub>	collector current			-	-	100	mA	
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = 6 V; I <sub>C</sub> = 1 mA; T <sub>amb</sub> = 25 °C		120	-	-		

## 5. Pinning information

**Table 2. Pinning information** 

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	E1	emitter TR1	6 5 4	C1 B2 E2
2	B1	base TR1		
3	C2	collector TR2		(TR1) TR2)
4	E2	emitter TR2	0	
5	B2	base TR2	1 2 3	
6	C1	collector TR1	SOT666	sym019



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## 6. Ordering information

#### **Table 3. Ordering information**

Type number	Package				
	Name	Description	Version		
PEMZ1	SOT666	plastic, surface-mounted package; 6 leads; 0.5 mm pitch; 1.6 mm x 1.2 mm x 0.55 mm body	<u>SOT666</u>		

## 7. Marking

#### Table 4. Marking codes

Type number	Marking code
PEMZ1	FZ

## 8. Limiting values

#### Table 5. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
Per transist	or; for the PNP transistor wit	h negative polarity		'	'	'
V <sub>CBO</sub>	collector-base voltage	open emitter		-	50	V
V <sub>CEO</sub>	collector-emitter voltage	open base		-	40	V
V <sub>EBO</sub>	emitter-base voltage	open collector		-	5	V
I <sub>C</sub>	collector current			-	100	mA
I <sub>CM</sub>	peak collector current			-	200	mA
I <sub>BM</sub>	peak base current			-	200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[1]	-	200	mW
Per device						
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[1]	-	300	mW
T <sub>j</sub>	junction temperature			-	150	°C
T <sub>amb</sub>	ambient temperature			-65	150	°C
T <sub>stg</sub>	storage temperature			-65	150	°C

<sup>[1]</sup> Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

### 9. Thermal characteristics

#### **Table 6. Thermal characteristics**

Symbol	Parameter	Conditions		Min	Тур	Max	Unit
uiy-a)	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	416	K/W

<sup>[1]</sup> Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

<sup>[2]</sup> Reflow soldering is the only recommended soldering method.

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### 10. Characteristics

**Table 7. Characteristics** 

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
Per transis	tor; for the PNP transistor	with negative polarity			<b> </b>	
I <sub>CBO</sub>	collector-base cut-off	V <sub>CB</sub> = 30 V; I <sub>E</sub> = 0 A; T <sub>amb</sub> = 25 °C	-	-	100	nA
	current	V <sub>CB</sub> = 30 V; I <sub>E</sub> = 0 A; T <sub>j</sub> = 150 °C	-	-	10	μΑ
I <sub>EBO</sub>	emitter-base cut-off current	V <sub>EB</sub> = 4 V; I <sub>C</sub> = 0 A; T <sub>amb</sub> = 25 °C	-	-	100	nA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = 6 V; I <sub>C</sub> = 1 mA; T <sub>amb</sub> = 25 °C	120	-	-	
V <sub>CEsat</sub>	collector-emitter saturation voltage	$I_C$ = 50 mA; $I_B$ = 5 mA; pulsed; $t_p \le$ 300 μs; $\delta \le$ 0.02; $T_{amb}$ = 25 °C	-	-	200	mV
f <sub>T</sub>	transition frequency	V <sub>CE</sub> = 12 V; I <sub>C</sub> = 2 mA; f = 100 MHz; T <sub>amb</sub> = 25 °C	100	-	-	MHz
Transistor	1 (NPN)				'	
C <sub>c</sub>	collector capacitance	V <sub>CB</sub> = 12 V; I <sub>E</sub> = 0 A; i <sub>e</sub> = 0 A; f = 1 MHz; T <sub>amb</sub> = 25 °C	-	-	1.5	pF
Transistor :	2 (PNP)					
C <sub>c</sub>	collector capacitance	V <sub>CB</sub> = -12 V; I <sub>E</sub> = 0 A; i <sub>e</sub> = 0 A; f = 1 MHz; T <sub>amb</sub> = 25 °C	-	-	2.2	pF

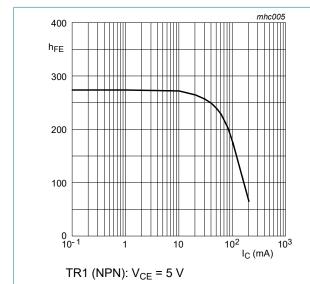


Fig. 1. DC current gain as a function of collector current; typical values

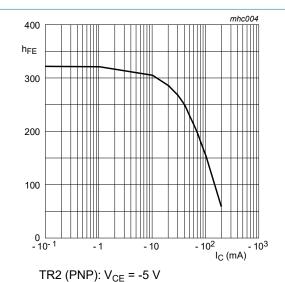
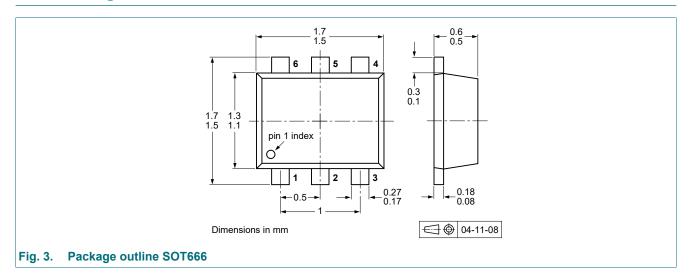


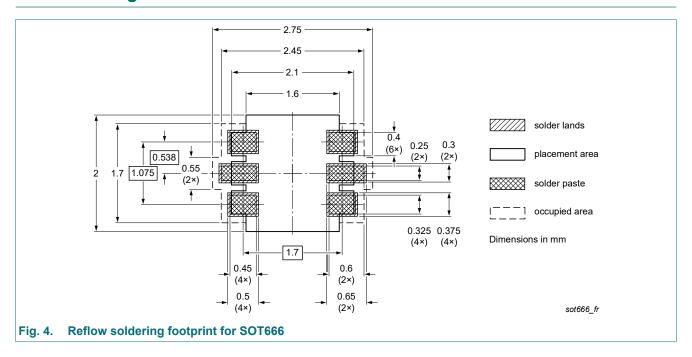
Fig. 2. DC current gain as a function of collector current; typical values

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# 11. Package outline



## 12. Soldering



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# 13. Revision history

#### **Table 8. Revision history**

Table 6. Revision metery							
Data sheet ID	Release date	Data sheet status	Change notice	Supersedes			
PEMZ1 v.3	20221229	Product data sheet	-	PEMZ1 v.2			
Modifications:	<ul> <li>The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li> <li>Legal texts have been adapted to the new company name where appropriate.</li> <li>Product(s) changed to non-automotive qualification.</li> </ul>						
PEMZ1 v.2	20011107	Product data sheet	-	PEMZ1 v.1			
PEMZ1 v.1	20010925	Product data sheet	-	-			

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### 14. Legal information

#### **Data sheet status**

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

- Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
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