2PC4617xMB series

50 V, 100 mA NPN general-purpose transistors

Rev. 1 — 26 March 2012 Product data sheet

1. Product profile

1.1 General description

NPN general-purpose transistors in a leadless ultra small DFN1006B-3 (SOT883B) Surface-Mounted Device (SMD) plastic package.

Table 1. Product overview

Type number	Package			PNP complement
	NXP	JEITA	JEDEC	
2PC4617QMB	SOT883B	-	-	2PA1774QMB
2PC4617RMB	SOT883B	-	-	2PA1774RMB

1.2 Features and benefits

- Leadless ultra small SMD plastic package
- Low package height of 0.37 mm
- Power dissipation comparable to SOT23
- AEC-Q101 qualified

1.3 Applications

- General-purpose switching and amplification
- Mobile applications

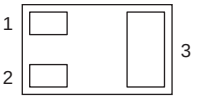
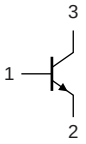
1.4 Quick reference data

Table 2. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base	-	-	50	V
I_C	collector current		-	-	100	mA
h_{FE}	DC current gain	V_{CE} = 6 V; I_C = 1 mA				
	2PC4617QMB		120	-	270	
	2PC4617RMB		180	-	390	

2. Pinning information

Table 3. Pinning

Pin	Description	Simplified outline	Graphic symbol
1	base	 Transparent top view	 sym021
2	emitter		
3	collector		

3. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
2PC4617xMB series	DFN1006B-3	leadless ultra small plastic package; 3 solder lands; body 1.0 × 0.6 × 0.37 mm	SOT883B

4. Marking

Table 5. Marking codes

Type number	Marking code[1]
2PC4617QMB	0000 1111
2PC4617RMB	0001 0000

[1] For DFN1006B-3 (SOT883B) binary marking code description see Figure 1.

4.1 Binary marking code description

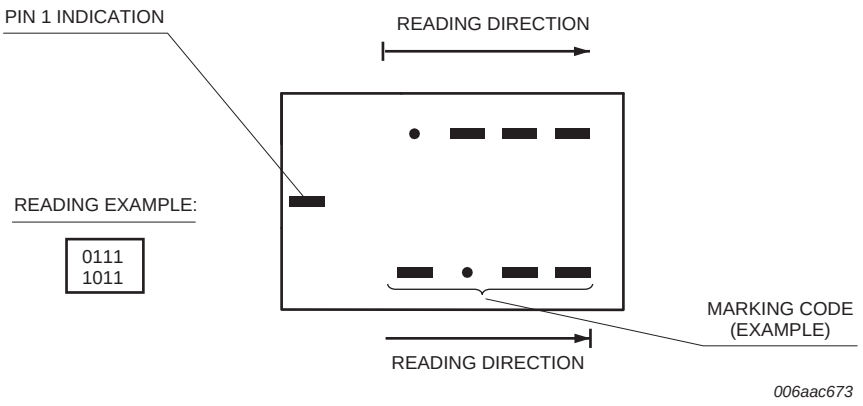


Fig 1. DFN1006B-3 (SOT883B) binary marking code description

5. Limiting values

Table 6. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
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		-	5	V
I_C	collector current			-	100	mA
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms		-	200	mA
I_{BM}	peak base current	single pulse; $t_p \leq 1$ ms		-	100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1][2]	-	250	mW
			[3][2]	-	590	mW
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			–55	+150	°C
T_{stg}	storage temperature			–65	+150	°C

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

[2] Reflow soldering is the only recommended soldering method.

[3] Device mounted on an FR4 PCB, single-sided copper, mounting pad for collector 1 cm^2.

6. Thermal characteristics

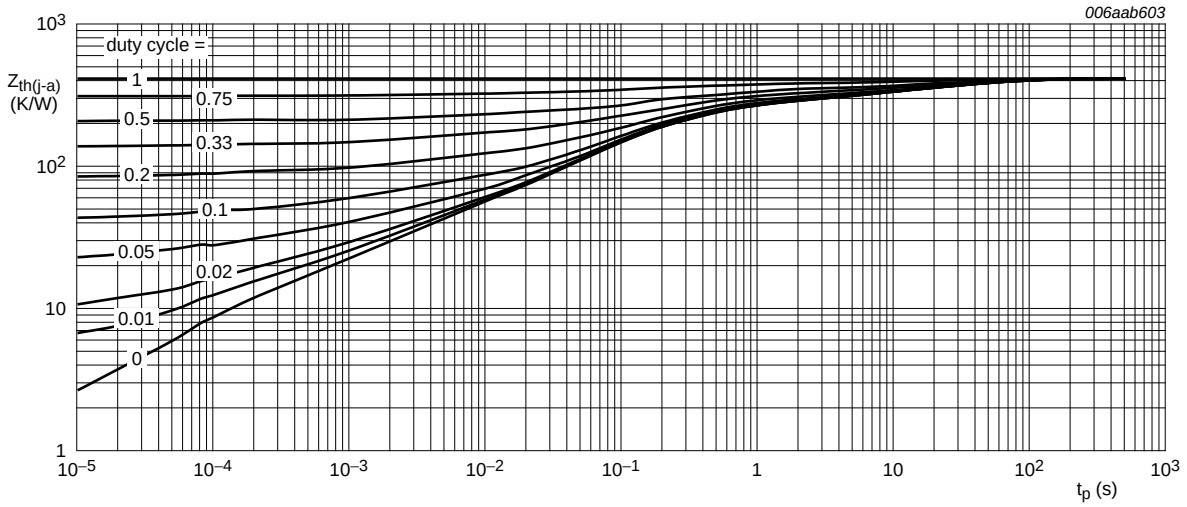
Table 7. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1][2]	-	-	500	K/W
			[3][2]	-	-	212	K/W

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

[2] Reflow soldering is the only recommended soldering method.

[3] Device mounted on an FR4 PCB, single-sided copper, mounting pad for collector 1 cm^2.



FR4 PCB, standard footprint

Fig 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

7. Characteristics

Table 8. Characteristics

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_{CBO}	collector-base cut-off current	V_{CB} = 30 V; I_E = 0 A		-	-	100	nA
		V_{CB} = 30 V; I_E = 0 A; T_j = 150 °C		-	-	5	µA
I_{EBO}	emitter-base cut-off current	V_{EB} = 4 V; I_C = 0 A		-	-	100	nA
h_{FE}	DC current gain	V_{CE} = 6 V; I_C = 1 mA					
	2PC4617QMB			120	-	270	
	2PC4617RMB			180	-	390	
V_{CEsat}	collector-emitter saturation voltage	I_C = 50 mA; I_B = 5 mA	[1]	-	-	200	mV
f_T	transition frequency	V_{CE} = 12 V; I_C = 2 mA; f = 100 MHz		100	-	-	MHz
C_c	collector capacitance	V_{CB} = 12 V; I_E = i_e = 0 A; f = 1 MHz		-	-	1.5	pF

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

8. Test information

8.1 Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101 - Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

9. Package outline

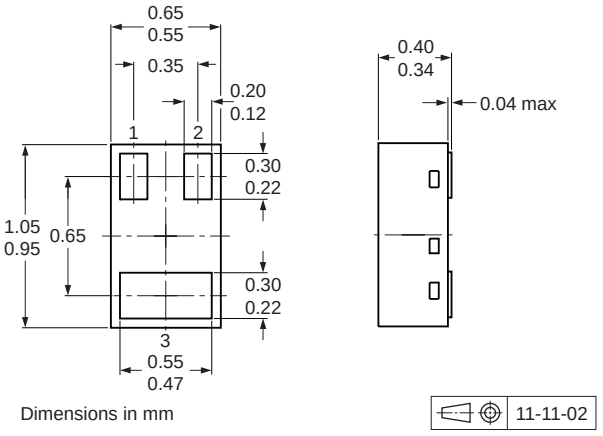


Fig 3. Package outline DFN1006B-3 (SOT883B)

10. Packing information

Table 9. Packing methods

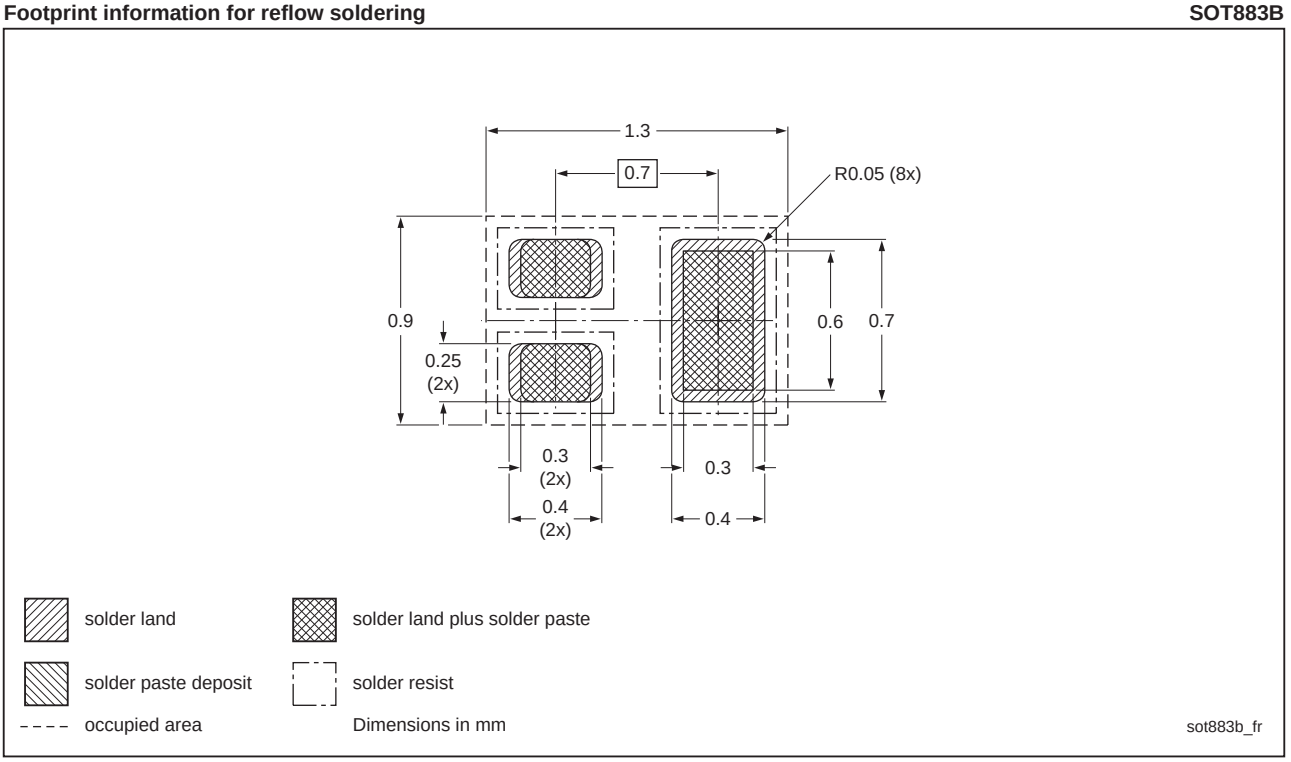
The indicated -xxx are the last three digits of the 12NC ordering code.[1]

Type number	Package	Description	Packing quantity
			10000
2PC4617xMB series	DFN1006B-3 (SOT883B)	2 mm pitch, 8 mm tape and reel	-315

[1] For further information and the availability of packing methods, see Section 14.

11. Soldering

Footprint information for reflow soldering **SOT883B**



Reflow soldering is the only recommended soldering method.

Fig 4. Reflow soldering footprint DFN1006B-3 (SOT883B)

12. Revision history

Table 10. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
2PC4617XMB_SER v.1	20120326	Product data sheet	-	-

13. Legal information

13.1 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.

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[2] The term 'short data sheet' is explained in section "Definitions".

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15. Contents

1 Product profile 1
1.1 General description 1
1.2 Features and benefits 1
1.3 Applications 1
1.4 Quick reference data 1
2 Pinning information 2
3 Ordering information 2
4 Marking 2
4.1 Binary marking code description 2
5 Limiting values 3
6 Thermal characteristics 4
7 Characteristics 5
8 Test information 5
8.1 Quality information 5
9 Package outline 5
10 Packing information 6
11 Soldering 6
12 Revision history 7
13 Legal information 8
13.1 Data sheet status 8
13.2 Definitions 8
13.3 Disclaimers 8
13.4 Trademarks 9
14 Contact information 9
15 Contents 10

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- ### Customer Service :

  Email service@ameya360.com

- ### Partnership :

  Tel +86 (21) 64016692-8333

  Email mkt@ameya360.com