



PMBT4401YS

40 V, 600 mA, double NPN switching transistor

16 July 2026

Product data sheet

1. General description

Double NPN switching transistor in a very small SOT363-3 (SC-88) Surface-Mounted Device (SMD) plastic package.

Double PNP complement: PMBT4403YS

2. Features and benefits

- Double general-purpose switching transistor
- High current (max. 600 mA)
- Voltage max. 40 V
- AEC-Q101 qualified

3. Applications

- Switching and linear amplification

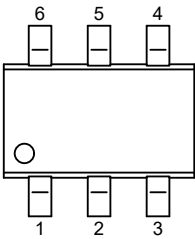
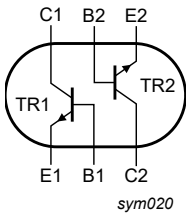
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor						
V_{CEO}	collector-emitter voltage	open base	-	-	40	V
I_C	collector current		-	-	600	mA
h_{FE}	DC current gain	$V_{CE} = 1\text{ V}; I_C = 0.1\text{ mA}; T_{amb} = 25\text{ °C}$	20	-	-	

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	E	emitter TR1	 Transparent top view TSSOP6 (SOT363-3)	 sym020
2	B	base TR1		
3	C	collector TR2		
4	E	emitter TR2		
5	B	base TR2		
6	C	collector TR1		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMBT4401YS	TSSOP6	Plastic surface-mounted package; 6 leads	SOT363-3

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
PMBT4401YS	BG%

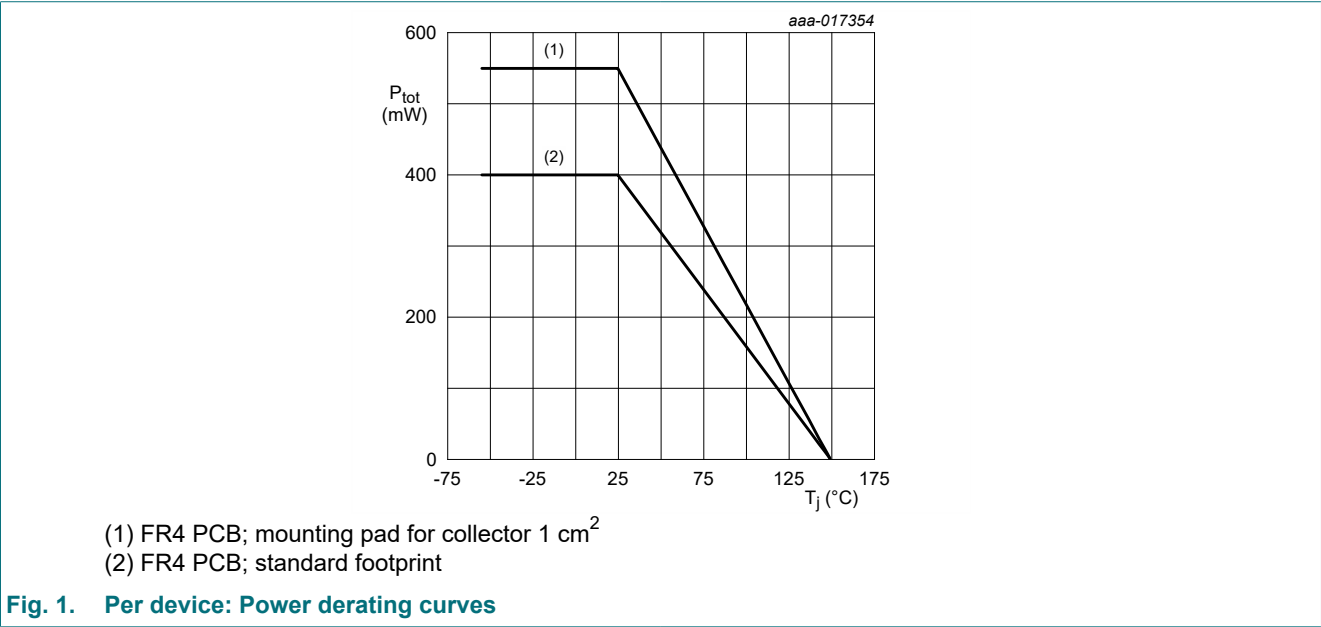
[1] % = placeholder for manufacturing site code

8. Limiting values

Table 5. 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		-	60	V
V _{CEO}	collector-emitter voltage	open base		-	40	V
V _{EBO}	emitter-base voltage	open collector		-	6	V
I _C	collector current			-	600	mA
I _{CM}	peak collector current	single pulse; t _p ≤ 1 ms		-	800	mA
I _{BM}	peak base current			-	200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	250	mW
			[2]	-	300	mW
Per device						
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	400	mW
			[2]	-	550	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] Device mounted on an FR4 PCB; single-sided copper; tin-plated and mounting pad for collector 1 cm².



9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per transistor							
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1]	-	-	500	K/W
			[2]	-	-	417	K/W
Per device							
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1]	-	-	313	K/W
			[2]	-	-	227	K/W

- [1] Device mounted on an FR4 PCB; single-sided copper; tin-plated and standard footprint.
[2] Device mounted on an FR4 PCB; single-sided copper; tin-plated and mounting pad for collector 1 cm².

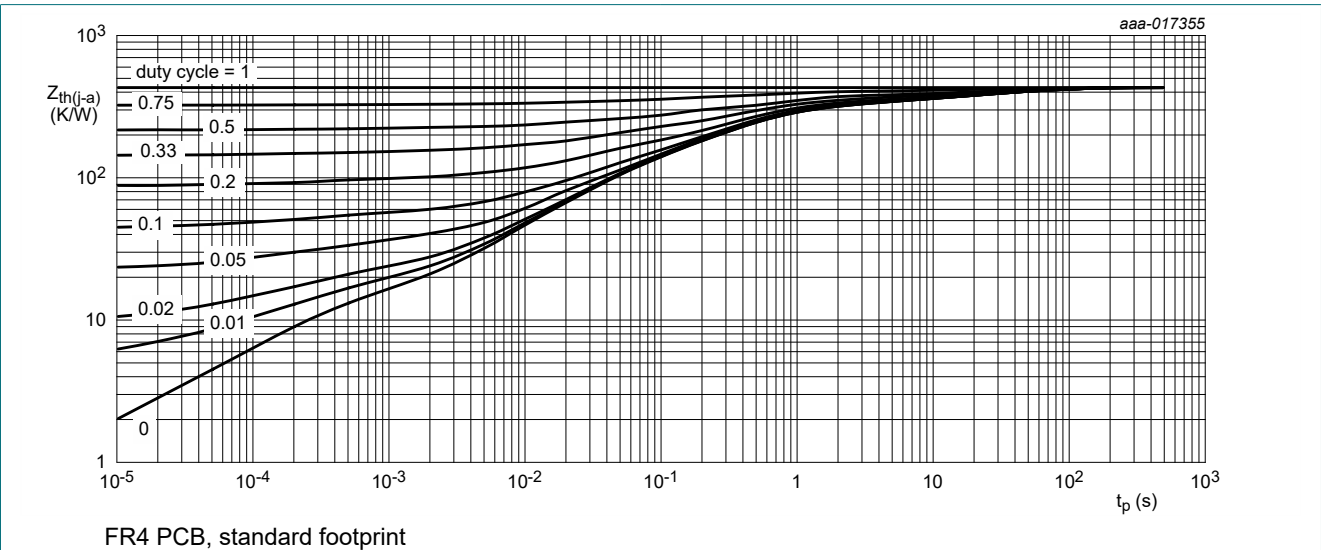


Fig. 2. Per transistor: Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

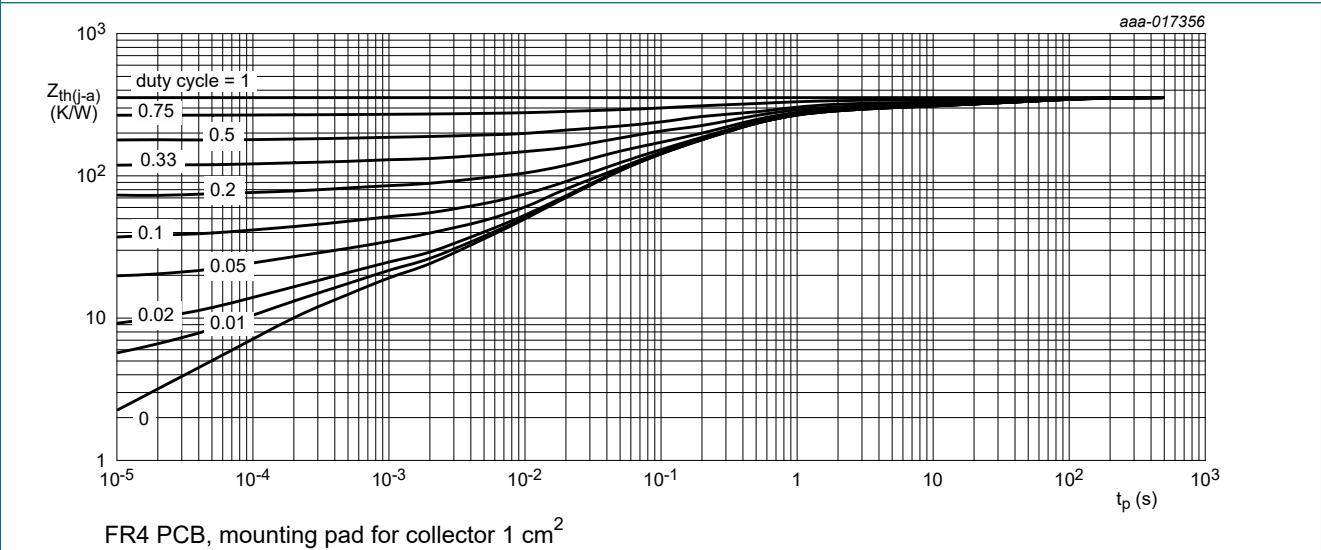


Fig. 3. Per Transistor: Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per transistor							
I _{CBO}	collector-base cut-off current	V _{CB} = 50 V; I _E = 0 A; T _{amb} = 25 °C		-	-	50	nA
		V _{CB} = 50 V; I _E = 0 A; T _j = 125 °C		-	-	10	µA
I _{EBO}	emitter-base cut-off current	V _{EB} = 6 V; I _C = 0 A; T _{amb} = 25 °C		-	-	50	nA
h _{FE}	DC current gain	V _{CE} = 1 V; I _C = 0.1 mA; T _{amb} = 25 °C		20	-	-	
		V _{CE} = 1 V; I _C = 1 mA; T _{amb} = 25 °C		40	-	-	
		V _{CE} = 1 V; I _C = 10 mA; T _{amb} = 25 °C		80	-	-	
		V _{CE} = 1 V; I _C = 150 mA; t _p ≤ 300 µs; δ ≤ 0.02; T _{amb} = 25 °C		100	-	300	
		V _{CE} = 2 V; I _C = 500 mA; t _p ≤ 300 µs; δ ≤ 0.02; T _{amb} = 25 °C		40	-	-	
V _{CEsat}	collector-emitter saturation voltage	I _C = 150 mA; I _B = 15 mA; t _p ≤ 300 µs; δ ≤ 0.02; T _{amb} = 25 °C		-	-	400	mV
		I _C = 500 mA; I _B = 50 mA; t _p ≤ 300 µs; δ ≤ 0.02; T _{amb} = 25 °C		-	-	750	mV
V _{BEsat}	base-emitter saturation voltage	I _C = 150 mA; I _B = 15 mA; t _p ≤ 300 µs; δ ≤ 0.02; T _{amb} = 25 °C		-	-	950	mV
		I _C = 500 mA; I _B = 50 mA; t _p ≤ 300 µs; δ ≤ 0.02; T _{amb} = 25 °C		-	-	1.2	V
t _d	delay time	I _C = 150 mA; I _{Bon} = 15 mA; I _{Boff} = -15 mA; T _{amb} = 25 °C		-	-	10	ns
t _r	rise time			-	-	25	ns
t _{on}	turn-on time			-	-	35	ns
t _s	storage time			-	-	200	ns
t _f	fall time			-	-	60	ns
t _{off}	turn-off time			-	-	250	ns
C _c	collector capacitance	V _{CB} = 10 V; I _E = 0 A; i _e = 0 A; f = 1 MHz; T _{amb} = 25 °C		-	-	8	pF
C _e	emitter capacitance	V _{EB} = 500 mV; I _C = 0 A; f = 1 MHz; T _{amb} = 25 °C		-	-	30	pF
f _T	transition frequency	V _{CE} = 20 V; I _C = 20 mA; f = 100 MHz; T _{amb} = 25 °C		250	-	-	MHz
NF	noise figure	V _{CE} = 5 V; I _C = 100 µA; R _S = 1 kΩ; f = 1 kHz		-	-	4	dB

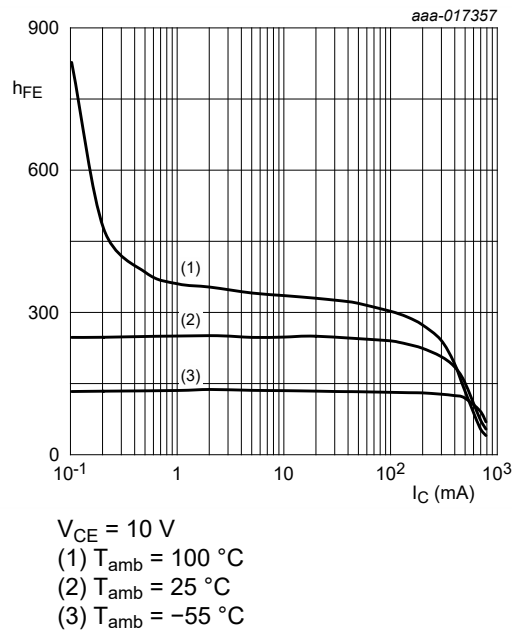


Fig. 4. DC current gain as a function of collector current; typical values

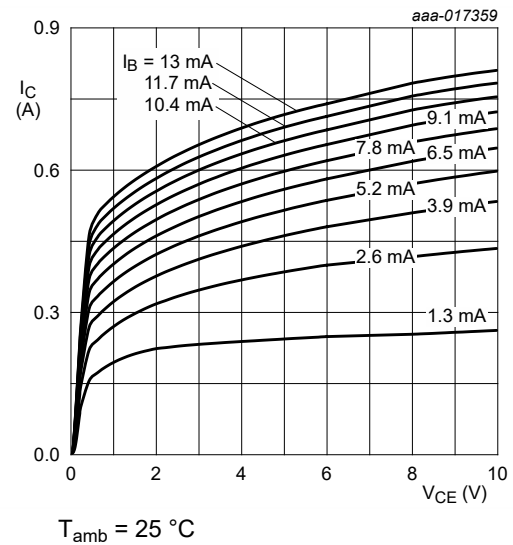


Fig. 5. Collector current as a function of collector-emitter voltage; typical values

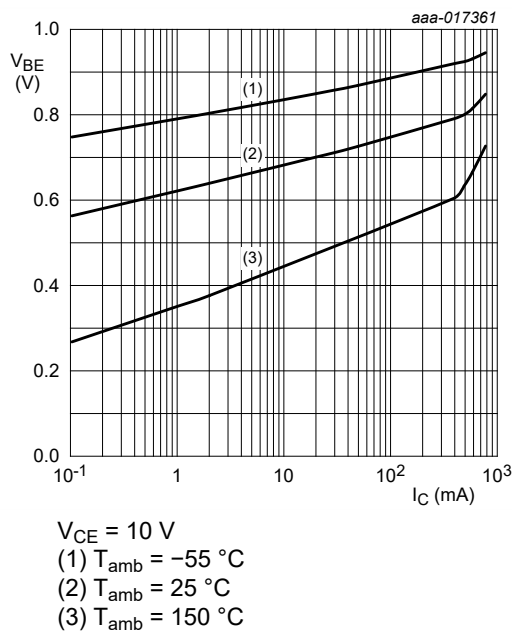


Fig. 6. Base-emitter voltage as a function of collector current; typical values

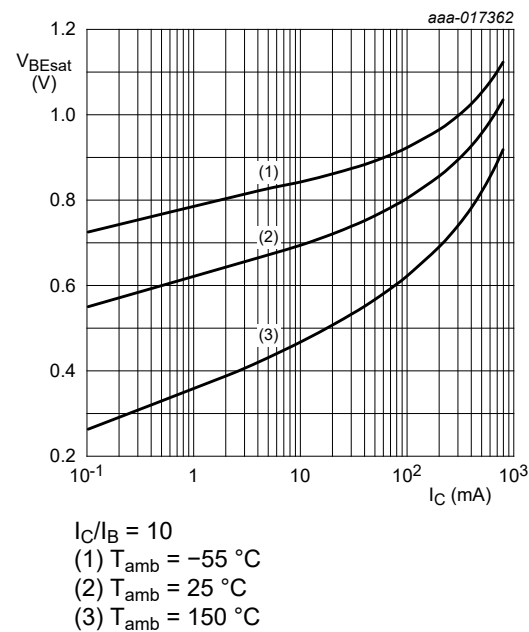


Fig. 7. Base-emitter saturation voltage as a function of collector current; typical values

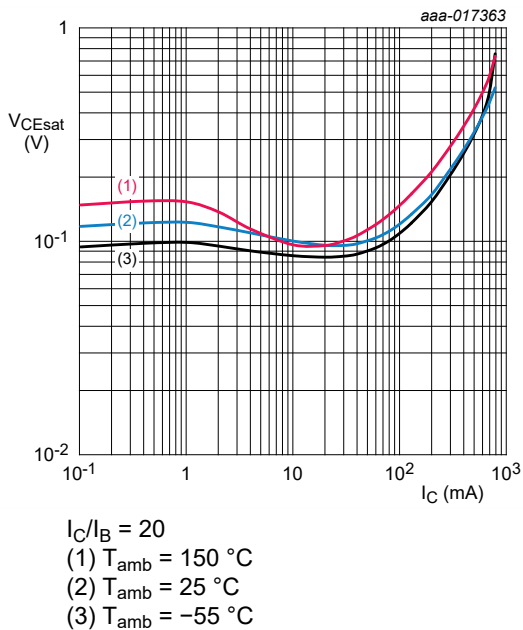


Fig. 8. Collector-emitter saturation voltage as a function of collector current; typical values

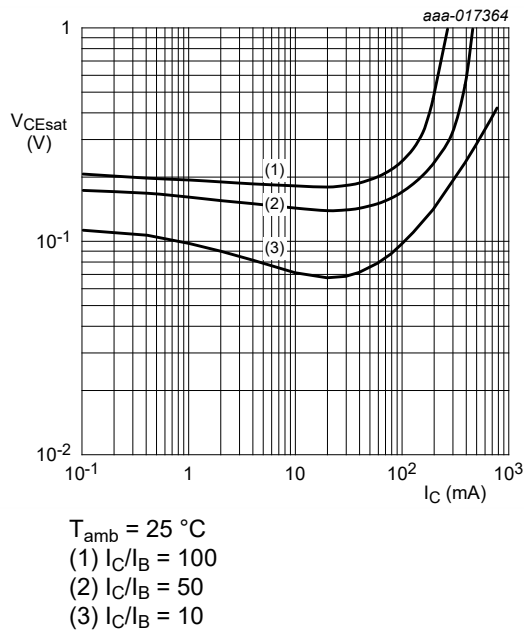


Fig. 9. Collector-emitter saturation voltage as a function of collector current; typical values

11. Test information

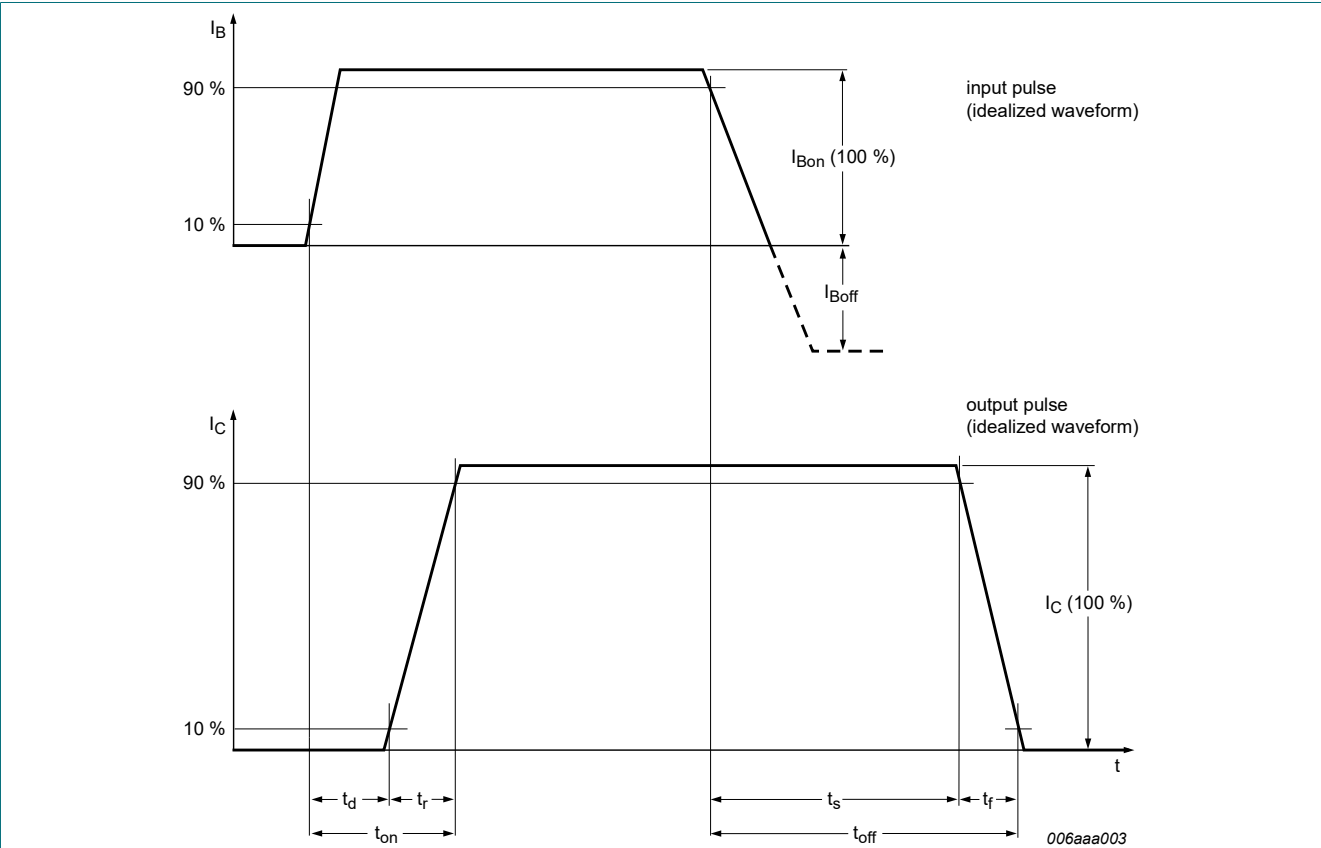


Fig. 10. Switching time definition

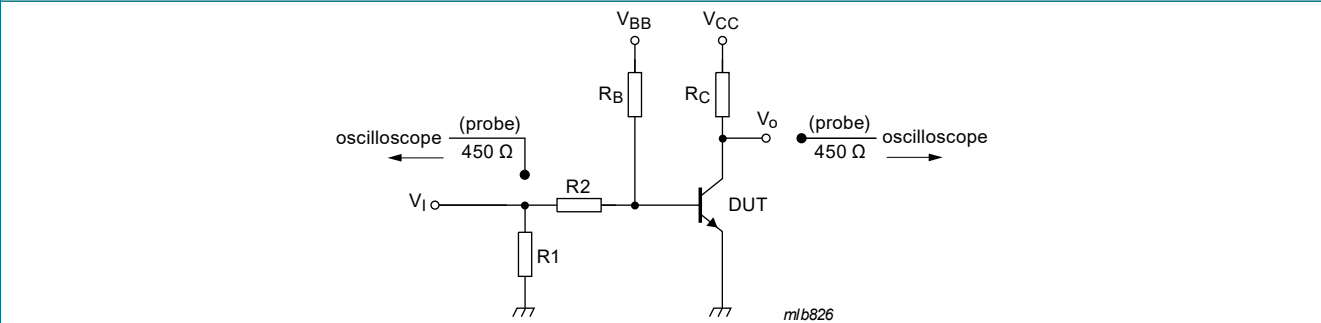
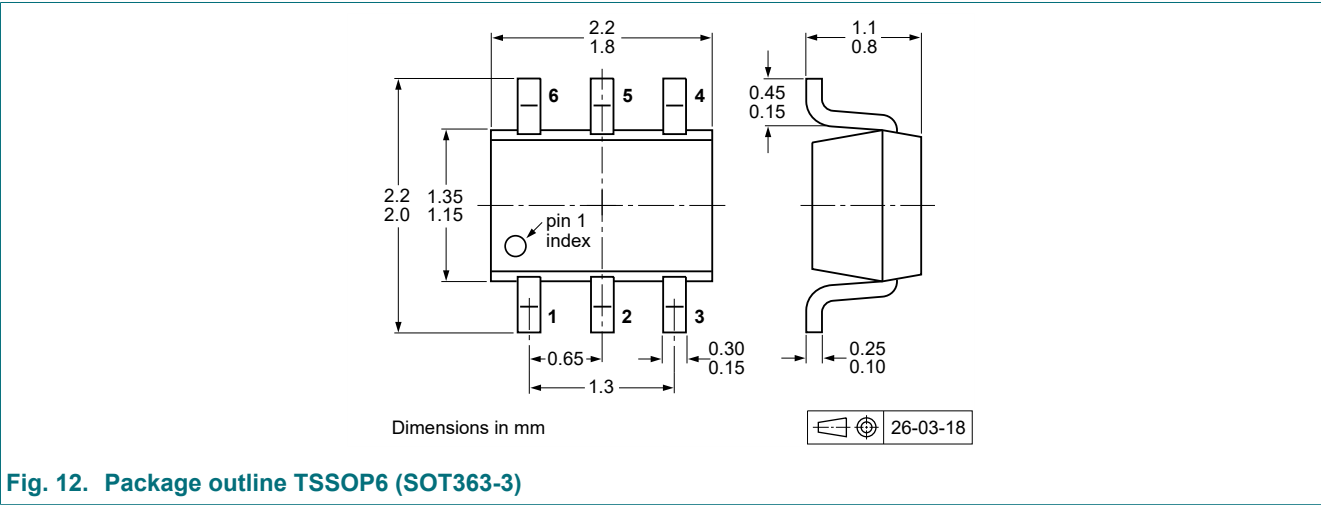


Fig. 11. Test circuit for switching times

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.

12. Package outline



13. Soldering

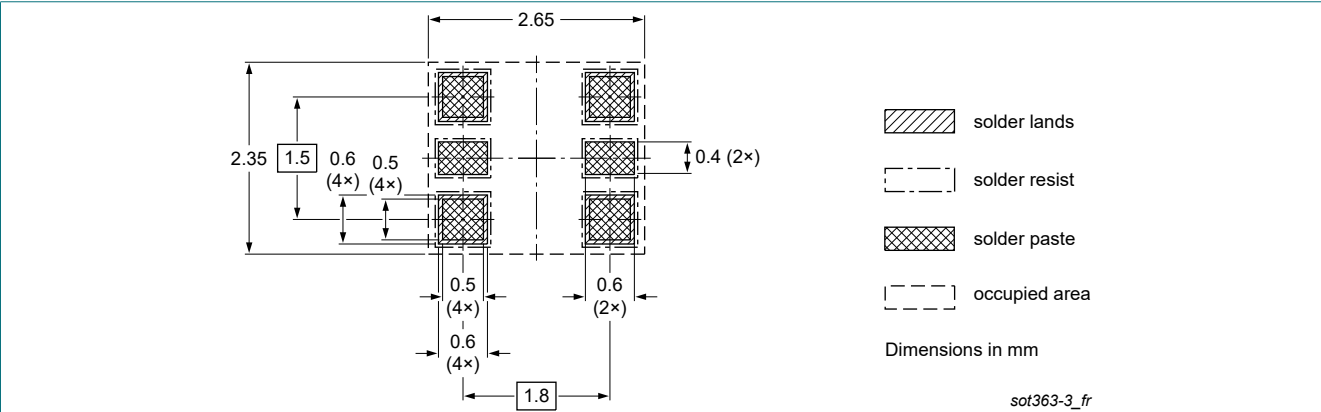


Fig. 13. Reflow soldering footprint for TSSOP6 (SOT363-3)

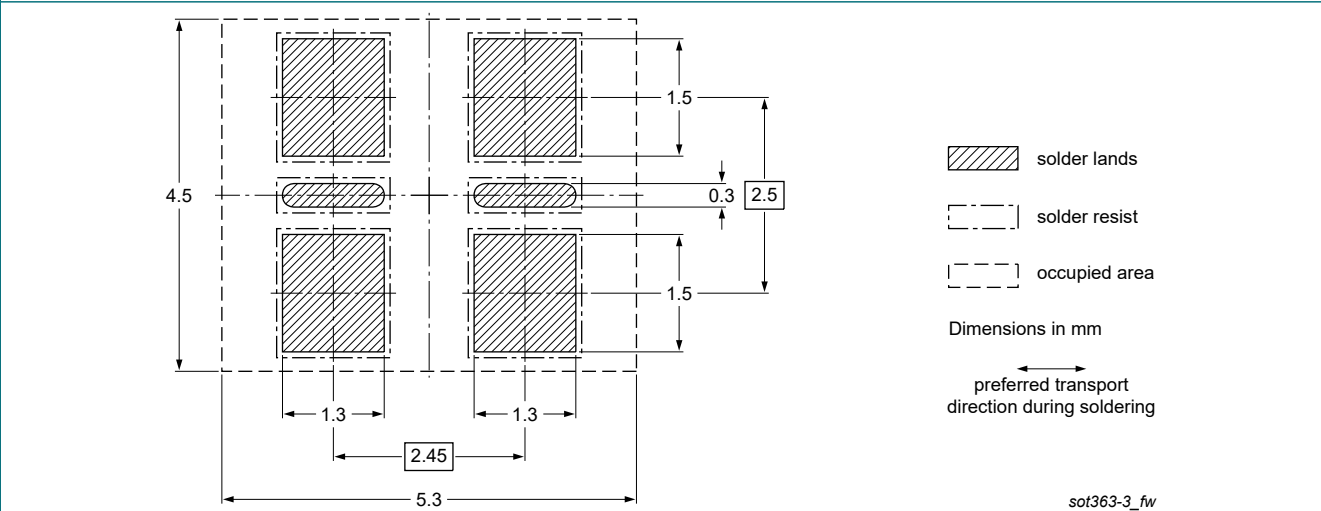


Fig. 14. Wave soldering footprint for TSSOP6 (SOT363-3)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMBT4401YS v.2	20260716	Product data sheet	-	PMBT4401YS v.1
Modifications:	• Package changed from SOT363 to SOT363-3			
PMBT4401YS v.1	20150702	Product data sheet	-	-

15. 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.

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