

ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number:	PBSS5360Z-QX
Manufacturer:	Nexperia USA Inc.
Package:	TO-261-4, TO-261AA
Availability:	Please confirm with sales

Product Page:

<https://antrexco.com/product/details/nexperia-usa-inc/pbss5360z-qx.html>

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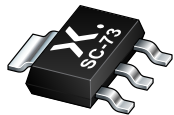
CoC / RoHS / REACH documents available on request

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Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.



PBSS5360Z-Q

60 V, 3 A PNP low V_{CEsat} transistor

24 May 2022

Product data sheet

1. General description

PNP low V_{CEsat} transistor in a medium power SOT223 (SC-73) Surface-Mounted Device (SMD) plastic package.

NPN complement: PBSS4360Z

2. Features and benefits

- Low collector-emitter saturation voltage V_{CEsat}
- High collector current capability I_C and I_{CM}
- High energy efficiency due to less heat generation
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- DC-to-DC conversion
- Supply line switching
- Battery charger
- LCD backlighting
- Driver in low supply voltage applications (e.g. lamps and LEDs)
- Inductive load driver (e.g. relays, buzzers and motors)

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _{CEO}	collector-emitter voltage	open base	-	-	-60	V
I _C	collector current		-	-	-3	A
I _{CM}	peak collector current	single pulse; t _p ≤ 1 ms	-	-	-6	A
R _{CEsat}	collector-emitter saturation resistance	I _C = -2 A; I _B = -200 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	-	225	mΩ

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	B	base	 SC-73 (SOT223)	 sym028
2	C	collector		
3	E	emitter		
4	C	collector		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PBSS5360Z-Q	SC-73	plastic, surface-mounted package with increased heatsink; 4 leads; 2.3 mm pitch; 6.5 mm x 3.5 mm x 1.65 mm body	SOT223

7. Marking

Table 4. Marking codes

Type number	Marking code
PBSS5360Z-Q	P5360Z

8. Limiting values

Table 5. Limiting values

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

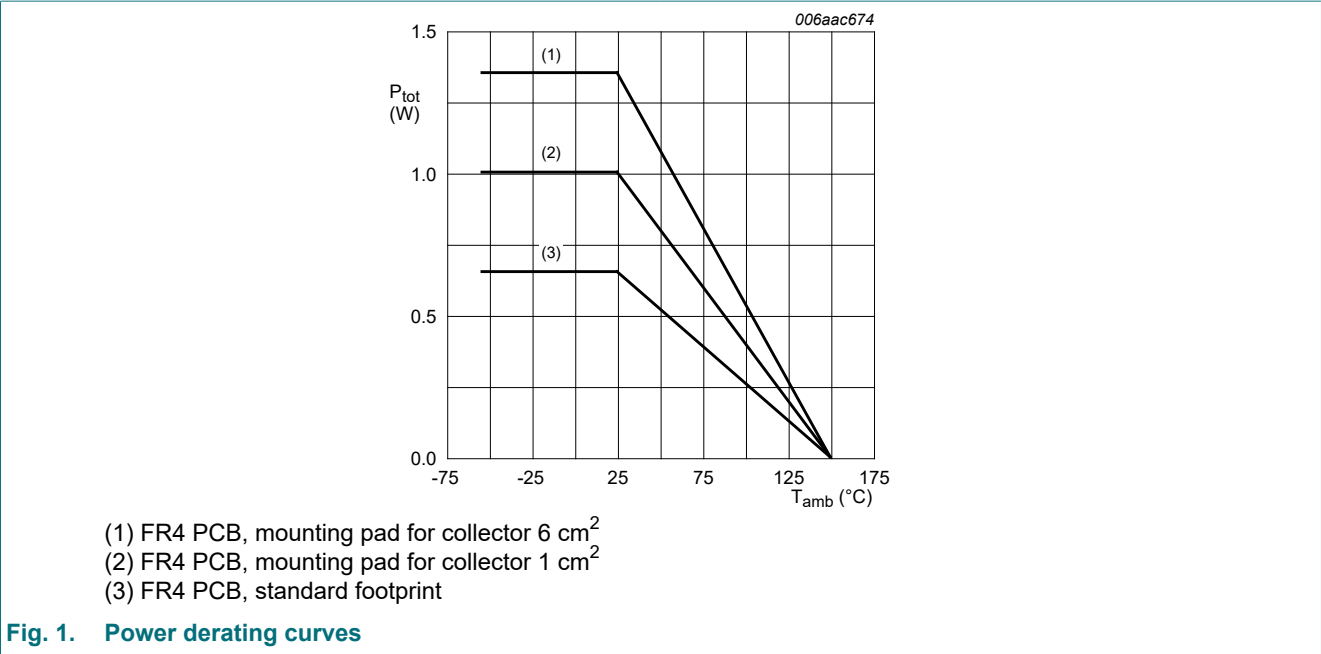
Symbol	Parameter	Conditions		Min	Max	Unit
V_{CBO}	collector-base voltage	open emitter		-	-80	V
V_{CEO}	collector-emitter voltage	open base		-	-60	V
V_{EBO}	emitter-base voltage	open collector		-	-7	V
I_C	collector current			-	-3	A
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms		-	-6	A
I_B	base current			-	-500	mA
I_{BM}	peak base current	single pulse; $t_p \leq 1$ ms		-	-1	A
P_{tot}	total power dissipation		[1]	-	0.65	W
			[2]	-	1	W
			[3]	-	1.35	W
			[4]	-	2	W
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, mounting pad for collector 1 cm².

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 6 cm².

[4] Device mounted on an FR4 PCB, 70 µm single-sided copper, tin-plated, mounting pad for collector 6 cm².

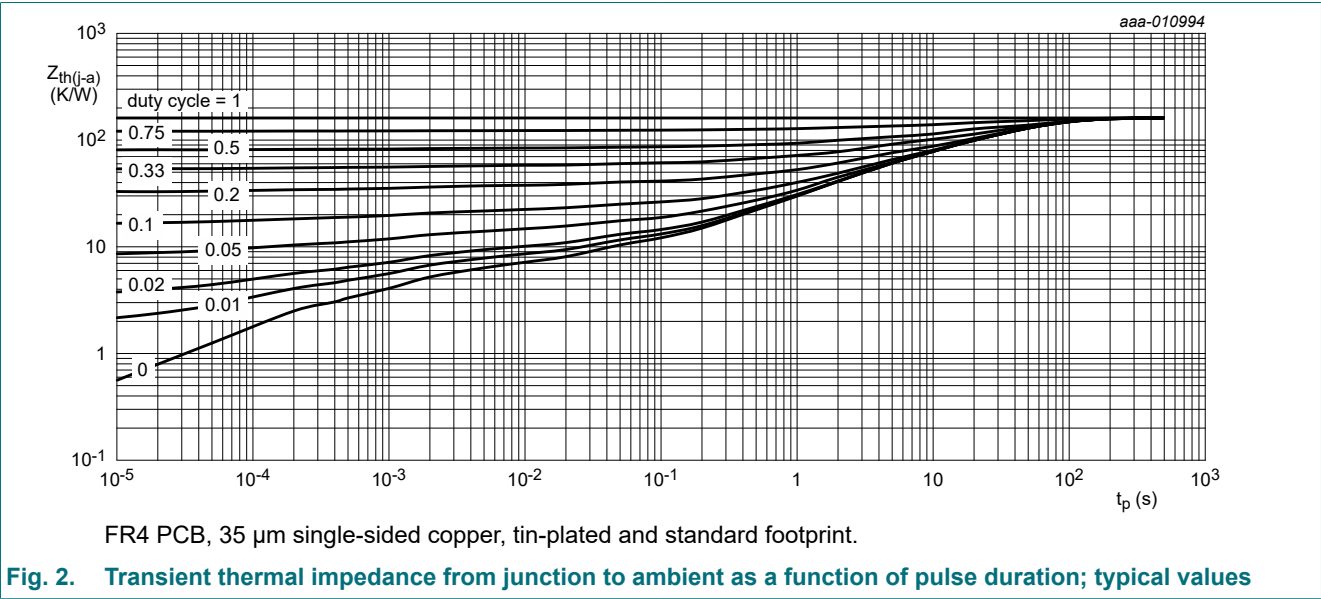


9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	192	K/W
			[2]	-	-	125	K/W
			[3]	-	-	93	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point			-	-	16	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, mounting pad for collector 1 cm².
[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 6 cm².



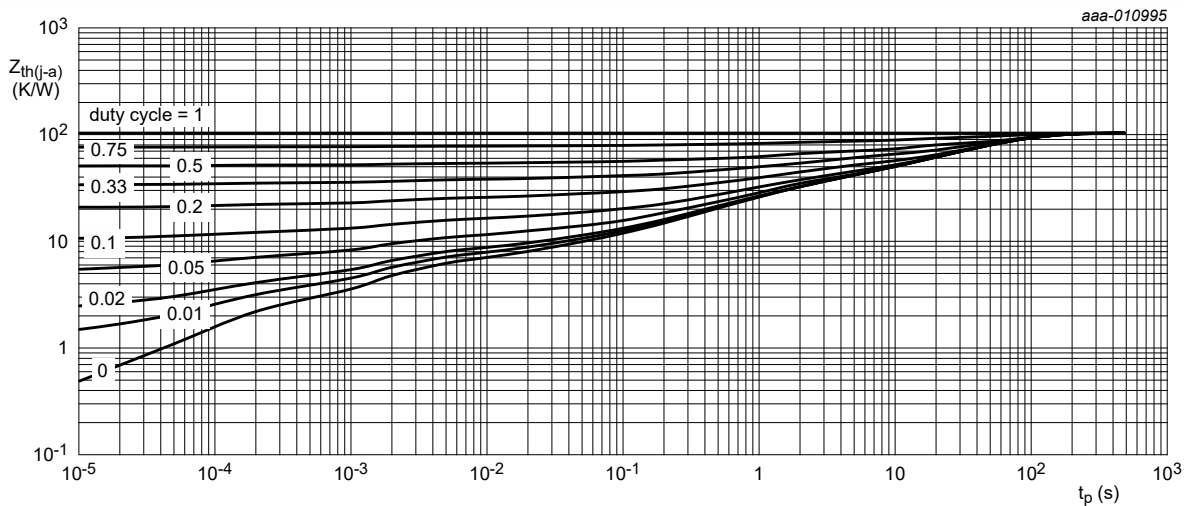


Fig. 3. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

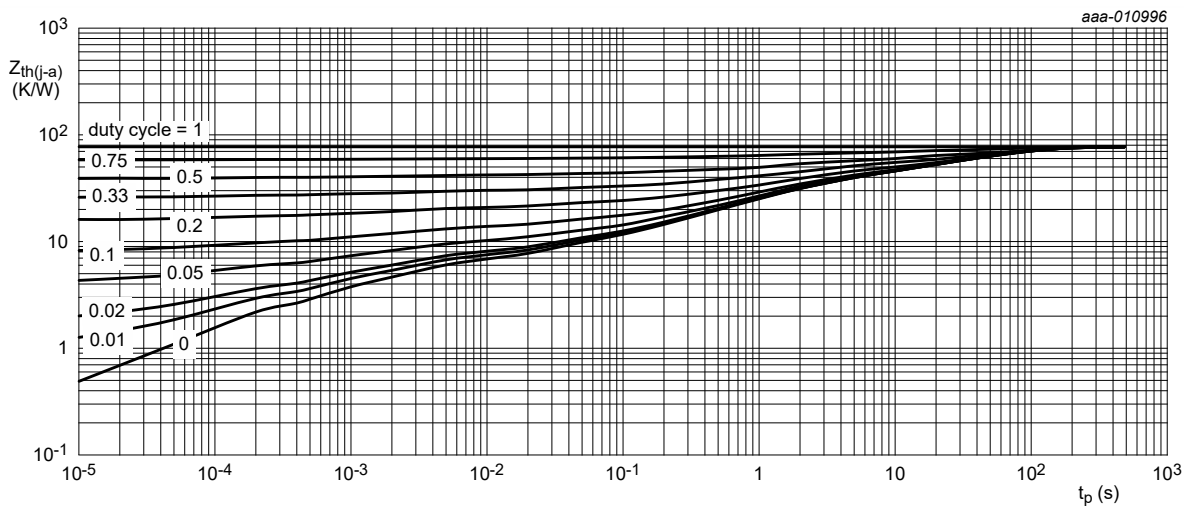


Fig. 4. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{CBO}	collector-base cut-off current	$V_{CB} = -48 \text{ V}; I_E = 0 \text{ A}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	-100	nA
		$V_{CB} = -48 \text{ V}; I_E = 0 \text{ A}; T_j = 150 \text{ }^{\circ}\text{C}$	-	-	-50	μA
I_{CES}	collector-emitter cut-off current	$V_{CE} = -48 \text{ V}; V_{BE} = 0 \text{ V}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	-100	nA
I_{EBO}	emitter-base cut-off current	$V_{EB} = -5 \text{ V}; I_C = 0 \text{ A}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	-100	nA
h_{FE}	DC current gain	$V_{CE} = -5 \text{ V}; I_C = -50 \text{ mA}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	150	-	-	
		$V_{CE} = -5 \text{ V}; I_C = -500 \text{ mA}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	130	-	-	
		$V_{CE} = -5 \text{ V}; I_C = -1 \text{ A}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	120	-	-	
		$V_{CE} = -5 \text{ V}; I_C = -2 \text{ A}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^{\circ}\text{C}; \text{pulsed}$	100	-	-	
		$V_{CE} = -5 \text{ V}; I_C = -3 \text{ A}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^{\circ}\text{C}; \text{pulsed}$	80	-	-	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -500 \text{ mA}; I_B = -50 \text{ mA}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	-150	mV
		$I_C = -1 \text{ A}; I_B = -100 \text{ mA}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^{\circ}\text{C}; \text{pulsed}$	-	-	-200	mV
		$I_C = -2 \text{ A}; I_B = -200 \text{ mA}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	-450	mV
		$I_C = -3 \text{ A}; I_B = -300 \text{ mA}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	-550	mV
R_{CEsat}	collector-emitter saturation resistance	$I_C = -2 \text{ A}; I_B = -200 \text{ mA}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	225	m Ω
V_{BEsat}	base-emitter saturation voltage	$I_C = -1 \text{ A}; I_B = -100 \text{ mA}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	-1.2	V
V_{BEon}	base-emitter turn-on voltage	$V_{CE} = -5 \text{ V}; I_C = -1 \text{ A}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	-	-1.1	V
f_T	transition frequency	$V_{CE} = -10 \text{ V}; I_C = -50 \text{ mA}; f = 100 \text{ MHz}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	65	130	-	MHz
C_c	collector capacitance	$V_{CB} = -10 \text{ V}; I_E = 0 \text{ A}; i_e = 0 \text{ A}; f = 1 \text{ MHz}; T_{amb} = 25 \text{ }^{\circ}\text{C}$	-	28	32	pF

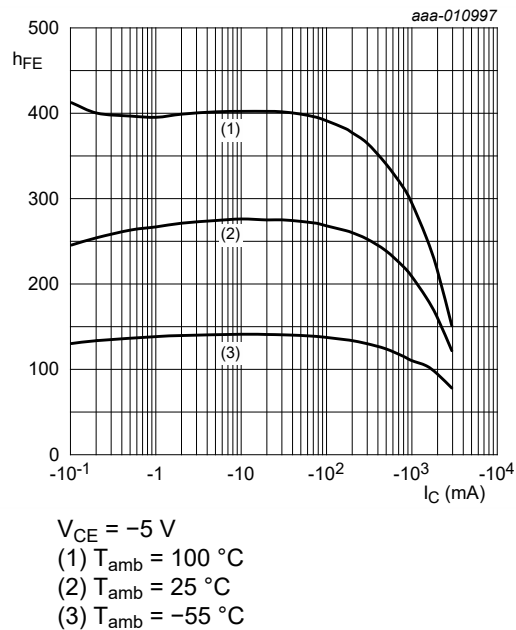


Fig. 5. DC current gain as a function of collector current; typical values

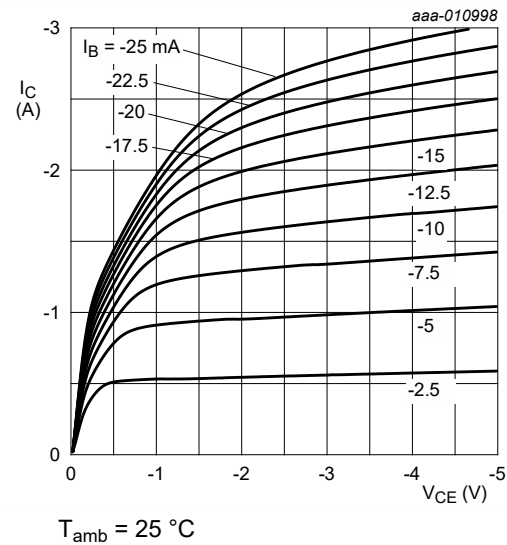


Fig. 6. Collector current as a function of collector-emitter voltage; typical values

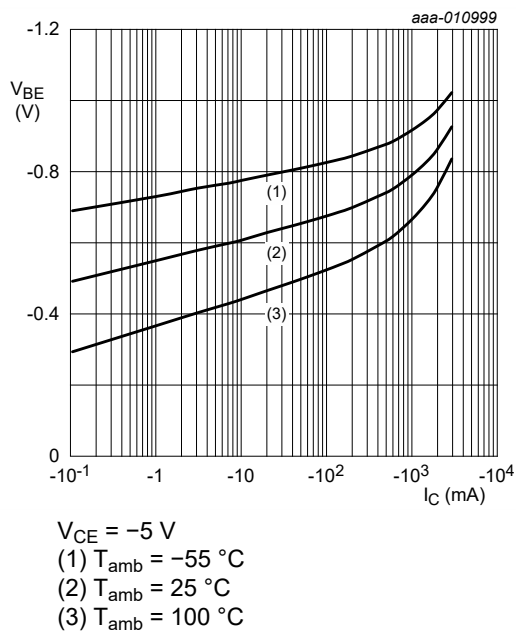


Fig. 7. Base-emitter voltage as a function of collector current; typical values

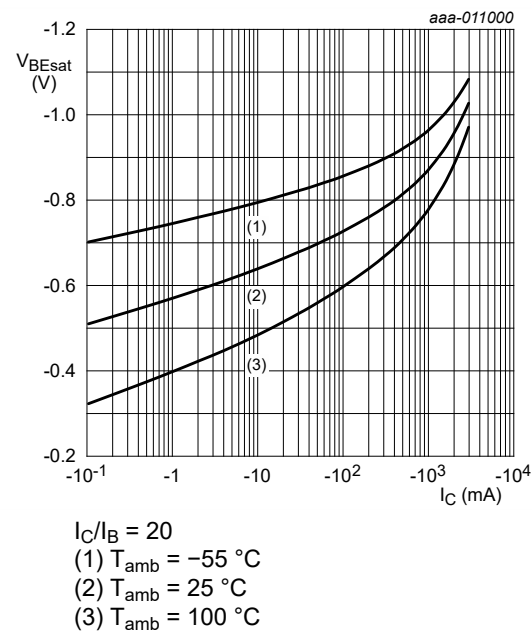
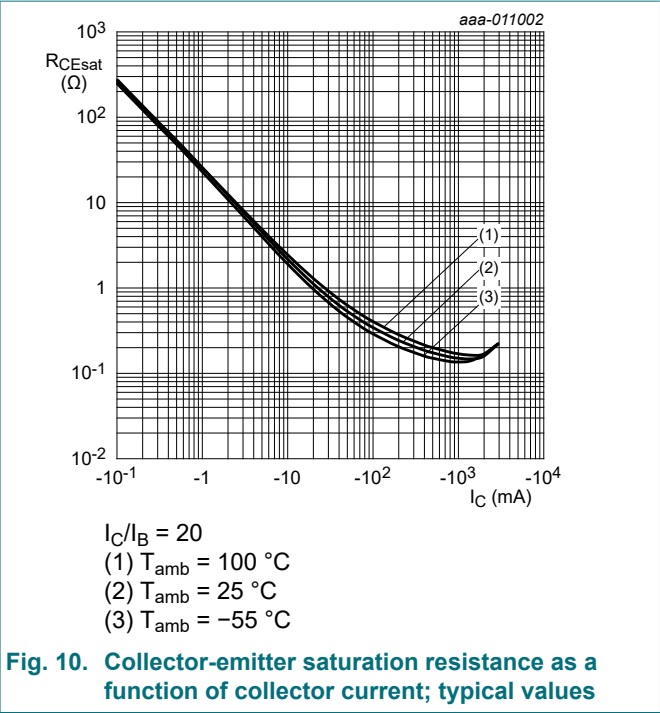
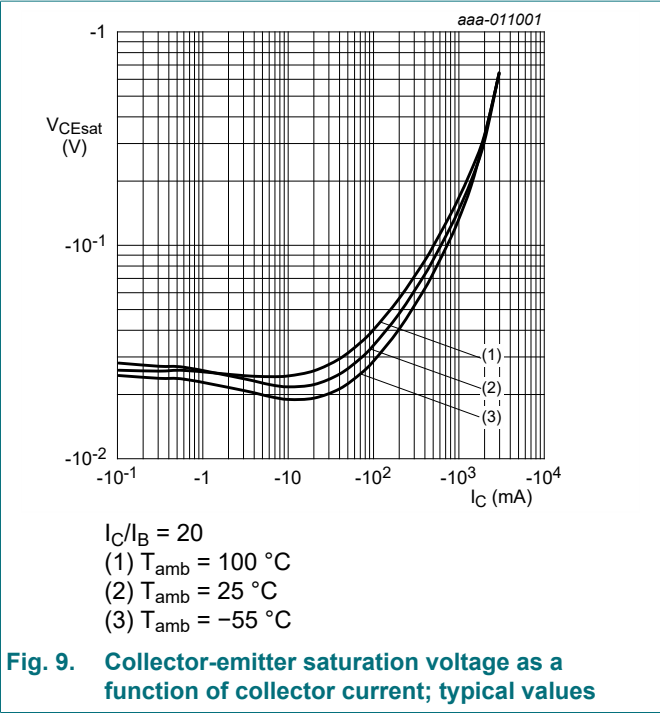


Fig. 8. Base-emitter saturation voltage as a function of collector current; typical values

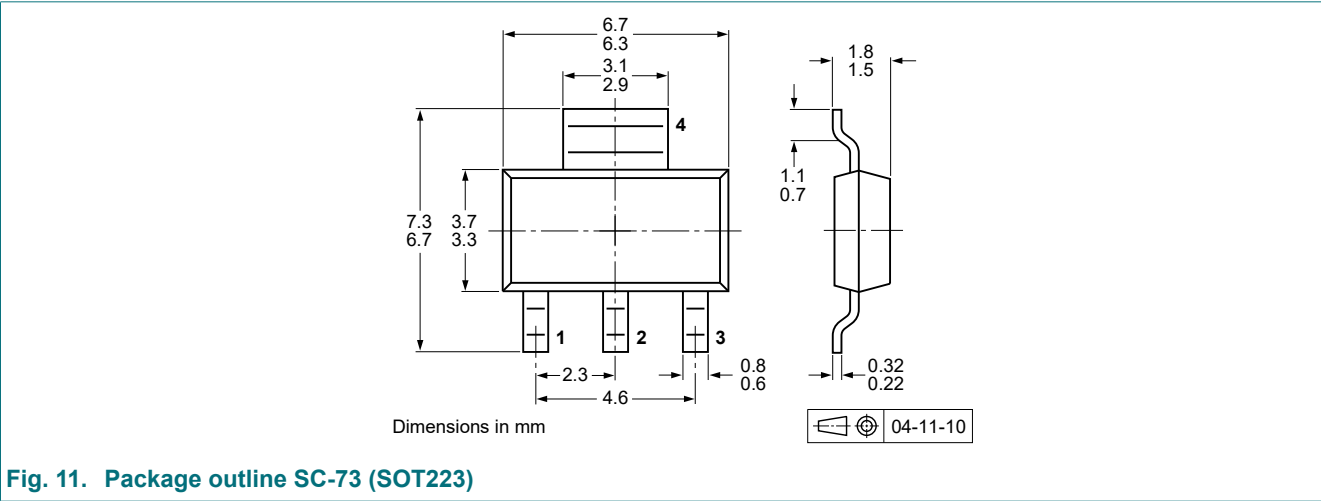


11. Test information

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

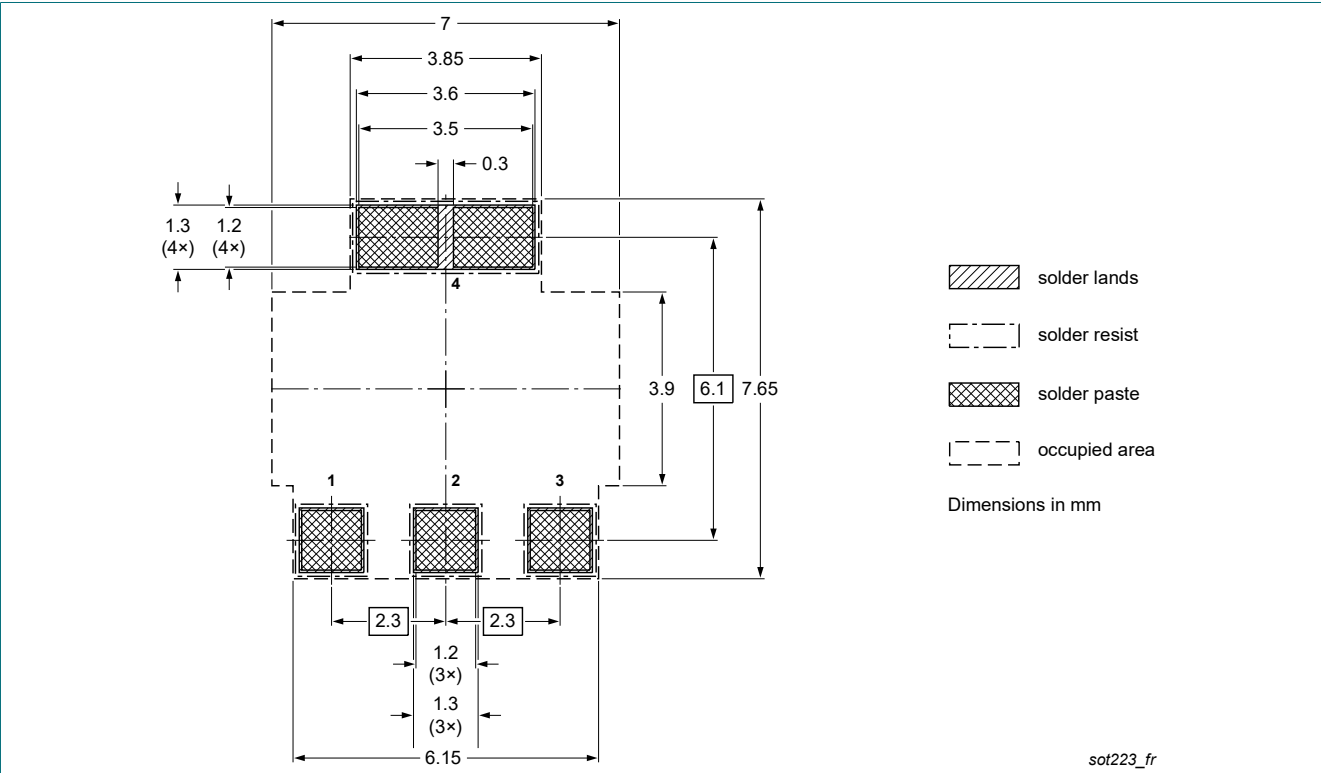


Fig. 12. Reflow soldering footprint for SC-73 (SOT223)

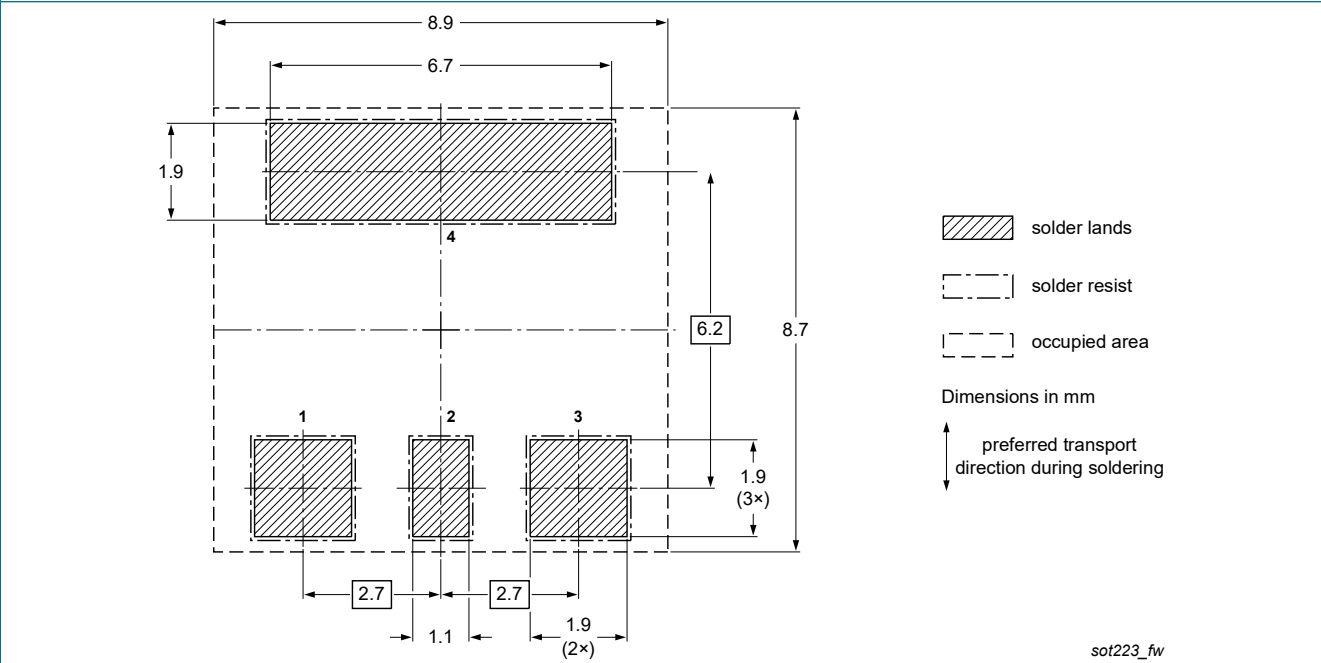


Fig. 13. Wave soldering footprint for SC-73 (SOT223)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PBSS5360Z-Q v.1	20220524	Product data sheet	-	PBSS5360Z v.1

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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