

BCX55-Q series

60 V, 1 A NPN medium power transistors

Rev. 2 — 29 July 2025 Product data sheet

1. General description

NPN medium power transistors in a SOT89 (SC-62) flat lead Surface-Mounted Device (SMD) plastic package.

Table 1. Product overview

Type number	Package		NPN complement
	Nexperia	JEITA	
BCX55-Q	SOT89	SC-62	BCX52-Q
BCX55-10-Q			BCX52-10-Q
BCX55-16-Q			BCX52-16-Q

2. Features and benefits

- High current
- Three current gain selections
- High power dissipation capability
- Exposed heatsink for excellent thermal and electrical conductivity
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- Linear voltage regulators
- Power management
- Low-side switches
- MOSFET drivers
- Battery-driven devices
- Amplifiers

4. Quick reference data

Table 2. Quick reference data

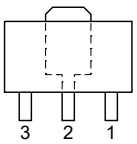
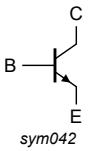
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base		-	-	60	V
I_C	collector current			-	-	1	A
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms		-	-	2	A
h_{FE}	DC current gain						
	BCX55-Q	V_{CE} = 2 V; I_C = 150 mA; T_{amb} = 25 °C	[1]	63	-	250	
	BCX55-10-Q		[1]	63	-	160	
	BCX55-16-Q		[1]	100	-	250	

[1] pulsed; $t_p \leq 300$ µs; $\delta \leq 0.02$

nexperia

5. Pinning information

Table 3. Pinning

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	E	emitter		
2	C	collector		
3	B	base		

6. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
BCX55-Q	SC-62	plastic surface-mounted package; exposed die pad for good heat transfer; 3 leads	SOT89
BCX55-10-Q			
BCX55-16-Q			

7. Marking

Table 5. Marking

Type number	Marking code
BCX55-Q	BE
BCX55-10-Q	BG
BCX55-16-Q	BM

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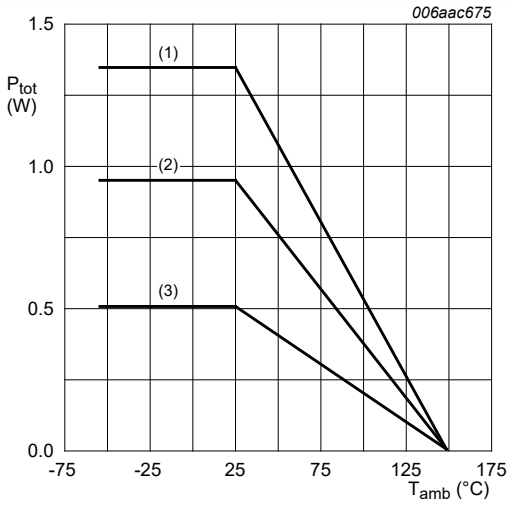
8. Limiting values

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		-	60	V
V_{CEO}	collector-emitter voltage	open base		-	60	V
V_{EBO}	emitter-base voltage	open collector		-	5	V
I_C	collector current			-	1	A
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms		-	2	A
I_B	base current			-	0.3	A
I_{BM}	peak base current	single pulse; $t_p \leq 1$ ms		-	0.3	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	0.50	W
			[2]	-	0.95	W
			[3]	-	1.35	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 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 cm^2.
[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated; mounting pad for collector 6 cm^2.



(1) FR4 PCB, mounting pad for collector 6 cm^2
(2) FR4 PCB, mounting pad for collector 1 cm^2
(3) FR4 PCB, standard footprint

Fig. 1. Power derating curves

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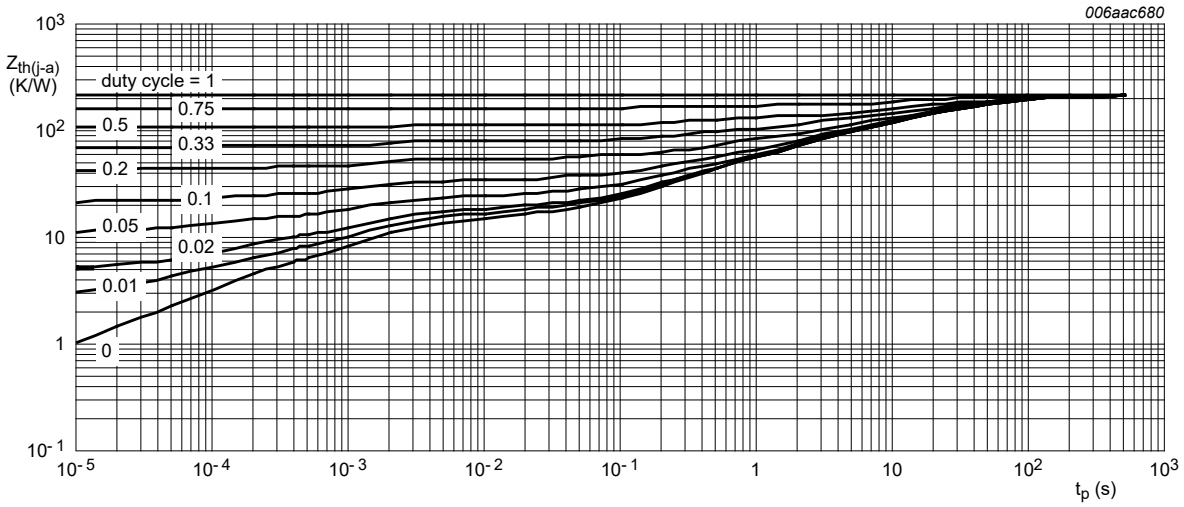
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9. Thermal characteristics

Table 7. Thermal characteristics

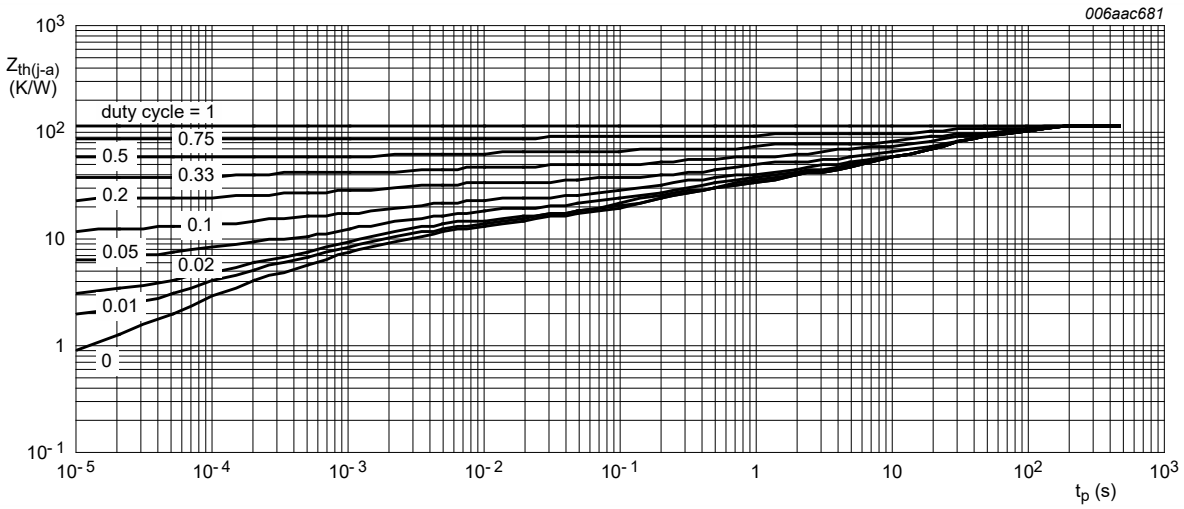
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	250	K/W
			[2]	-	-	132	K/W
			[3]	-	-	93	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point			-	-	16	K/W

[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 cm^2.
[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated; mounting pad for collector 6 cm^2.



FR4 PCB, single-sided, tin-plated and standard footprint

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

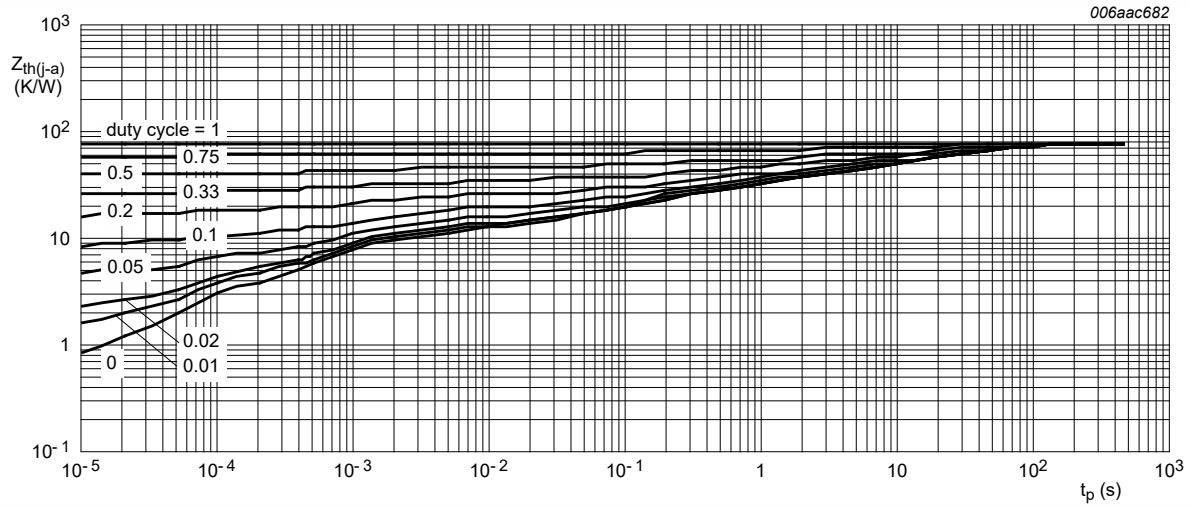


FR4 PCB, single-sided copper, tin-plated; mounting pad for collector 1 cm^2.

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

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FR4 PCB, single-sided copper, tin-plated; mounting pad for collector 6 cm^2.

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

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10. Characteristics

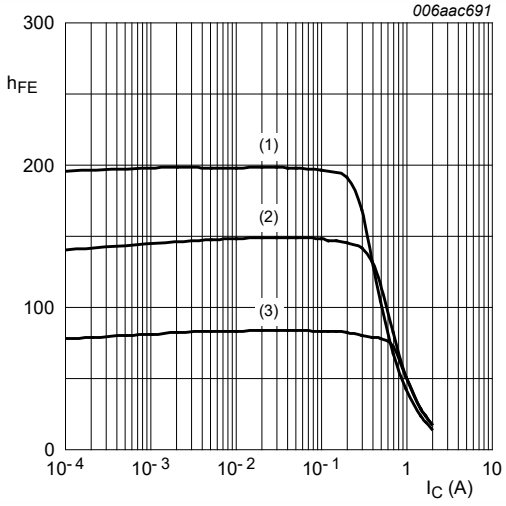
Table 8. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$V_{(BR)CBO}$	collector-base breakdown voltage	I_C = 100 µA; I_E = 0 ; T_{amb} = 25 °C		60	-	-	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	I_C = 2 mA; I_B = 0 A; T_{amb} = 25 °C		60	-	-	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	I_C = 0 A; I_E = 100 µA; T_{amb} = 25 °C		5	-	-	V
I_{CBO}	collector-base cut-off current	V_{CB} = 30 V; I_E = 0 A; T_{amb} = 25 °C		-	-	100	nA
		V_{CB} = 30 V; I_E = 0 A; T_j = 150 °C		-	-	10	µA
I_{EBO}	emitter-base cut-off current	V_{EB} = 5 V; I_C = 0 A; T_{amb} = 25 °C		-	-	100	nA
h_{FE}	DC current gain						
	BCX55-Q	V_{CE} = 2 V; I_C = 5 mA; T_{amb} = 25 °C	[1]	63	-	-	
		V_{CE} = 2 V; I_C = 150 mA; T_{amb} = 25 °C	[1]	63	-	250	
		V_{CE} = 2 V; I_C = 500 mA; T_{amb} = 25 °C	[1]	40	-	-	
	BCX55-10-Q	V_{CE} = 2 V; I_C = 5 mA; T_{amb} = 25 °C	[1]	63	-	-	
		V_{CE} = 2 V; I_C = 150 mA; T_{amb} = 25 °C	[1]	63	-	160	
		V_{CE} = 2 V; I_C = 500 mA; T_{amb} = 25 °C	[1]	40	-	-	
	BCX55-16-Q	V_{CE} = 2 V; I_C = 5 mA; T_{amb} = 25 °C	[1]	63	-	-	
		V_{CE} = 2 V; I_C = 150 mA; T_{amb} = 25 °C	[1]	100	-	250	
		V_{CE} = 2 V; I_C = 500 mA; T_{amb} = 25 °C	[1]	40	-	-	
V_{CEsat}	collector-emitter saturation voltage	I_C = 500 mA; I_B = 50 mA; T_{amb} = 25 °C	[1]	-	-	0.5	V
V_{BE}	base-emitter voltage	V_{CE} = 2 V; I_C = 500 mA; T_{amb} = 25 °C	[1]	-	-	1	V
C_c	collector capacitance	V_{CB} = 10 V; I_E = i_e = 0 A; f = 1 MHz; T_{amb} = 25 °C		-	6	-	pF
f_T	transition frequency	V_{CE} = 5 V; I_C = 50 mA; f = 100 MHz; T_{amb} = 25 °C		100	180	-	MHz

[1] pulsed; $t_p \leq 300$ µs; $\delta \leq 0.02$

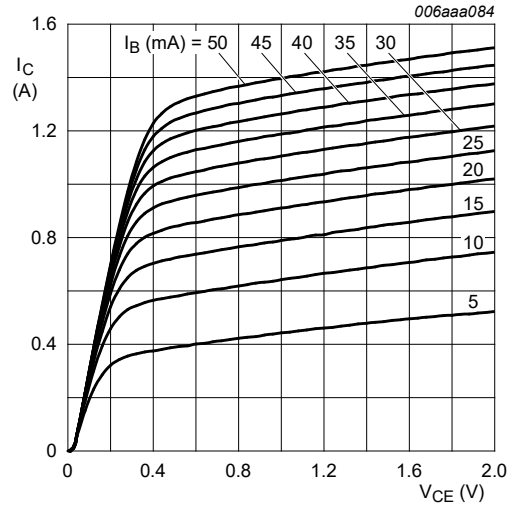
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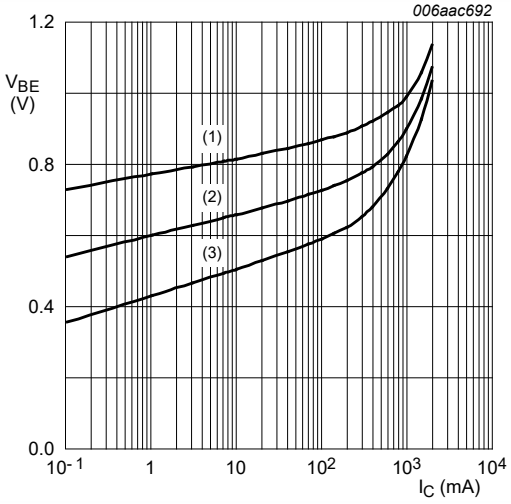
V_{CE} = 2 V
(1) T_{amb} = 100 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = -55 °C

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



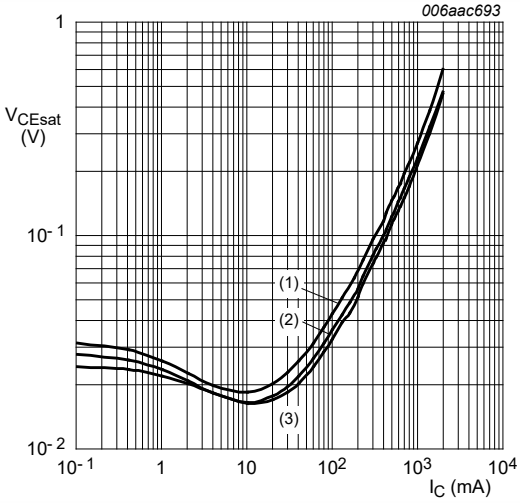
T_{amb} = 25 °C

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



V_{CE} = 2 V
(1) T_{amb} = -55 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = 100 °C

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



IC/IB = 10
(1) T_{amb} = 100 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = -55 °C

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

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11. Test information

11.1. 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.

12. Package outline

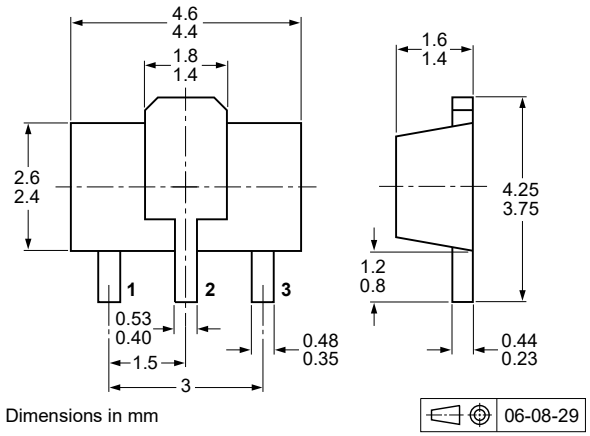


Fig. 9. Package outline SOT89 (SC-62)

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13. Soldering

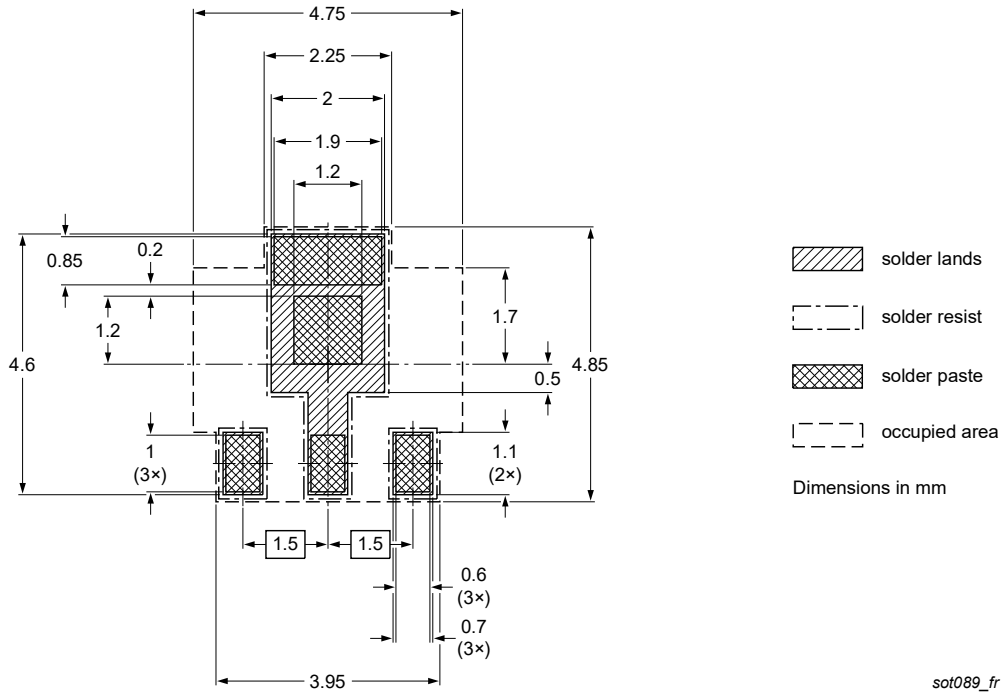


Fig. 10. Reflow soldering footprint for SOT89 (SC-62)

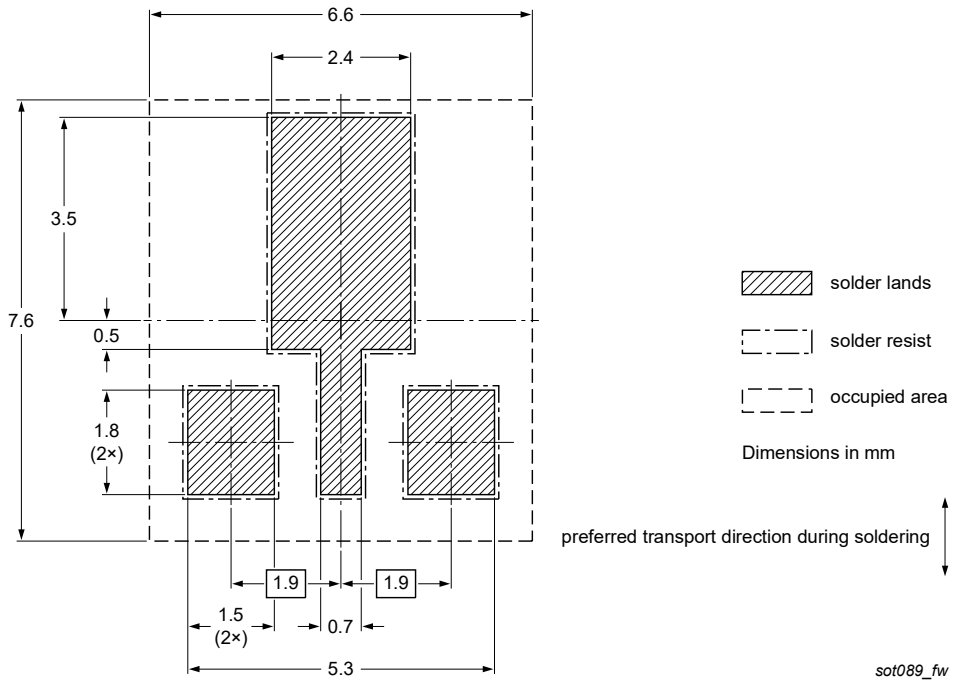


Fig. 11. Wave soldering footprint for SOT89 (SC-62)

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14. Revision history

Table 9. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BCX55-Q_SER v.2	20250729	Product data sheet	-	BCX55-Q_SER v.1
Modifications:	• Characteristics: Typo corrected in conditions of $V_{(BR)CEO}$			
BCX55-Q_SER v.1	20220714	Product data sheet	-	-

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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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