



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

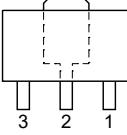
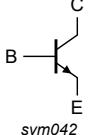
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base	-	-	60	V
I_C	collector current		-	-	1	A
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms	-	-	2	A
h_{FE}	DC current gain	$V_{CE} = 2$ V; $I_C = 150$ mA; $T_{amb} = 25$ °C	[1]	63	-	250
	BCX55-Q		[1]	63	-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

[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		 <i>sym042</i>
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

8. Limiting values

Table 6. Limiting values

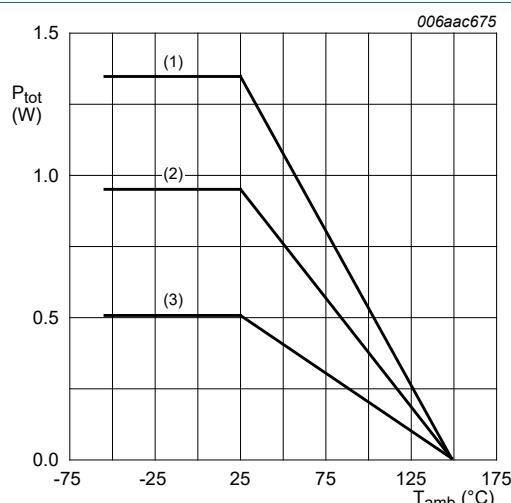
In accordance with the Absolute Maximum Rating System (IEC 60134).

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 cm².

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



- (1) FR4 PCB, mounting pad for collector 6 cm²
- (2) FR4 PCB, mounting pad for collector 1 cm²
- (3) FR4 PCB, standard footprint

Fig. 1. Power derating curves

9. Thermal characteristics

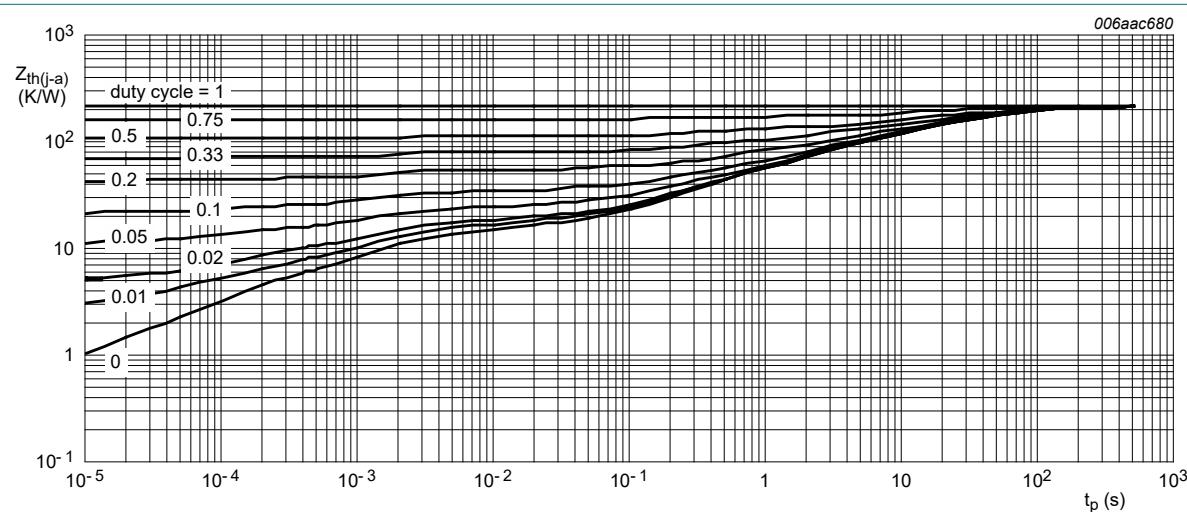
Table 7. Thermal characteristics

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.

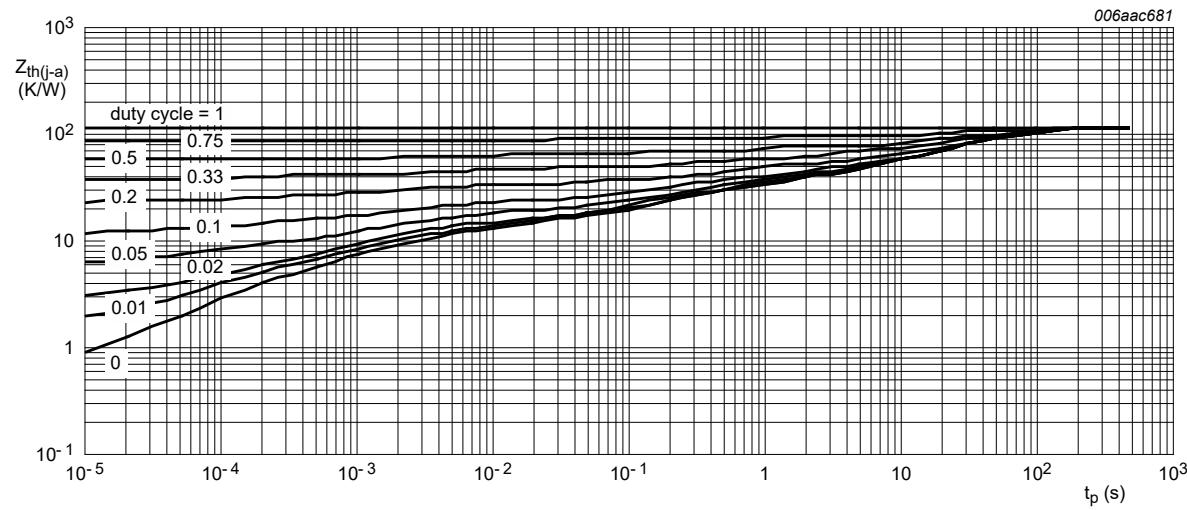
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated; mounting pad for collector 1 cm².

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



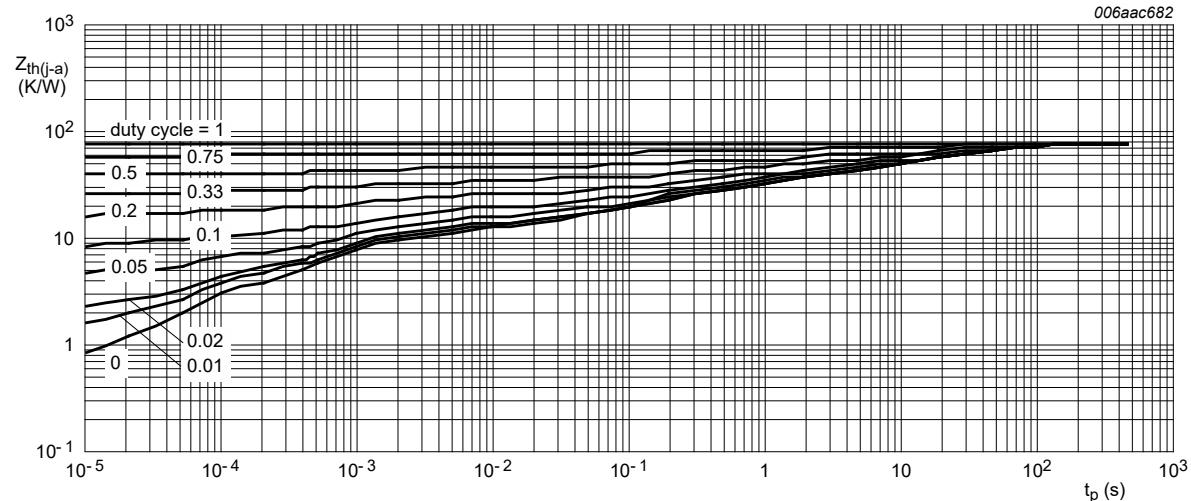
FR4 PCB, single-sided, tin-plated and standard footprint

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 cm².

Fig. 3. 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 6 cm².

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

10. Characteristics

Table 8. Characteristics

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

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

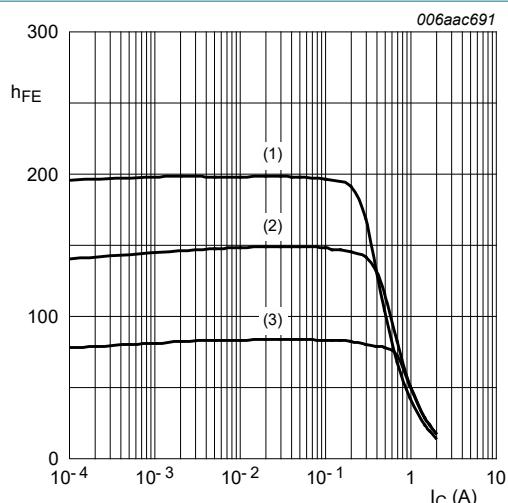


Fig. 5. DC current gain as a function of collector current; typical values

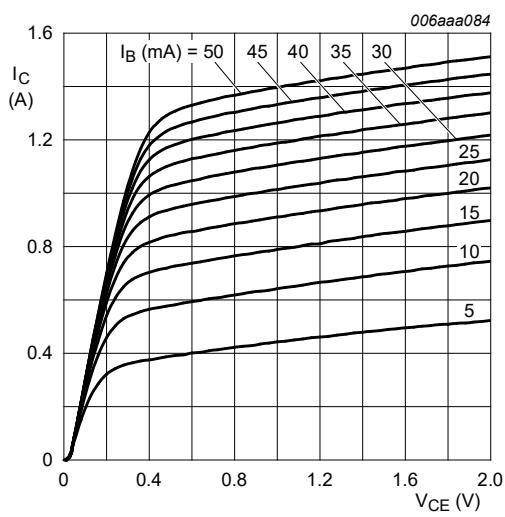


Fig. 6. Collector current as a function of collector-emitter voltage; typical values

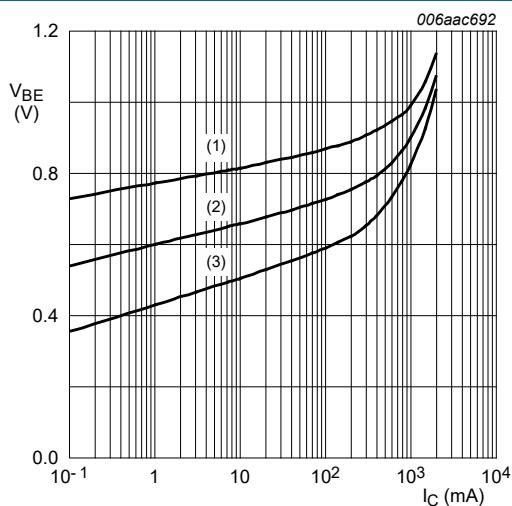


Fig. 7. Base-emitter voltage as a function of collector current; typical values

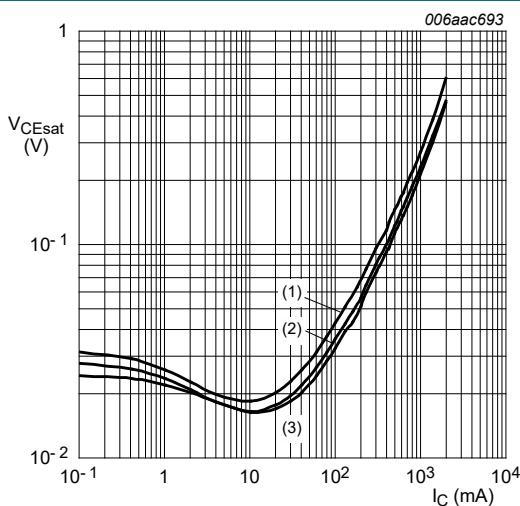


Fig. 8. Collector-emitter saturation voltage as a function of collector current; typical values

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

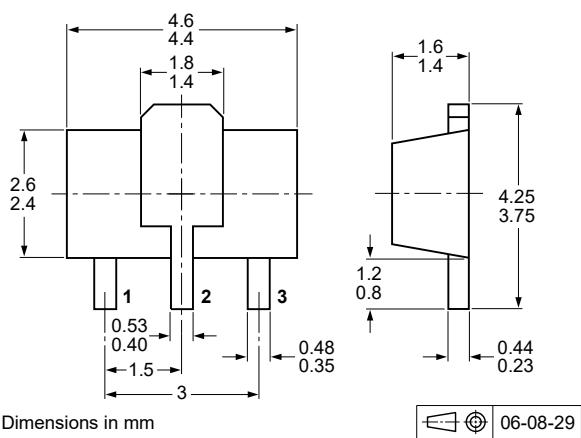


Fig. 9. Package outline SOT89 (SC-62)

13. Soldering

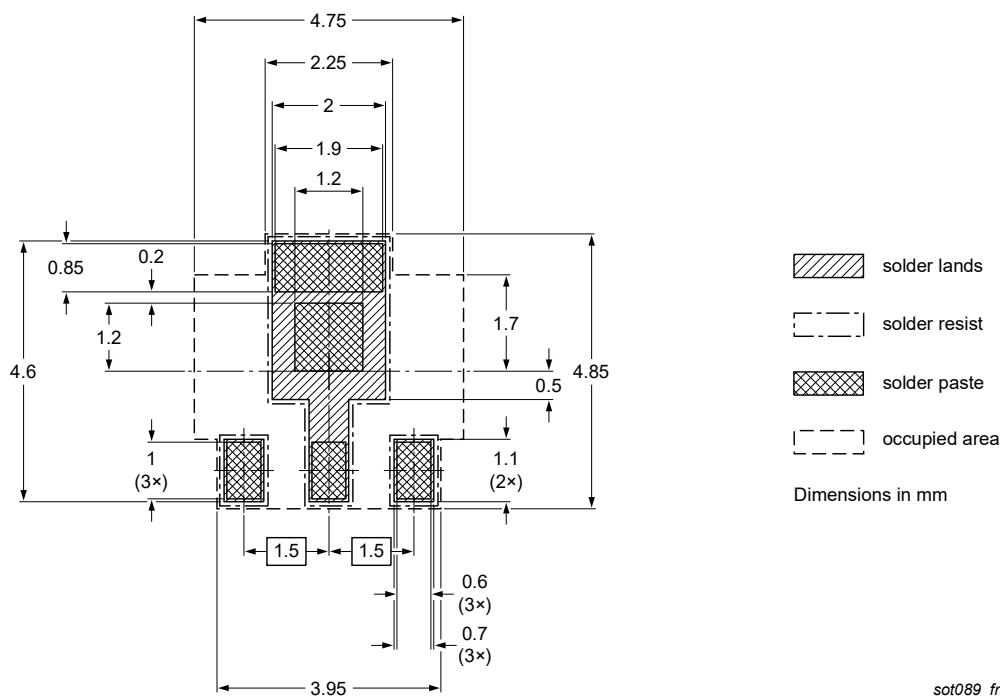


Fig. 10. Reflow soldering footprint for SOT89 (SC-62)

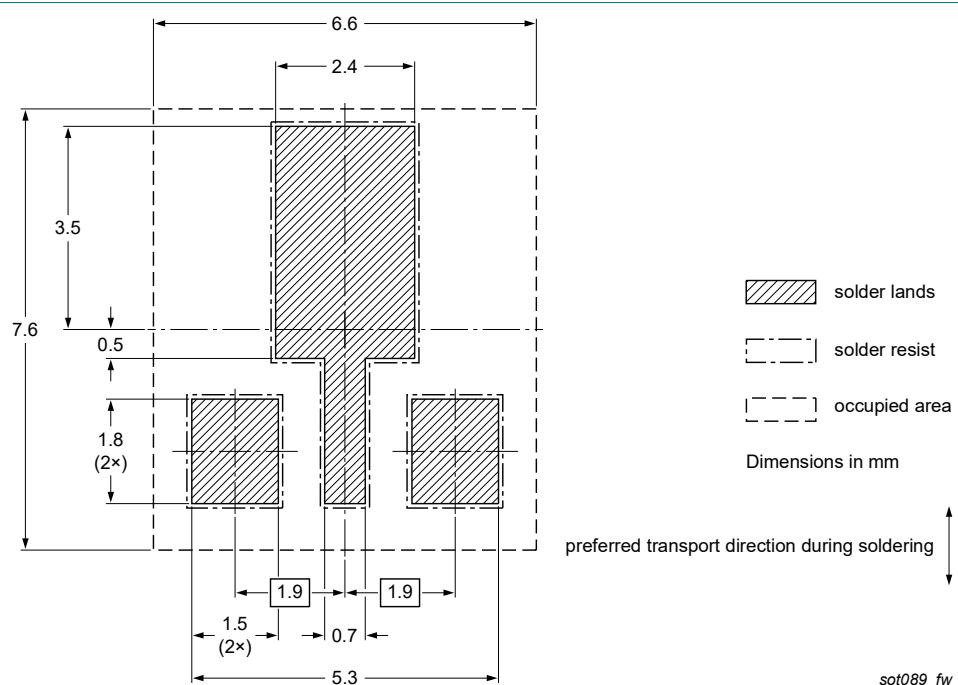


Fig. 11. Wave soldering footprint for SOT89 (SC-62)

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:	<ul style="list-style-type: none">Characteristics: Typo corrected in conditions of $V_{(BR)}CEO$			
BCX55-Q_SER v.1	20220714	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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