BAS70LS-Q

General-purpose Schottky diode

4 May 2021 **Product data sheet**

1. General description

General-purpose Schottky diode in a leadless ultra small DFN1006BD-2 (SOD882BD) SurfaceMounted Device (SMD) plastic package with side-wettable flanks.

2. Features and benefits

- High switching speed
- High breakdown voltage
- Low leakage current
- Low capacitance
- Suitable for Automatic Optical Inspection (AOI) of solder joint
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- Ultra high-speed switching
- Voltage clamping

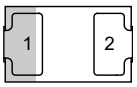
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_F	forward current	T_{amb} = 25 °C		-	-	70	mA
V_R	reverse voltage			-	-	70	V
V_F	forward voltage	I_F = 1 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	-	410	mV

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 Transparent top view **DFN1006BD-2 (SOD882BD)**	 *sym001*
2	A	anode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS70LS-Q	DFN1006BD-2	Leadless ultra small plastic package with side-wettable flanks (SWF); 2 terminals; 0.65 mm pitch; 1 mm x 0.6 mm x 0.47 mm body	SOD882BD

7. Marking

Table 4. Marking codes

Type number	Marking code
BAS70LS-Q	8K

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
V_R	reverse voltage			-	70	V
I_F	forward current	T_{amb} = 25 °C		-	70	mA
I_{FRM}	repetitive peak forward current	$t_p \leq$ 1 s; $\delta \leq$ 0.5; T_{amb} = 25 °C		-	70	mA
I_{FSM}	non-repetitive peak forward current	square-wave pulse; $t_p \leq$ 10 ms; $T_{j(init)}$ = 25 °C		-	100	mA
P_{tot}	total power dissipation	$T_{amb} \leq$ 25 °C	[1]	-	345	mW
			[2]	-	640	mW
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			-55	150	°C
T_{stg}	storage temperature			-65	150	°C

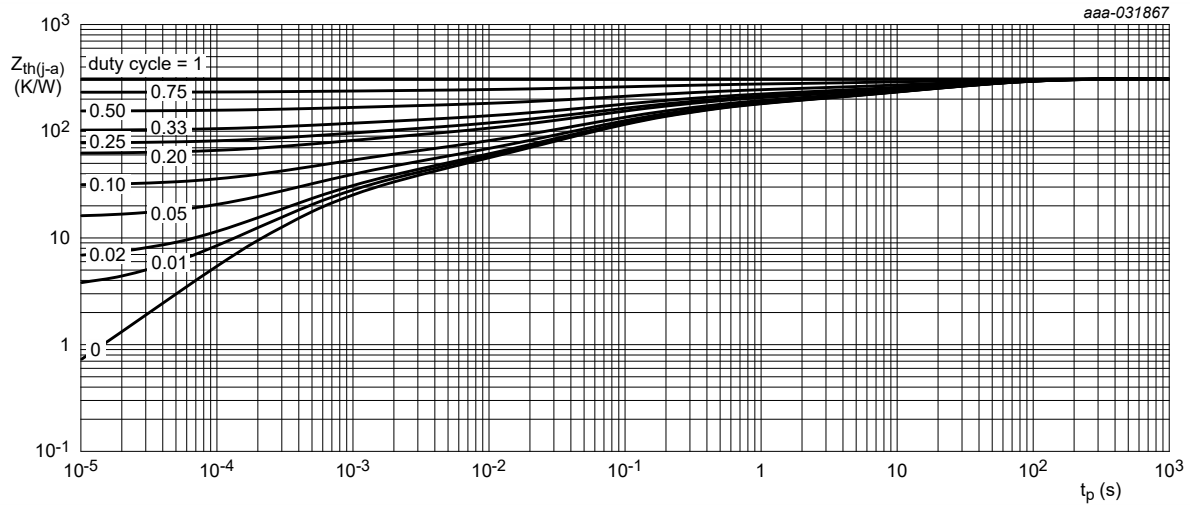
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided 70 µm copper, tin-plated and standard footprint.
[2] Device mounted on an FR4 Printed-Circuit Board (PCB), 70 µm single-sided copper, tin-plated; mounting pad for collector 1cm^2.

9. Thermal characteristics

Table 6. Thermal characteristics

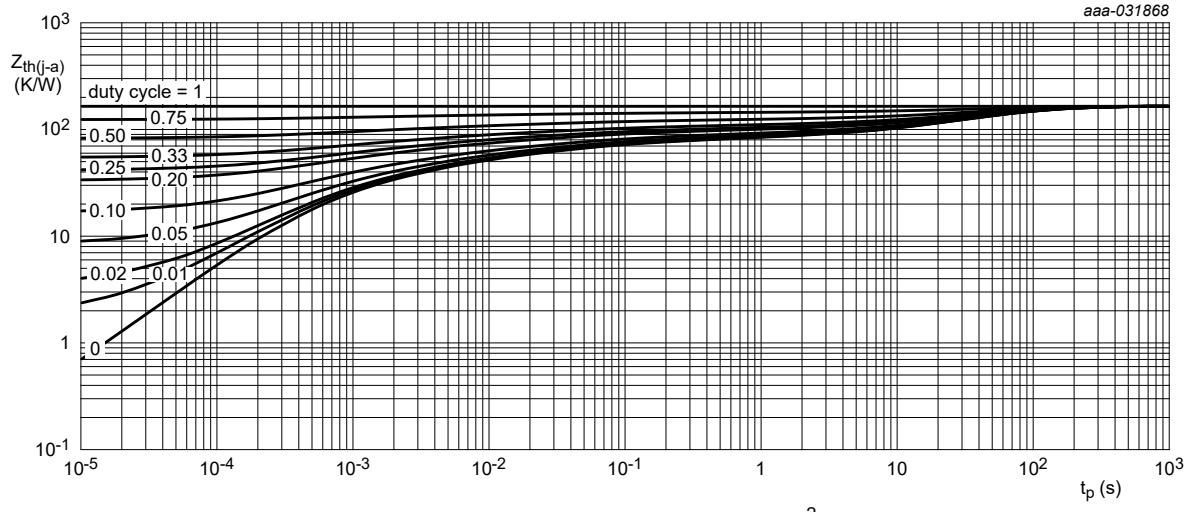
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	360	K/W
			[3]	-	-	195	K/W

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided 70 µm copper, tin-plated and standard footprint.
[2] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses PR are a significant part of the total power losses.
[3] Device mounted on an FR4 Printed-Circuit Board (PCB), 70 µm single-sided copper, tin-plated; mounting pad for collector 1cm^2.



FR4 PCB, 70 µm single sided copper standard footprint

Fig. 1. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



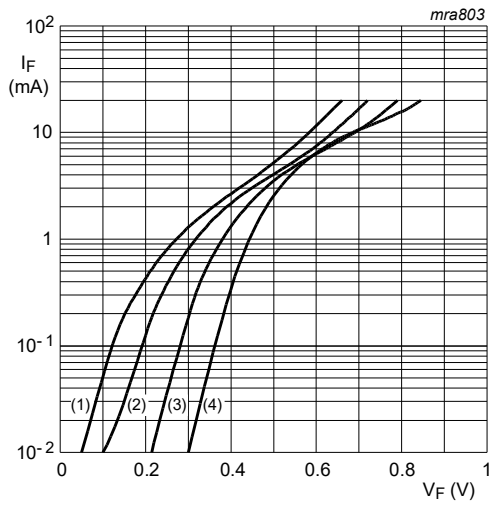
FR4 PCB, 70 µm single sided copper, mounting pad for cathode 1 cm^2

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

10. Characteristics

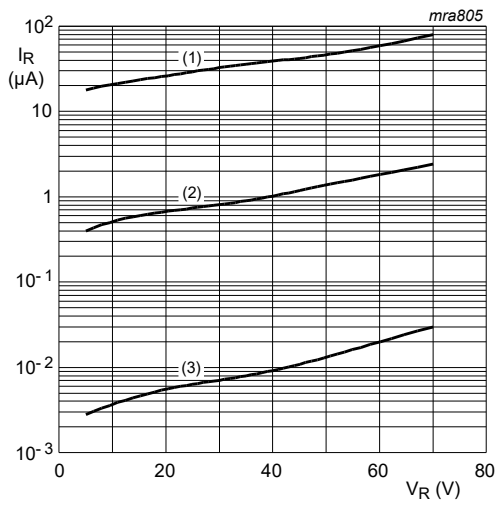
Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 1 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	-	410	mV
		I_F = 10 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	-	750	mV
		I_F = 15 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	-	1	V
I_R	reverse current	V_R = 50 V; T_j = 25 °C		-	-	100	nA
		V_R = 70 V; T_j = 25 °C		-	-	10	µA
C_d	diode capacitance	V_R = 0 V; f = 1 MHz; T_{amb} = 25 °C		-	-	2	pF



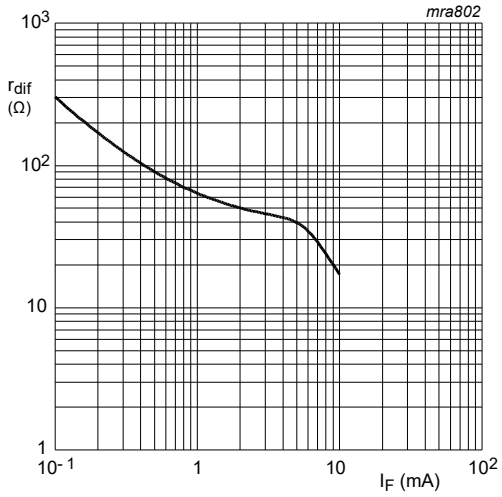
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C
(4) T_{amb} = −40 °C

Fig. 3. Forward current as a function of forward voltage; typical values



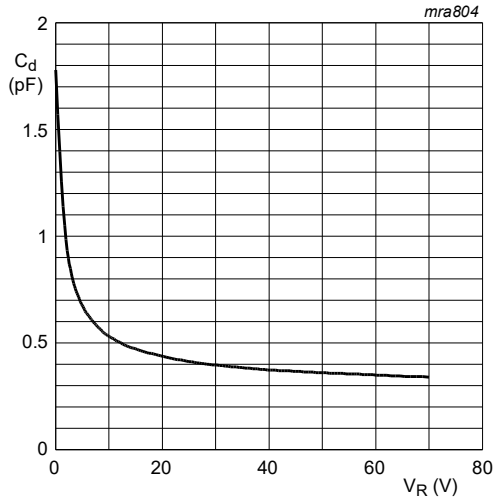
(1) T_j = 125 °C
(2) T_j = 85 °C
(3) T_j = 25 °C

Fig. 4. Reverse current as a function of reverse voltage; typical values



f = 10 kHz

Fig. 5. Differential forward resistance as a function of forward current; typical values



T_{amb} = 25 °C; f = 1 MHz

Fig. 6. Diode capacitance as a function of reverse voltage; typical values

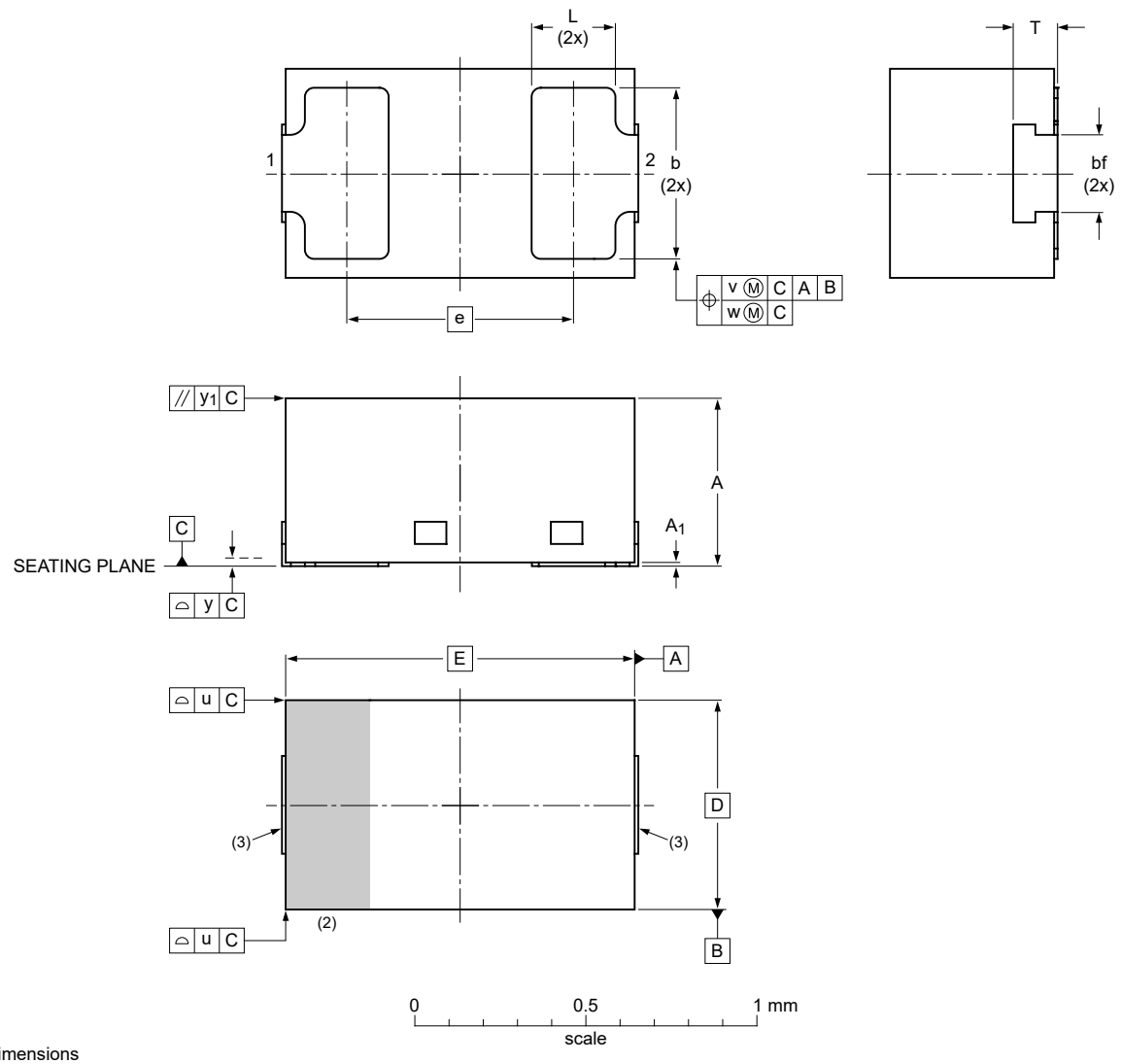
11. Test information

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

DFN1006BD-2 **Leadless ultra small plastic package with side-wettable flanks (SWF); 2 terminals; 0.65 mm pitch; 1 mm x 0.6 mm x 0.47 mm body** **SOD882BD**



Dimensions

Unit		$A^{(1)}$	A_1	$bf^{(1)}$	b	D	E	e	L	$T^{(1)}$	u	v	w	y	y_1
	max	0.50	0.04		0.55				0.30	0.22					
mm	nom	0.47			0.50	0.60	1.00	0.65	0.25	0.16	0.05	0.10	0.05	0.05	0.05
	min	0.44		0.20	0.45				0.22	0.10					

Note
1. Dimension including plating thickness.
2. The marking bar indicates the cathode.
3. Solderable lead end, protrusion max. 0.02 mm.

sod882bd_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOD882BD		MO-343AA				~~20-06-22~~ 20-06-23

Fig. 7. Package outline DFN1006BD-2 (SOD882BD)

13. Soldering

Footprint information for reflow soldering of DFN1006BD-2 package **SOD882BD**

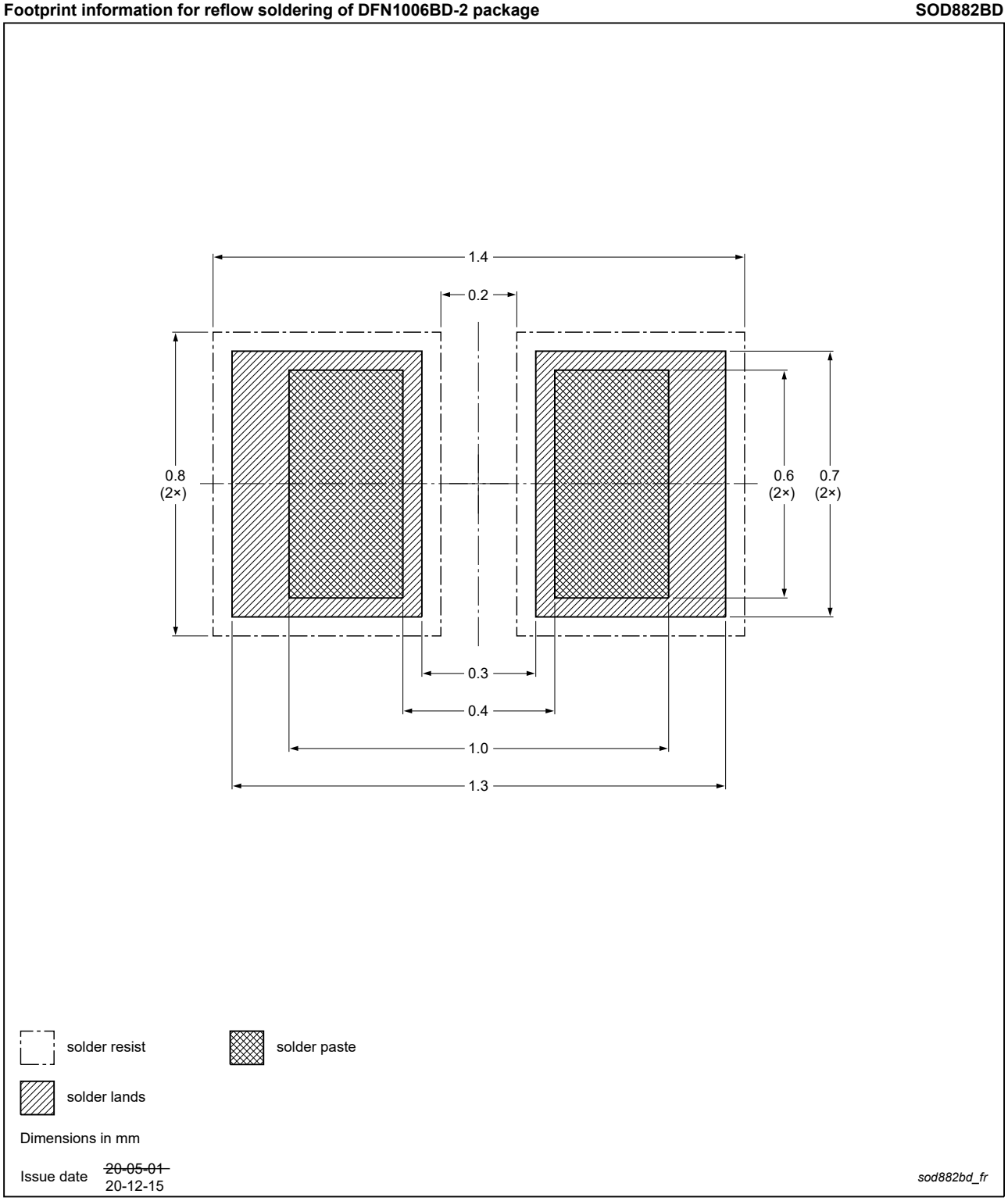


Fig. 8. Reflow soldering footprint for DFN1006BD-2 (SOD882BD)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS70LS-Q v.2	20210504	Product data sheet	-	BAS70LS-Q v.1
Modifications:	• Features and benefits: added recommendation for automotive applications			
BAS70LS-Q v.1	20210125	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.

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at https://www.nexperia.com.

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