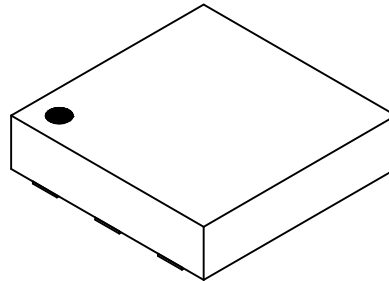
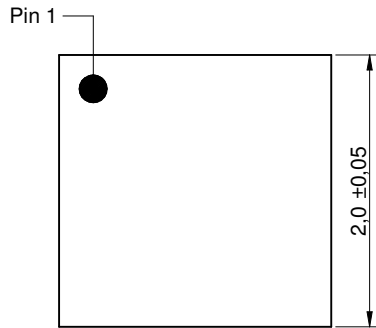
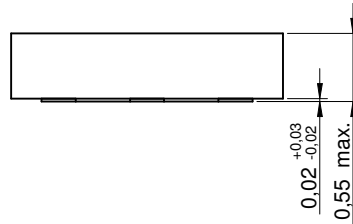
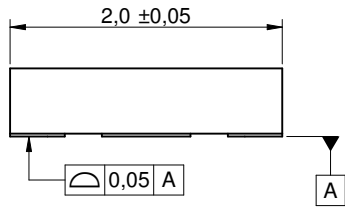
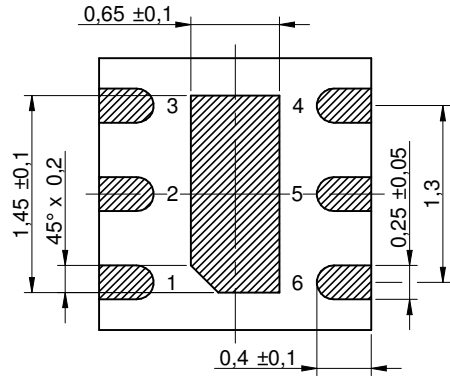
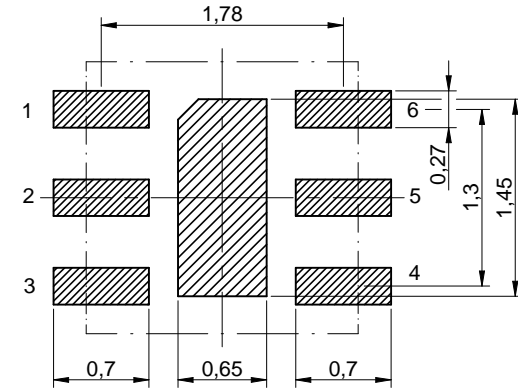


Dimensions: [mm]



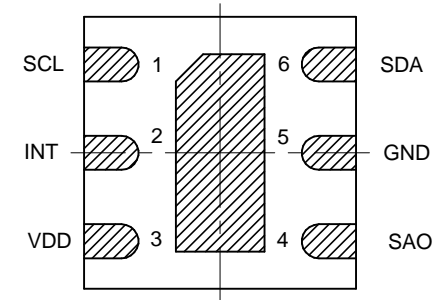
Scale - 18:1

Recommended Land Pattern: [mm] (Top View)



Scale - 18:1

Product Specific Pinning: (Top View)



Scale - 18:1



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CHECKED NMe	REVISION 001.000	DATE (YYYY-MM-DD) 2020-02-10	GENERAL TOLERANCE DIN ISO 2768-1m	PROJECTION METHOD
DESCRIPTION WSEN-TIDS Temperature sensor IC			ORDER CODE 2521020222501	
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Temperature Sensor Specification:

Properties	Test conditions	Value			Unit
		min.	typ.	max.	
Measurement range	T _{RANGE}	-40		125	°C
Absolute Accuracy	T _{ACC_ABS} T = -10 to 60 °C	-0.5 °C	±0.25 °C	0.5 °C	
Total accuracy	T _{ACC_TOT} T = -40 to 125 °C	-1 °C	±0.7 °C	1 °C	
Resolution	RES _T		16		bits
Sensitivity	SEN _T		0.01 °C/digit		
Output data rate	ODR Continuous mode	25		200	Hz
Noise (RMS)	T _{NOISE} ODR = 25 Hz		0.025		°C RMS

Electrical Properties:

Properties	Test conditions	Value			Unit
		min.	typ.	max.	
Operating supply voltage	V _{DD}	1.5	3.3	3.6	V
Current consumption in single conversion mode	I _{DD_SC}		1.75		µA
Current consumption in power down mode	I _{DD_PD}		0.6		µA
Peak current consumption	I _{DD_PEAK} During conversion		120	180	µA
Digital input voltage - high-level	V _{IH}	0.7 * V _{DD}			
Digital input voltage - low-level	V _{IL}			0.3 * V _{DD}	
Digital output voltage - high-level	V _{OH}	V _{DD} - 0.2 V			

Absolute Maximum Ratings:

Properties	Value	Unit	
			min.
Input voltage VDD pin	V _{DD} -0.3	4.8	V

Absolute Maximum Ratings:

Properties	Value	Unit	
			min.
Input voltage SDA, SCL,CS & SAO pins ¹⁾	V _{IN} -0.3	V _{DD} + 0.3	V

¹⁾ SCL,SDA and SAO are control pins. Supply voltage on any pin should never exceed 4.8 V

General Information:




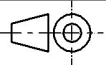

Operating Temperature	-40 up to +125 °C
Storage Conditions (in original packaging)	< 40 °C ; < 75 % RH
Communication interface	I ² C
Moisture Sensitivity Level (MSL)	1
Electrostatic discharge protection (HBM)	2 kV

Product Specific Pinning:

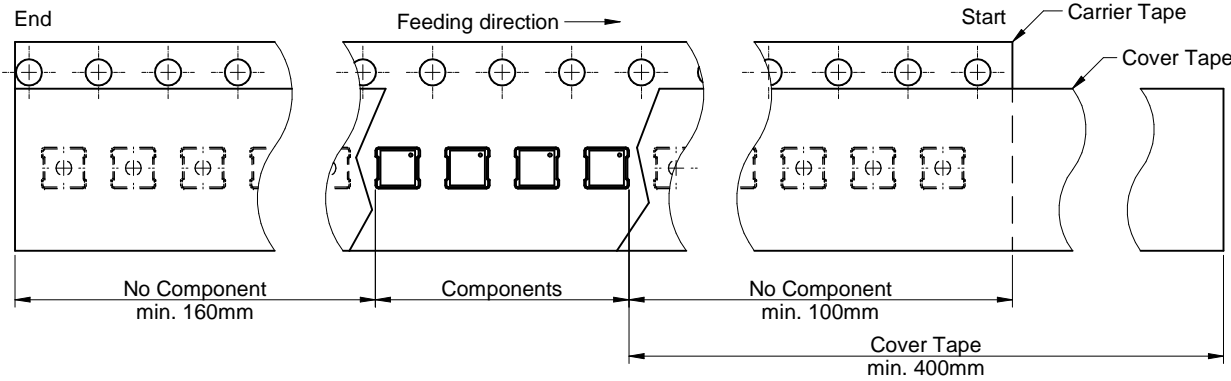
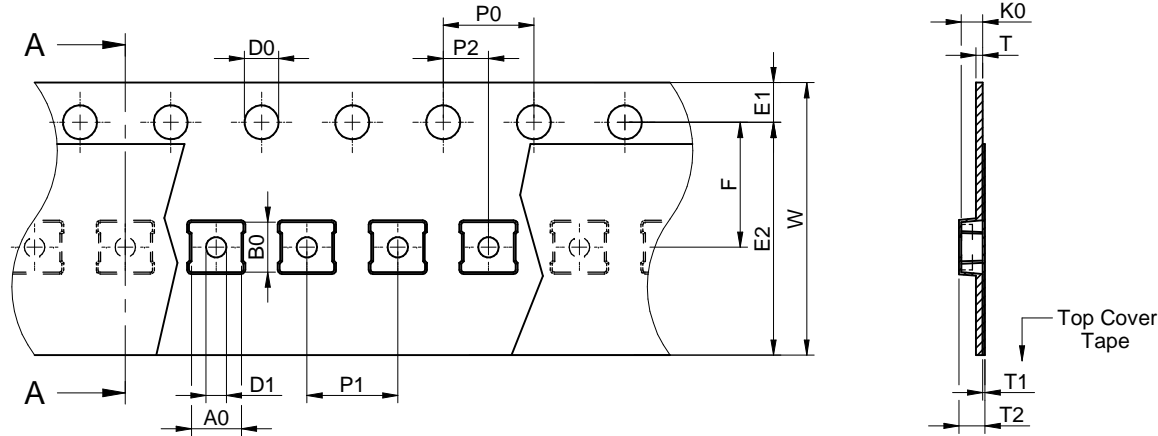
Pin	Pad	Description	I/O
SCL	1	I ² C serial clock	Input
INT	2	Interrupt	Output
VDD	3	Positive supply voltage	Supply
SAO	4	I ² C device address selection	Input
GND	5	Negative supply voltage	Supply
SDA	6	I ² C serial data	Input/Output

Certification:

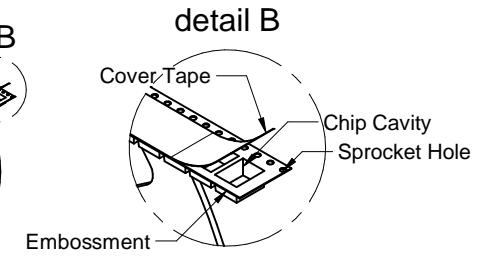
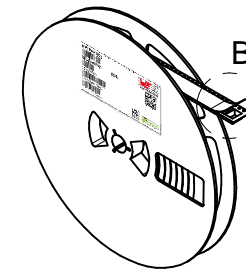
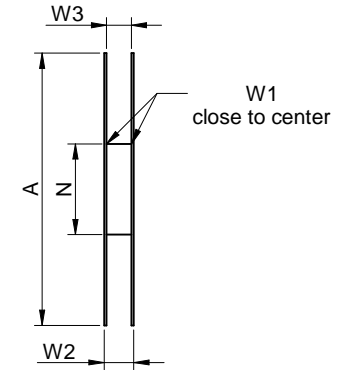
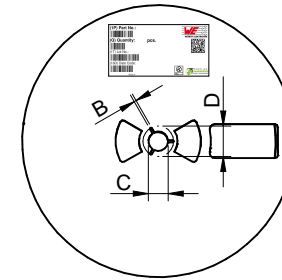
RoHS Approval	Compliant [2011/65/EU&2015/863]
REACH Approval	Conform or declared [(EC)1907/2006]

  	CHECKED NMe	REVISION 001.000	DATE (YYYY-MM-DD) 2020-02-10	GENERAL TOLERANCE DIN ISO 2768-1m	PROJECTION METHOD 	
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	BUSINESS UNIT eiSos	STATUS Valid	PAGE 2/7			

Packaging Specification - Tape and Reel: [mm]



Tape Type	A0 (mm)	B0 (mm)	W (mm)	T (mm)	T1 (mm)	T2 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	D0 (mm)	D1 (mm)	E1 (mm)	E2 (mm)	F (mm)	Material	Qty. (pcs.)
	±0.05	±0.05	+0.3/-0.1	±0.05	ref.	typ.	typ.	±0.1	±0.1	±0.05	+0.1/-0.0	min.	±0.1	min.	±0.05		
2a	2,30	2,30	12,00	0,25	0,10	1,20	1,00	4,00	4,00	2,00	1,50	1,50	1,75	10,25	5,50	Polystyrene	3000



A (mm)	B (mm)	C (mm)	D (mm)	N (mm)	W1 (mm)	W2 (mm)	W3 (mm)	W3 (mm)	Material
± 2,0	min.	min.	min.	typ.	+ 2,0	max.	min.	max.	Polystyrene
178,00	1,50	12,80	20,20	60,00	12,40	18,40	11,90	15,40	



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This electronic component has been designed and developed for usage in general electronic equipment only. This product is not authorized for use in equipment where a higher safety standard and reliability standard is especially required or where a failure of the product is reasonably expected to cause severe personal injury or death, unless the parties have executed an agreement specifically governing such use. Moreover Würth Elektronik eiSos GmbH & Co KG products are neither designed nor intended for use in areas such as military, aerospace, aviation, nuclear control, submarine, transportation (automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network etc... Würth Elektronik eiSos GmbH & Co KG must be informed about the intent of such usage before the design-in stage. In addition, sufficient reliability evaluation checks for safety must be performed on every electronic component which is used in electrical circuits that require high safety and reliability functions or performance.

Classification Reflow Profile for SMT components:



Classification Reflow Soldering Profile:

Profile Feature		Value
Preheat Temperature Min	$T_{s \min}$	150 °C
Preheat Temperature Max	$T_{s \max}$	200 °C
Preheat Time t_s from $T_{s \min}$ to $T_{s \max}$	t_s	60 - 120 seconds
Ramp-up Rate (T_L to T_p)		3 °C/ second max.
Liquidous Temperature	T_L	217 °C
Time t_L maintained above T_L	t_L	60 - 150 seconds
Peak package body temperature	T_p	$T_p \leq T_c$, see Table below
Time within 5°C of actual peak temperature	t_p	20 - 30 seconds
Ramp-down Rate (T_p to T_L) ¹⁾		6 °C/ second max.
Time 25°C to peak temperature		8 minutes max.

¹⁾ In order to reduce residual stress on the sensor components, the recommended ramp-down temperature slope should not exceed 3°C/sec.
refer to IPC/ JEDEC J-STD-020E

Package Classification Reflow Temperature (T_c):

Properties	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
PB-Free Assembly Package Thickness < 1.6 mm	260 °C	260 °C	260 °C
PB-Free Assembly Package Thickness 1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
PB-Free Assembly Package Thickness > 2.5 mm	250 °C	245 °C	245 °C

refer to IPC/ JEDEC J-STD-020E

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			BUSINESS UNIT	STATUS	PAGE
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Further information

Component Libraries:



[3D_2521020222501](#)



[Altium_WSEN \(V4.1\)](#)



[Eagle_WSEN \(V4.1\)](#)



[Download_IGS_2521020222501](#)






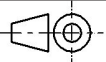

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Cautions and Warnings:

The following conditions apply to all goods within the product series of sensor components of Würth Elektronik eiSos GmbH & Co. KG:

General:

- This electronic component is designed and manufactured for use in general electronic equipment.
- Würth Elektronik must be asked for written approval (following the PPAP procedure) before incorporating the components into any equipment in fields such as military, aerospace, aviation, nuclear control, submarine, transportation (automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network, etc. where higher safety and reliability are especially required and/or if there is the possibility of direct damage or human injury.
- Electronic components that will be used in safety-critical or high-reliability applications, shall be pre-evaluated by the customer.
- The component is designed and manufactured to be used within the datasheet specified values. If the usage and operation conditions specified in the datasheet are not met, the wire insulation may be damaged or dissolved.
- Do not drop or impact the components, the component may be damaged
- Würth Elektronik products are qualified according to international standards, which are listed in each product reliability report. Würth Elektronik does not warrant any customer qualified product characteristics beyond Würth Elektronik's specifications, for its validity and sustainability over time.
- The responsibility for the applicability of the customer specific products and use in a particular customer design is always within the authority of the customer. All technical specifications for standard products also apply to customer specific products.

Product specific:

Soldering:

- The solder profile must comply with the technical product specifications. All other profiles will void the warranty.
- All other soldering methods are at the customers' own risk.

Cleaning and Washing:

- Washing agents used during the production to clean the customer application might damage or change the characteristics of the component. Washing agents may have a negative effect on the long-term functionality of the product.
- Using a brush during the cleaning process may damage the component. Therefore, we do not recommend using a brush during the PCB cleaning process.

Potting and Coating:

- Potting material might shrink or expand during and after hardening. This might apply mechanical stress on the components, which can influence the characteristics of the transfer function. In addition, potting material can close existing openings in the housing. This can lead to a malfunction of the component. Thus, potting is not recommended.

- Conformal coating may affect the product performance. We do not recommend coating the components.

Storage Conditions:

- A storage of Würth Elektronik products for longer than 12 months is not recommended. Within other effects, the terminals may suffer degradation, resulting in bad solderability. Therefore, all products shall be used within the period of 12 months based on the day of shipment.
- Do not expose the components to direct sunlight.
- The storage conditions in the original packaging are defined according to DIN EN 61760-2.
- For a moisture sensitive component, the storage condition in the original packaging is defined according to IPC/JEDEC-J-STD-033. It is also recommended to return the component to the original moisture proof bag and reseal the moisture proof bag again.
- The storage conditions stated in the original packaging apply to the storage time and not to the transportation time of the components.

Packaging:






- The packaging specifications apply only to purchase orders comprising whole packaging units. If the ordered quantity exceeds or is lower than the specified packaging unit, packaging in accordance with the packaging specifications cannot be ensured.

Handling:

- Violation of the technical product specifications such as exceeding the nominal rated supply voltage, will void the warranty.
- Violation of the technical product specifications such as but not limited to exceeding the absolute maximum ratings will void the conformance to regulatory requirements.
- ESD prevention methods need to be followed for manual handling and processing by machinery.
- The edge castellation is designed and made for prototyping, i.e. hand soldering purposes only.
- The applicable country regulations and specific environmental regulations must be observed.
- Do not disassemble the product. Evidence of tampering will void the warranty.
- The temperature rise of the component must be taken into consideration. The operating temperature is comprised of ambient temperature and temperature rise of the component. The operating temperature of the component shall not exceed the maximum temperature specified.

These cautions and warnings comply with the state of the scientific and technical knowledge and are believed to be accurate and reliable. However, no responsibility is assumed for inaccuracies or incompleteness.

All topics are described in a more detailed manner in the user manual for each product.

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