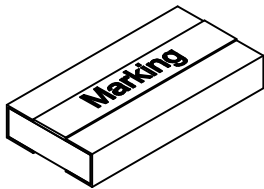
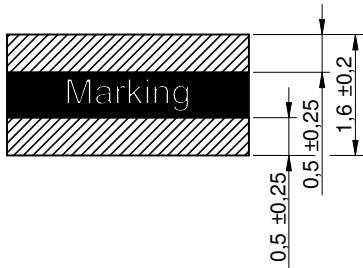
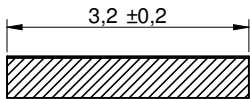
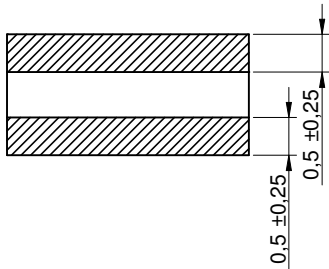
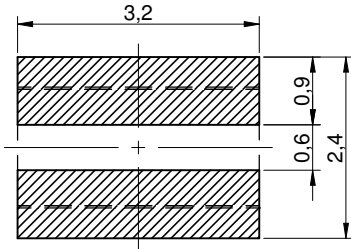


Dimensions: [mm]



Scale - 10:1

Recommended Land Pattern: [mm]



Scale - 10:1

Schematic:



Electrical Properties:

Properties		Test conditions	Value	Unit	Tol.
Resistance	R		0.6	Ω	±1%
Rated Power	P _{Rated}	@ 70 °C	1	W	
Temperature Coefficient of Resistance (max.)	TCR		200	ppm/ °C	max.
Rated Current	I _R		1.3	A	max.
Rated Voltage	U _R		774.6	mV	max.

General Information:

Operating Temperature	-55 up to +155 °C
Storage Conditions (in original packaging)	5 °C - 35 °C; 25 % up to 75 % RH
Test conditions of Electrical Properties: +20 °C, 35 % RH if not specified differently	
FIT according to separate documentation	
Component conform to REACH and RoHS requirements and standards	

Würth Elektronik eiSos GmbH & Co. KG
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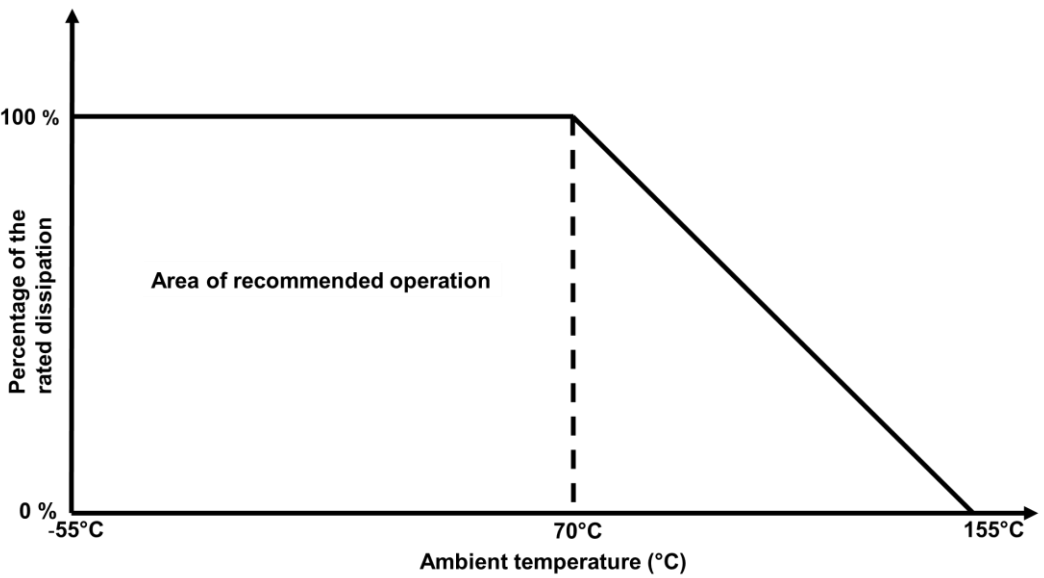
CREATED KaS	CHECKED PSL	GENERAL TOLERANCE DIN ISO 2768-1m	PROJECTION METHOD
DESCRIPTION WRIS-KWKH Thick Film Resistors		TECHNICAL REFERENCE KH0612R600F101HAATP0000	
		ORDER CODE 561070332080	
SIZE 0612	REVISION 001.000	STATUS Valid	DATE (YYYY-MM-DD) 2018-10-30
		BUSINESS UNIT eiSos	PAGE 1/6

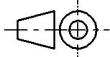
This electronic component has been designed and developed for usage in general electronic equipment only. This product is not authorized for use in equipment where a higher safety standard and reliability standard is especially required or where a failure of the product is reasonably expected to cause 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.

Mechanical Properties:

Properties	Definition	
Termination	plating	Cu/Ni/Sn
Adhesive Strenght of Termination		60 ± 1 sec; 17.7N
Vibration Resistance		5 g for 20 minutes, 12cycles each of 3 orientations @ 10 - 2000 - 10 Hz
Resistance to Solder Heat	Solder Temperature	260°C ± 5°C
	Dipping Time	10 sec.
	Specific	Refer to Soldering Profile

Derating Curve:



Würth Elektronik eiSos GmbH & Co. KG EMC & Inductive Solutions Max-Eyth-Str. 1 74638 Waldenburg Germany Tel. +49 (0) 79 42 945 - 0 www.we-online.com eiSos@we-online.com 	CREATED		CHECKED	GENERAL TOLERANCE		PROJECTION METHOD		
	KaS		PSL	DIN ISO 2768-1m				
	DESCRIPTION					TECHNICAL REFERENCE		
						KH0612R600F101HAATP0000		
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Classification Reflow Profile for SMT components:



Classification Reflow Soldering Profile:

Profile Feature		Value
Preheat Temperature Min	$T_{s \text{ min}}$	150 °C
Preheat Temperature Max	$T_{s \text{ max}}$	200 °C
Preheat Time t_s from $T_{s \text{ min}}$ to $T_{s \text{ max}}$	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	see table below
Time within 5°C of actual peak tempaure	t_p	20 - 30 seconds
Ramp-down Rate (T_L to T_p)		6 °C/ second max.
Time 25°C to peak temperature		8 minutes max.

refer to IPC/ JEDEC J-STD-020E

Package Classification Reflow Temperature:

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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CREATED KaS	CHECKED PSL	GENERAL TOLERANCE DIN ISO 2768-1m	PROJECTION METHOD 	
DESCRIPTION WRIS-KWKH Thick Film Resistors			TECHNICAL REFERENCE KH0612R600F101HAATP0000	
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			PAGE 3/6	

Cautions and Warnings:

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

General:

- This electronic component was designed and manufactured for use in general electronic equipment.
- Würth Elektronik must be asked for a written approval (following the certain PPAP level procedure) before incorporating the components into any equipment in the field 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, should be pre-evaluated by the customer.
- Direct mechanical impact to the product shall be prevented as material of the body, pins or termination could flake or in the worst case it could break.
- Avoid any water or heavy dust on resistor s surface, which may cause electrical leakage, damage, overheating or corrosion.
- 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 characteristic, beyond Würth Elektronik specifications, for its validity and sustainability over time.
- The customer is responsible for the functionality of his or her own products. All technical specifications for standard products also apply to customer specific products.
- The component was 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 body, pins or termination may be damaged or dissolved.
- Do not apply any kind of flexural or compressive force onto soldered or unsoldered component.
- The resistance tolerance as specified within the datasheet is only valid on the date of delivery and according specified measurement criteria.

Product specific:

Storage conditions:

- A storage of Würth Elektronik products for longer than 24 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 24 months based on the day of shipment.
- Do not expose the components into direct sunlight.
- These product must be stored in stable conditions within an ambient temperature between 5°C to 35°C with a relative humidity of 25 to 75%.
- The environment in which the resistors are operated and stored has to have atmospheric characteristics and must be free of dew condensation and toxic gases (e.g. chlorine, ammonia, sulfur, hydrogen sulphide and hydrogen sulfate).

Operating climatic conditions:

- Do not exceed the lower nor the upper specified temperature under no circumstances.
- Be aware that the specified resistance tolerance is only valid at the date of delivery.
- Do not use the resistors under high humidity, high temperature nor under high or low atmospheric pressure which may affect resistors reliability.
- Surface temperature including self-heating must be kept below the maximum operating temperature.
- Avoid any water or heavy dust on resistors surface, which may cause electrical leakage, damage, overheating or corrosion.

Operating load conditions:

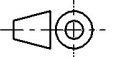
- Do not use the resistor with any higher than specified rated dissipation, rated current or rated voltage.
- Violation of the technical product specifications such as exceeding the specified dissipation will void the warranty.
- When the resistors are operated in ambient temperature above the rated temperature, the power rating must be derated according to the derating curve.
- Verification and confirmation of performance characteristics of product, after on-board mounting, is advised.

Design of the PCB:

- The chip resistor shall be located to minimize any possible mechanical stress from deflection or board wrap.
- It is recommended to position the chip resistor in parallel to slits and perforations and as far away from slits, perforations, separation points, screw holes, frames and edges of the PCB to avoid mechanical stress.
- Determine the shape and size of the solder pads to have proper amount of solder on the terminations as the amount of solder at the terminations has a direct effect on resistance value and reliability of the resistor. The resistance value after soldering may change depending on the size of land pattern, the wiring pattern or solder amount, make sure the effect of the change of the resistance value before you use it.
- WE provide individual land patterns for each termination in the datasheet.
- Cracking of the solder fillet may occur with thermal cycling, because of mismatch of coefficients of thermal expansion between the board and the component. Pad size, amount of solder, and amount of heatradiating from the PCB must be designed carefully.
- The parasitic inductance of the chip resistor and the wiring pattern may influence current detection under high frequency usage, make sure the effect before you use it.
- The PCB design (e.g. land pattern design and grounding planes) must be evaluated for each individual circuit to achieve the optimal soldering results.

Mounting:

- Adjust the bottom dead center of the mounting head not to press on the PCB surface to avoid any punctual pressure on component at pick & place.
- When a highly active halogenous (chlorine,bromine, etc.) flux is used, the residues of flux may negatively affect resistor performance and reliability.

Würth Elektronik eiSos GmbH & Co. KG EMC & Inductive Solutions Max-Eyth-Str. 1 74638 Waldenburg Germany Tel. +49 (0) 79 42 945 - 0 www.we-online.com eiSos@we-online.com 	CREATED	CHECKED	GENERAL TOLERANCE	PROJECTION METHOD		
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Important Notes

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

1. General Customer Responsibility

Some goods within the product range of Würth Elektronik eiSos GmbH & Co. KG contain statements regarding general suitability for certain application areas. These statements about suitability are based on our knowledge and experience of typical requirements concerning the areas, serve as general guidance and cannot be estimated as binding statements about the suitability for a customer application. The responsibility for the applicability and use in a particular customer design is always solely within the authority of the customer. Due to this fact it is up to the customer to evaluate, where appropriate to investigate and decide whether the device with the specific product characteristics described in the product specification is valid and suitable for the respective customer application or not.

2. Customer Responsibility related to Specific, in particular Safety-Relevant Applications

It has to be clearly pointed out that the possibility of a malfunction of electronic components or failure before the end of the usual lifetime cannot be completely eliminated in the current state of the art, even if the products are operated within the range of the specifications. In certain customer applications requiring a very high level of safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health it must be ensured by most advanced technological aid of suitable design of the customer application that no injury or damage is caused to third parties in the event of malfunction or failure of an electronic component. Therefore, customer is cautioned to verify that data sheets are current before placing orders. The current data sheets can be downloaded at www.we-online.com.

3. Best Care and Attention

Any product-specific notes, cautions and warnings must be strictly observed. Any disregard will result in the loss of warranty.

4. Customer Support for Product Specifications

Some products within the product range may contain substances which are subject to restrictions in certain jurisdictions in order to serve specific technical requirements. Necessary information is available on request. In this case the field sales engineer or the internal sales person in charge should be contacted who will be happy to support in this matter.

5. Product R&D

Due to constant product improvement product specifications may change from time to time. As a standard reporting procedure of the Product Change Notification (PCN) according to the JEDEC-Standard inform about minor and major changes. In case of further queries regarding the PCN, the field sales engineer or the internal sales person in charge should be contacted. The basic responsibility of the customer as per Section 1 and 2 remains unaffected.

6. Product Life Cycle

Due to technical progress and economical evaluation we also reserve the right to discontinue production and delivery of products. As a standard reporting procedure of the Product Termination Notification (PTN) according to the JEDEC-Standard we will inform at an early stage about inevitable product discontinuance. According to this we cannot guarantee that all products within our product range will always be available. Therefore it needs to be verified with the field sales engineer or the internal sales person in charge about the current product availability expectancy before or when the product for application design-in disposal is considered. The approach named above does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.

7. Property Rights

All the rights for contractual products produced by Würth Elektronik eiSos GmbH & Co. KG on the basis of ideas, development contracts as well as models or templates that are subject to copyright, patent or commercial protection supplied to the customer will remain with Würth Elektronik eiSos GmbH & Co. KG. Würth Elektronik eiSos GmbH & Co. KG does not warrant or represent that any license, either expressed or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, application, or process in which Würth Elektronik eiSos GmbH & Co. KG components or services are used.

8. General Terms and Conditions

Unless otherwise agreed in individual contracts, all orders are subject to the current version of the “General Terms and Conditions of Würth Elektronik eiSos Group”, last version available at www.we-online.com.

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**Стандарт
Электрон
Связь**

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

Наши контакты:

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Электронная почта: sales@st-electron.ru

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