

No. SPQ-19L27

Nov. 20, 2019

TO : DIGI-KEY ELECTRONICS

S P E C I F I C A T I O N

Product name : DIA THERMISTOR NEGATIVE

Part number : DTN-G103H3H-DGS102H

PW-AP-3610E : Specification

Should you have any changes regarding this specifications, please make a contact to our sales department within 14 days after receiving this document.

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Thermistor Sensor Specification		Drawing No.	PW-AP-3610E (1st Edition)	Page	1 / 4
Type	DTN-G103H3H-DGS102H	Date	November 20, 2019		
<p>1. Usage range</p> <p>This specification is applied to thermistor sensor [DTN-G103H3H-DGS102H] . RoHS directive pass.</p> <p>2. Thermistor characteristics</p>					
Item	Particular	Specification			
2-1 Resistance	Resistance at 25°C.	$R_{25} = 10k\Omega \pm 3\%$			
2-2 B-value	B-value between t1°C and t2 °C $B_{t1/t2} = \ln \frac{R_{t1}}{R_{t2}} \left(\frac{1}{t1+273.15} - \frac{1}{t2+273.15} \right)$	$B_{25/50} = 3465K \pm 3\%$ ($B_{25/85} = 3502K$)			
2-3 Thermal time constant (ambient temp. change)	Where the sensor is screwed up on aluminum block(120L*20W*20T), the block except sensor attached surface is put into 25°C water. From this state when the block is moved into 50°C water, the time required for the temperature of the sensor to change by 63.2% of the difference of temperature.	$\tau \leq 22 \text{ sec.}$			
2-4 Dissipation constant	The electric power to increase 1 degree in temperature of sensor at 25°C in still air.	$\delta \doteq 2.8 \text{ mW}/^\circ\text{C}$			
2-5 Operating temperature range		$T_w = -40 \sim +150^\circ\text{C}$			
2-6 Rated power	The electric power which is necessary to make the thermistor self heating up to maximum operating temperature at the ambient temperature 25°C.	$P_{\text{max.}} = 350 \text{ mW}$			
2-7 Withstanding voltage	A. C. 500V-1 minute or A. C. 600V-1 second. (between terminal and lead wire)	No abnormal found			
2-8 Insulation resistance	D. C. 500V megger. (between terminal and lead wire)	$I. R. \geq 100M\Omega$			

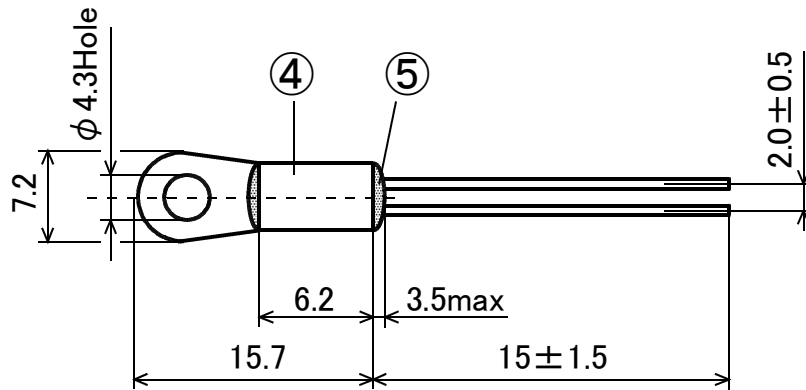
3. Reliability characteristics

Testing item	Testing requirement	Changing ratio after test
3-1 Heat resistance test	150°C in air placed for 1000 hours	$\Delta R_{25} \leq \pm 3\%$ $\Delta B_{25/50} \leq \pm 2\%$ Satisfy 2-7, 2-8 items.
3-2 Cold resistance test	-40°C in air placed for 1000 hours	$\Delta R_{25} \leq \pm 3\%$ $\Delta B_{25/50} \leq \pm 2\%$ Satisfy 2-7, 2-8 items.
3-3 High temperature humidity test	60°C, 95% R.H. placed for 1000 hours	$\Delta R_{25} \leq \pm 3\%$ $\Delta B_{25/50} \leq \pm 2\%$ Satisfy 2-7, 2-8 items.
3-4 P. C. T.	121°C 2 atm placed for 1000 hours	$\Delta R_{25} \leq \pm 3\%$ $\Delta B_{25/50} \leq \pm 2\%$ Satisfy 2-7, 2-8 items.
3-5 Heat cycle test	-40°C [in air] \leftrightarrow 85°C [in air] each 1 hours. 1000 cycles	$\Delta R_{25} \leq \pm 3\%$ $\Delta B_{25/50} \leq \pm 2\%$ Satisfy 2-7, 2-8 items.

4. Mechanical characteristics

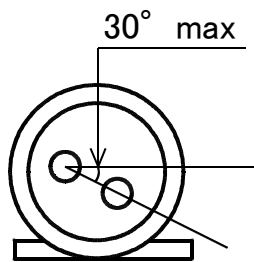
Testing item	Testing requirement	Characteristics after test
4-1 Lead wire pull test	Fix terminal, pull from lead wire axis direction, hang a static load of 49N(5.0kg·f) and stay for 10 minutes. (Two is pulled at the same time)	$\Delta R_{25} \leq \pm 3\%$ $\Delta B_{25/50} \leq \pm 2\%$ No abnormal found in appearance and 2-7, 2-8 items.
4-2 Lead wire bending test	Hang a load of 2.45N (0.25kg·f) on to the lead wire, bend the Sample 90° and then return it to its original position. Carry out this operation within 2~3 seconds, which is counted as 1 cycle. Run 2 cycles.	$\Delta R_{25} \leq \pm 3\%$ $\Delta B_{25/50} \leq \pm 2\%$ No abnormal found in appearance and 2-7, 2-8 items.
4-3 Drop test	Drop on concrete floor from height of 1m 3 times.	$\Delta R_{25} \leq \pm 3\%$ $\Delta B_{25/50} \leq \pm 2\%$ No abnormal found in appearance and 2-7, 2-8 items.
4-4 Case pressurizing test	Sensor insertion axis direction, hang a load of 249N(30kg·f) and stay for 10 minutes. (The trestle and, pushing gold are iron)	$\Delta R_{25} \leq \pm 3\%$ $\Delta B_{25/50} \leq \pm 2\%$ No abnormal found in appearance and 2-7, 2-8 items.

5. Shape · Dimension

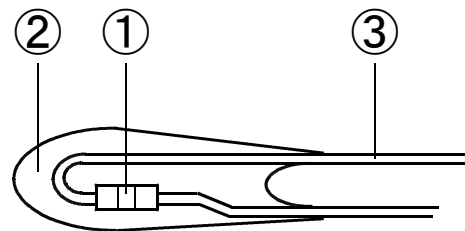


(mm)

Lead wire twist angle



Inner structure



5	Adhesive	High heat resistance and Low expansion type Epoxy resin	Yes
4	Terminal	Ring tongue terminal 5.5-S4 (JST)	Yes
3	Lead wire	Nickel plated CP wire $\phi 0.4$	Yes
2	Coating	High heat resistance and Low expansion type Epoxy resin	Yes
1	Thermistor	Glass enclosing chip (GA13 type)	Yes
No.	Part	Specification	RoHS compliant

6. Caution in Thermistor Sensor usage

Due to the possibilities of destruction of the sensor, damage or miss use of equipment, please strictly follow below matter.

- ①The sensor is designed for individual usage. When it is going to be used beyond the specified condition, please speak to your daily contact person for our products.
- ②Whenever designing the equipment, make sure to check sensor operation and if there is no lack of quality.
- ③Do not use the sensor exceeding rated electric power.
- ④Due to possibility of causing the decrease of the value of resistance with self heat and malfunction of the equipment or the precision decrease of the inspection temperature, carefully refer to the dissipation constant usage of electric power and voltage.
- ⑤Do not use the sensor beyond operating temperature range.
- ⑥Avoid from exceeding radical temperature change, which is beyond operating temperature range.
- ⑦In case of independently use of the sensor as a main control of the device, make sure to design and devise through safety measures for [safe circuit] and [parallel use with same function sensor] etc, to prevent from accident.
- ⑧Under the environment which receives the influence of electric noise, make sure to take countermeasure by installing a protection circuit and seal the sensor.
(including the lead wire)
- ⑨When the case type sensor is used under high humidity environment, make sure to design so that the protected case tip must be exposed to environment (in water, moisture) condition, and open part of the case must be prevented from not touching water and steam directly.
- ⑩Do not add excessive vibrating shocking pressure.
- ⑪Avoid from excessive pulling and bending of the lead wire.
- ⑫Do not impress excessive voltage in the insulated part and between the electrode.
This might cause to occur the insulated malfunction.
- ⑬Consider wiring, due to contact failure might occur if the terminal of the lead wire (including the connector) is immersed into [water] [steam] [electrolyte] etc.
- ⑭Do not use in corrosiveness gas atmosphere (CO₂, NH₃, SO_x, NO_x) beyond the designated condition. Do not use at the place where the sensor touches the electrolytic, brine, acid, alkaline and organic solvent beyond the designated condition.
- ⑮Due to possibility of the equipment becoming malfunction depending upon metal corrosion, consider not to cause potential difference with the contact metal for the case and screw equipped type sensor.

If there is any others unclear point, please inquire to our company sales in-charge.