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# SPECIFICATIONS

Resistors Current Sensing

**BWS05-Serie**

Version November 2014

## BWS03, BWS05 Chip Shunt Resistors

**BWS03** resistors exhibit a constant power of 5 watts up to 100A at 0.5mΩ.  
**BWS05** resistors exhibit a constant power of 7 watts at 0.2mΩ. Continuous current load up to 180A at 0.2mΩ. These models have heavy copper connectors, excellent long term stability and low inductance. Maximum soldering temperatures of up to 350 °C 30 sec. Mounting using re-flow soldering or welding on copper.  
**Applications include :** Current sensors for hybrid power sources, frequency converters and high current automotive applications.



### ■ GENERAL SPECIFICATIONS

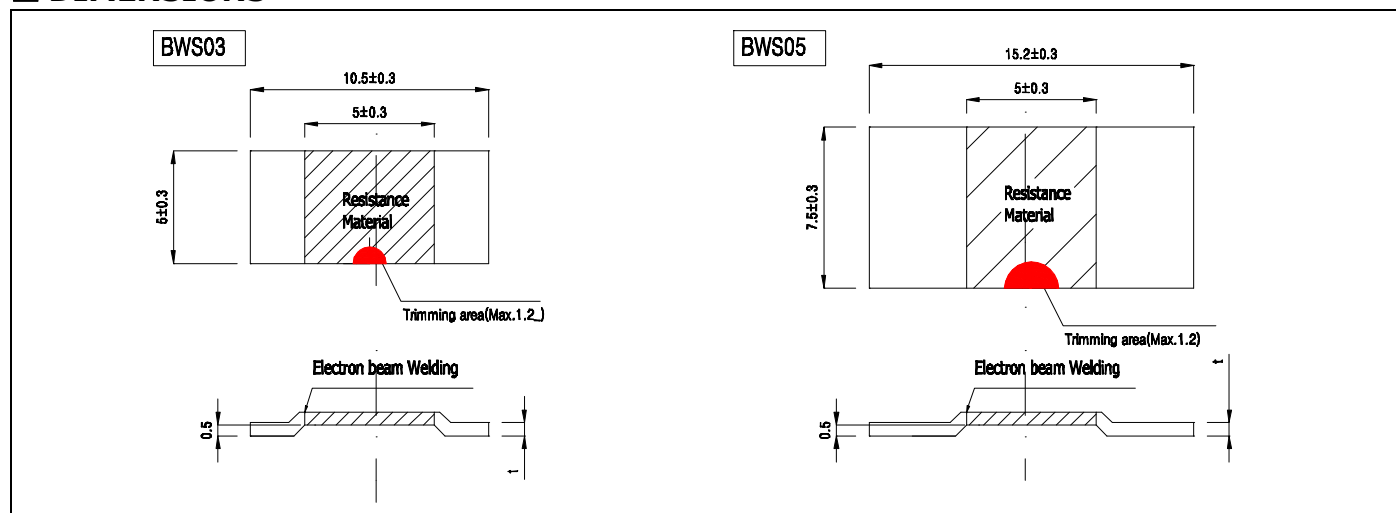
Model	*Power rating(W)	Resistance[mΩ]	Tolerance (%)	*TCR (+20°C to +60°C)	Operating temperature range
BWS03	5	0.3,0.5,1,2,3,4	±1%(F), ±2%(G) ±5(J)	Max. ±50ppm	-55°C ~ +170°C
BWS05	7	0.2,0.5,1,2,3			

\* see table on Page 3

### ■ DIMENSIONS (mm) & Materials

Model	Value	Material	Thickness(t)
BWS03-M	0.3mΩ	Manganin	1.46mm±0.1
BWS03-M	0.5mΩ	Manganin	0.88mm±0.1
BWS03-M	1mΩ	Manganin	0.43mm±0.1
BWS03-N	2mΩ	NiCr [FeCr] alloy	0.64mm±0.1
BWS03-N[F]	3mΩ	NiCr [FeCr] alloy	0.43mm±0.1
BWS03-N[F]	4mΩ	NiCr [FeCr] alloy	0.32mm±0.1
<b>BWS05-M</b>	<b>0.2mΩ</b>	<b>Manganin</b>	<b>1.5mm±0.1</b>
BWS05-M	0.5mΩ	Manganin	0.56mm±0.1
BWS05-N[F]	1mΩ	NiCr [FeCr] alloy	0.9mm±0.1
BWS05-N[F]	2mΩ	NiCr [FeCr] alloy	0.45mm±0.1
BWS05-N[F]	3mΩ	NiCr [FeCr] alloy	0.3mm±0.1

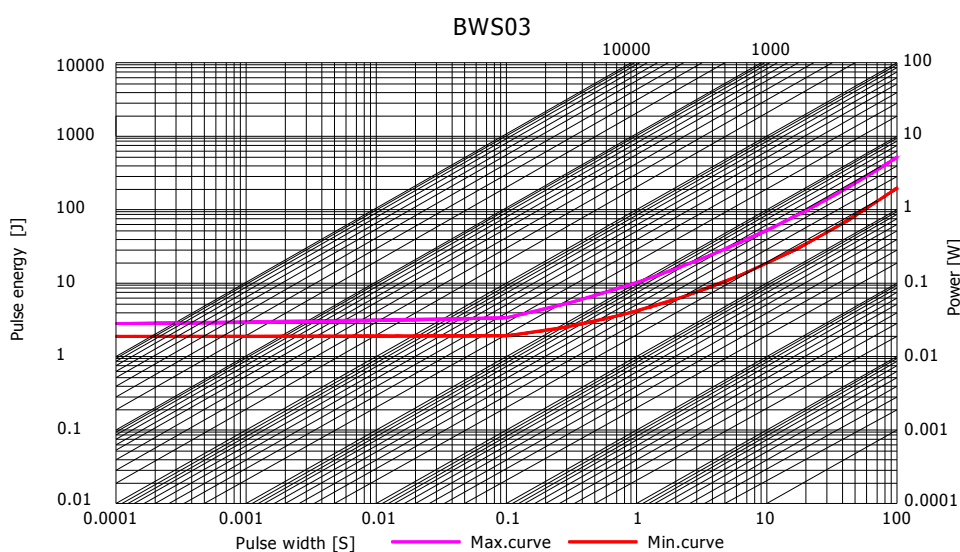
### ■ DIMENSIONS



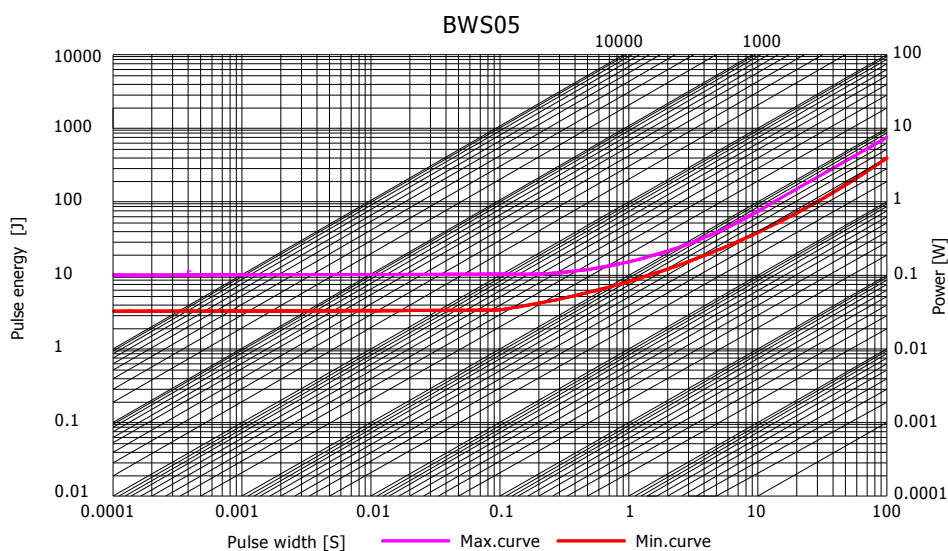
## CHARACTERISTICS

<b>Operating temperature</b>		-55°C ~ +170°C
<b>Thermal Shock</b>	[±0.1%]	-65°C, 25°C, 125°C, 25 °C 25cycles
<b>Short time overload</b>	[±0.2%]	Rated Power × 5 for 5 secs.
<b>Resistance to Soldering Heat</b>	[±0.5%]	260°C 10 sec
<b>Moisture Resistance</b>	[±0.2%]	90~98%RH, +25°C, +65°C, -10°C 10 Cycle
<b>High Temperature Exposure</b>	[±0.5%]	140°C for 250hours
<b>Inductance</b>	[ <3nH ]	
<b>Load Life</b>	[±1.0%]	90 min "ON" 30 min "OFF" for 2000hours

## PULSE ENERGY RESPECTIVELY PULSE POWER FOR CONTINUOUS OPERATION

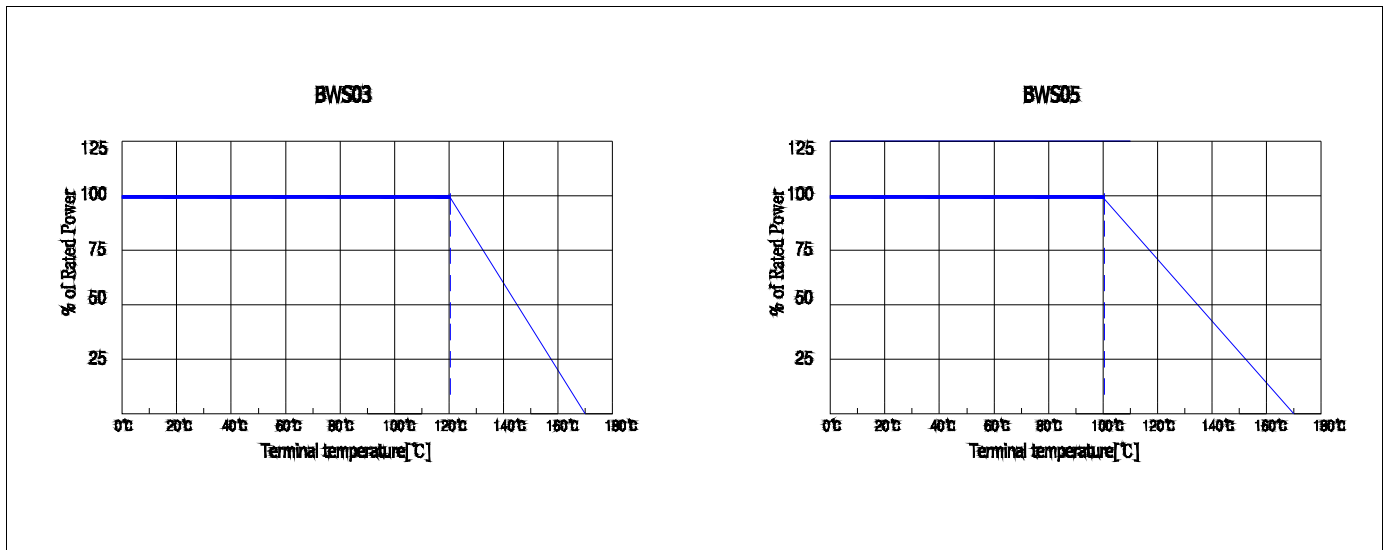


The max.curve is only valid for the resistance value 0.5m. The min.curve is only valid for the resistance value 4m. For other resistance values the area in between the max. and the min. curve is valid



The max.curve is only valid for the resistance value 0.2m. The min.curve is only valid for the resistance value 2m. For other resistance values the area in between the max. and the min. curve is valid

## DERATING CURVE



## RATED POWER DEPENDENCE OF RESISTANCE VALUE

Model	Resistive Value[mΩ]	Power[W]	Model	Resistive Value[mΩ]	Power [W]
BWS03M	0.3 0.5	5	BWS05M	0.2	7
BWS03M	1	4	BWS05M	0.5	6
BWS03N[F]	2	4	BWS05N[F]	1	6
BWS03N[F]	3	3	BWS05N[F]	2	4
BWS03N[F]	4	2.5	BWS05N[F]	3	3.5

## ORDERING PROCEDURE EXAMPLE & PROPOSAL FOR PCB -LAYOUT

