

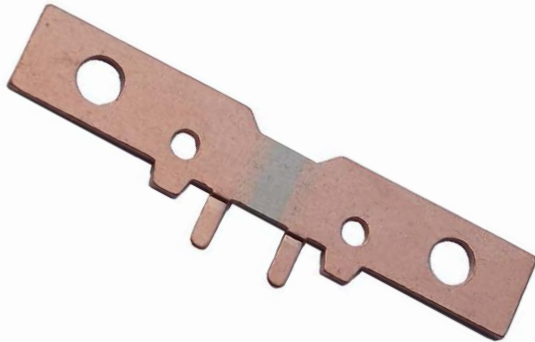
Application Note

High Current Shunt Capabilities



TT Electronics has a wide range of high current shunts in conventional or electron-beam welded constructions.


High current connections are made by high purity copper tabs which may be formed or stamped into custom configurations for



terminal or busbar mounting. Kelvin sense connection tabs provide the calibrated voltage output and additional connections can be provided for tamper proof requirements in utility metering. Sense termination leads may be pre-fitted to customer requirements.

Range of Capabilities	
Rated current (dc / ac rms)	Up to 600A
Output voltages	10 / 30/ 60mV or custom
Ohmic values	5 to 1000 $\mu\Omega$
TCR	100 to 200ppm/ $^{\circ}\text{C}$ typical
Tolerance	1 to 10% typical
Operating temperature range	-55 to 170 $^{\circ}\text{C}$
Inductance	<1nH typical
Thermal EMF	Manganese alloy types: 3 $\mu\text{V}/^{\circ}\text{C}$ Copper nickel types: 40 $\mu\text{V}/^{\circ}\text{C}$
Stability (dry heat 200 $^{\circ}\text{C}$, 1000 hours)	1% typical

* Upper temperature may be restricted by the insulation on flying leads if fitted.



Applications

- Utility meter
- Motor drive
- Battery charge
- Automotive
- Energy monitor
- Generator
- UPS

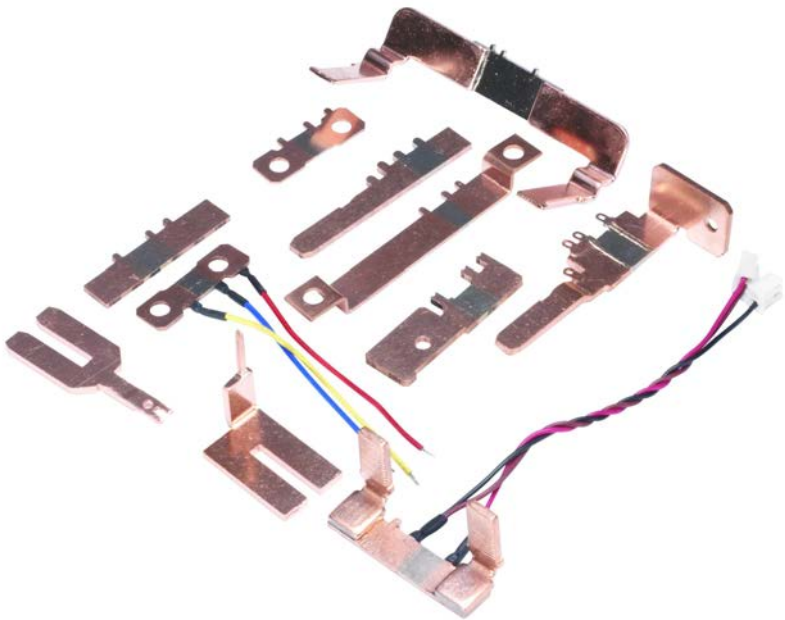
Features

- Kelvin format
- RoHS compliant
- Low inductance
- Customizable
- Pre-fitted flying leads

Application Note

Customisation

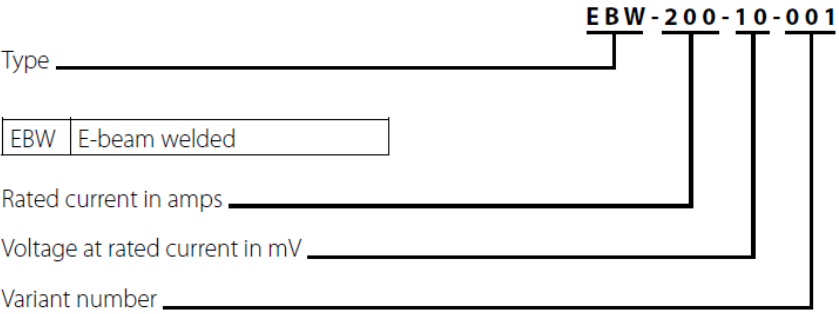
High current shunts are generally defined as custom components in which the mechanical and electrical characteristics may be optimised to match the application design. For example, the copper current connections may be extended to act as part of the high current interconnect within the equipment, by folding or stamping to create three-dimensional structures. Due to the high thermal capacity of these shunts, the attachment of sense flying leads is a specialised process best performed by the shunt manufacturer. The length, colour and configuration of these leads may be custom defined. There is a choice of resistance alloys; Manganese alloy is used for most values and offers low thermal EMF, whilst CuNi (copper nickel) alloy enables the lowest ohmic values to be reached.



Examples of e-beam welded shunts

Ordering Procedure

Example: E-beam welded shunt with 10mV sense output at a rated current of 200A:



Note: The variant number defines alloy type, tolerance, termination wires and physical configuration and is assigned by the Applications Engineering team to reflect customer requirements.