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Alternative Process – Laser welding of Metal Strip Material

VT-BE-TC

18-Jan-23

Products affected:

BVT-M-R001-1.0
BVT-M-R0005-1.0

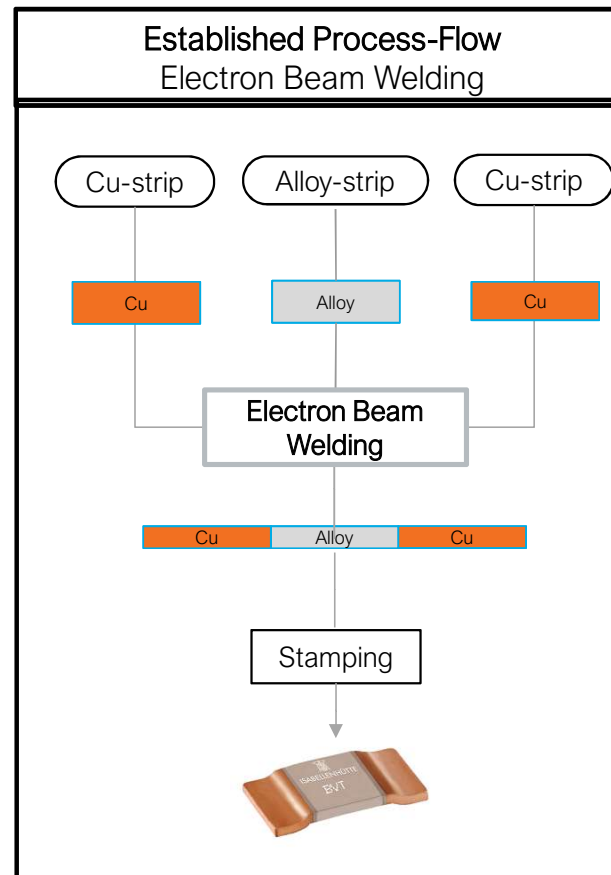
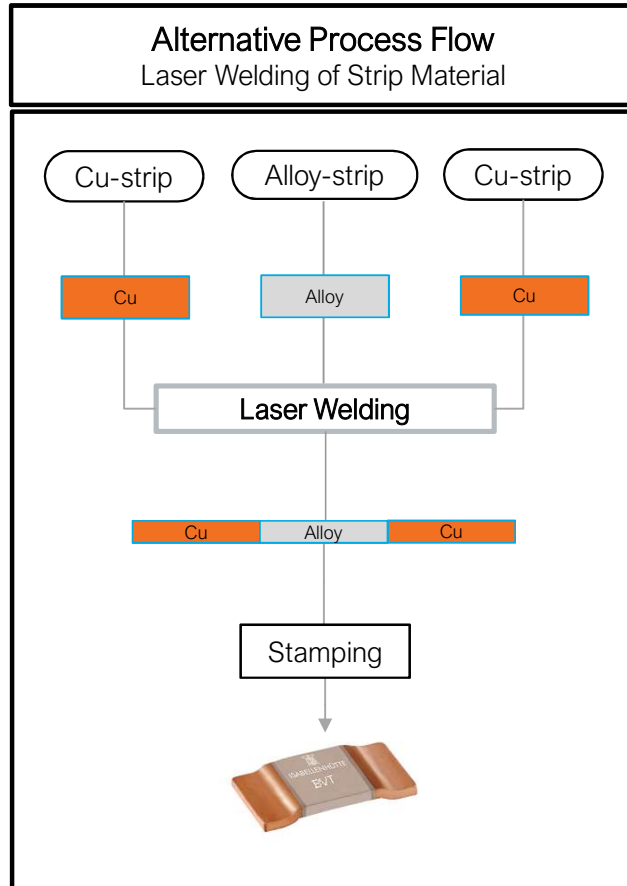


Reason and Motivation of Change:

- Increase capacity in order to be able to fulfill customer demands
- Second source strategy, additional new supplier

Info-Note – P2844 (BVT)

Simplified Process Flow in Comparison BVT-M-R001 // BVT-M-R0005



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- This change will not impact the visual appearance of the component's surface and is classified as a minor change without Customer Information Notification.
See below PAS-RES-MA-06
- This type of change does not affect fit, function, quality, or reliability of the product and/or agreed on contractual agreements.
- We see “No Remaining Risk within the Supply Chain”.

Worked on: (Name, Function)		Patrick Schwalfenberg, Torsten Schmidt							
Signature:									
Date:		13.05.2022							
PCN number:		2187							
		Hide Text						Evaluation level A / B / C	
		Values: Hide Rows		Values: Hide Columns					
				Form provided by ZVEI - Revision 5.0 - December 2021					
		Assessment of impact regarding following aspects - contractual agreements - technical interface of handling/processability/manufacturability of customer - form, fit, function, quality performance, reliability		Potential impact?		Understanding of component experts		Examples to explain	
Selection of component		ID	Type of change	No	Yes			Evaluation level A: Application level B: Component level C: Component level *: Not relevant for qualification matrix	
NETWORKS & RESISTORS		PAS-RES-MA-06	Change of supplier of material	-	p	Change to a new or additional material supplier at component manufacturer.		e.g. for 2nd source purpose	
NETWORKS & RESISTORS		PAS-RES-EQ-02	Production from a new equipment/tool which uses the same basic technology (replacement equipment or extension of existing equipment pool)	-	p	PCN required for dedicated equipment for sensitive component production.		e.g. additional equipment to increase production capacity e.g. replacement of same equipment	

Mark change with an "x"



Impact on the Component – Visual Appearance:

The visual appearance of the component surface in comparison to both processes.

Exemplary picture of type BVT-M-R001-1.0 according to:



Alternative Flow
Laser welding of strip material

Current Established Flow
E-beam welding of strip material

Note: The typical color of the copper and resistance material may vary.

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Delta-Qualification according to ZVEI-Matrix:

The following AEC-Q200 tests have already been started on parts with the alternative process:

Intermediate results after 1000h will be available on the 24th March 2023.

stress test	description	parameter	remarks	sample size
S01	Pre- and Post-Stress Electrical Test	initial resistance value distribution		
S02	Internal Heat Resistance	internal heat resistance (Rthi)		3
S03-T3	High Temperature Exposure	T=170°C; t=2000 h	in covered condition	77
S04	Temperature Cycling	-55°C to +150°C; 2000 cycles; Dwell time 30 min.		77
S06	Moisture Resistance	Temperature cycles ; RH = 90-100 %	Generic Data BVT-V-R002 (Voestalpine 2022)	
S09	External Visual	examination anywhere in the range of 1.5x to 10x		20
S10	Physical Dimension	inspection of dimension	EMPB	
S12a	Resistance to solvents	3x 10 strokes		5
S17	ESD	testing highest passed ESD classification level	Generic Data BVE-M-R0002	
S19	Electrical Characterization	Applicable temperature range: T _{min} to T _{max}		30
S22	Terminal Strength (SMD)	F = 18 N; t = 60 s		30

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Risk Assessment:



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- We see no technical risk, after assessment of manufactured parts. We made several tests like grinding, X-Ray, and bending on laser-welded strip material.
- AEC-Q200 test has been started. Intermediate results after 1000h will be available at the 24th of March 2023.
- Continuous process inspections will ensure a high-quality level, furthermore
- The current Established Process-Flow described on page 3 continues to exist as a standard process and is only supplemented by the “Alternative Process-Flow” of laser-welded strip material to ensure the supply chain.

Impact of Change:

- No impact on electrical performance, fit, form, and function according to component specification
- Agreed specifications and Datasheet of concerned components are not affected by this change
- Marking of components will be unchanged
- Traceability is guaranteed

Info-Note – P2844 (BVT)

Timeline for Introduction of the Alternative Process



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- BVT-M-R0005-1.0; Indented start of delivery approx. 1st of April 2023
- BVT-M-R001-1.0; Indented start of delivery approx. 1st of April 2023



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