Würth Elektronik eiSos GmbH & Co. KG
EMC & Inductive Solutions
Max-Eyth-Straße 1 · 74638 Waldenburg · Germany
Tel. +49 7942 945-0 · Fax +49 7942 945-5000
eiSos@we-online.com · www.we-online.com

Product / Process Change Notification (PCN)

☒ Major change
☐ Minor change

PCN #:	PCN_WPME-VDMM_20230710
Affected Series:	WPME-VDMM; 171930601
PCN Date:	April 10, 2023
Effective Date:	July 10, 2023

Change Category:

☐ Equipment / Location
☐ General Data
☐ Material
☒ Process
☐ Product Design
☐ Shipping / Packaging
☐ Supplier
☐ Software

Contact:	Product Management
Phone:	+49 (0) 7942 - 945 5001
Fax:	+49 (0) 7942 - 945 5179
E-Mail:	pcn.eisos@we-online.com

Data Sheet Change:
☒ Yes ☐ No

Attachment:
☒ Yes ☐ No

Description and purpose of change:
To improve the processability, Würth Elektronik has expanded the reflow solder profile to align with the JEDEC J-STD020E industry standard for reflow soldering.
All date codes will be affected by this change.
There will be no change in form, fit or function of the product.

Würth Elektronik eiSos GmbH & Co. KG Sitz Waldenburg, Registergericht Stuttgart HRA 580801
Komplementär Würth Elektronik eiSos Verwaltungs-GmbH, Sitz Waldenburg, Registergericht Stuttgart HRB 581033
Geschäftsführer Thomas Schrott, Alexander Gerfer, Thomas Wild, Dirk Knorr, Josef Wörner
Bankverbindung UniCredit Bank AG Stuttgart, Konto 322 620 136, BLZ 600 202 90, IBAN DE86 6002 0290 0322 6201 36, SWIFT/BIC HYVEDEMM473
USt.-IdNr. DE220618976

Würth Elektronik eiSos GmbH & Co. KG
EMC & Inductive Solutions
Max-Eyth-Straße 1 · 74638 Waldenburg · Germany
Tel. +49 7942 945-0 · Fax +49 7942 945-5000
eiSos@we-online.com · www.we-online.com

Detail of Change:

The recommended reflow solder profile in the Handling Recommendations section of the data sheet has been updated.

Before

HANDLING RECOMMENDATIONS

1. The power module is classified as MSL3 (JEDEC Moisture Sensitivity Level 3) and requires special handling due to moisture sensitivity (JEDEC J-STD033).
2. The parts are delivered in a sealed bag (Moisture Barrier Bags = MBB) and should be processed within one year.
3. When opening the moisture barrier bag, check the Humidity Indicator Card (HIC) for color status. Bake parts prior to soldering in case indicator color has changed according to the notes on the card.
4. Parts must be processed after 168 hour (7 days) of floor life. Once this time has been exceeded, bake parts prior to soldering per JEDEC J-STD033 recommendation.

SOLDER PROFILE

1. Measure the peak reflow temperature of the MagI³C power module in the middle of the top view.
2. Ensure that the peak reflow temperature does not exceed 235°C ±5°C.
3. The reflow time period during peak temperature of 235°C ±5°C must not exceed 20 seconds.
4. Reflow time above liquidus (217°C) must not exceed 90 seconds.
5. Maximum ramp up is rate 3K per second
6. Maximum ramp down rate is 3K per second
7. Reflow time from room (25°C) to peak must not exceed 8 minutes as per JEDEC J-STD020.
8. Maximum numbers of reflow cycles is three.
9. For minimum risk, solder the module in the last reflow cycle of the PCB production.
10. For soldering process please consider lead material copper (Cu) and lead finish tin (Sn).
11. For solder paste use a standard SAC Alloy such as SAC 305, type 3 or higher.
12. Below profile is valid for convection reflow only
13. Other soldering methods (e.g.vapor phase) are not verified and have to be validated by the customer on his own risk

Max 20 sec
Max 240
Peak
230°C
Ramp Up Rate
Max 3°C/sec
Liquidus
Ramp Down Rate
Max 3°C/sec
217
Max 90 sec
Min 60 sec
180
150
Temperature [°C]
Preheat
Max 90 sec
Min 60 sec
Max 3 solder cycles !
Time [sec]

After

19 HANDLING RECOMMENDATIONS

1. The power module is classified as MSL3 (JEDEC Moisture Sensitivity Level 3) and requires special handling due to moisture sensitivity (JEDEC J-STD033D).
2. The parts are delivered in a sealed bag (Moisture Barrier Bag = MBB) and should be processed within one year.
3. When opening the moisture barrier bag, check the Humidity Indicator Card (HIC) for color status. Bake parts prior to soldering in case indicator color has changed according to the notes on the card.
4. Parts must be processed after 168 hour (7 days) of floor life. Once this time has been exceeded, bake parts prior to soldering per JEDEC J-STD033D recommendation.
5. Maximum number of solder cycles is two.
6. For minimum risk, solder the module in the last solder cycle of the PCB production.
7. For soldering process please consider lead material copper (Cu) and lead finish tin (Sn).
8. It is recommended to use a standard SAC Alloy such as SAC 305, type 3 or higher.
9. The profile below is valid for convection reflow only.
10. Other soldering methods (e.g. vapor phase) are not verified and have to be validated by the customer at their own risk.

19.1 SOLDERING PROFILE

Table 13: Reflow solder profile.

Profile Feature	Symbol	Value
Preheat temperature minimum	T_{s_min}	150°C
Preheat temperature maximum	T_{s_max}	180°C
Preheat time from T_{s_min} to T_{s_max}	t_s	60-90 seconds
Liquidous temperature	T_L	217°C
Time maintained above T_L	t_L	60-190 seconds
Classification temperature	T_C	260°C
Peak package body temperature	T_P	$T_P \leq T_C$
Time within 5°C of actual peak temperature	t_P	$t_P \leq 20$ seconds
Ramp-up Rate (T_L to T_p)		3°C/second maximum
Ramp-down rate (T_p to T_L)		3°C/second maximum
Time 25°C to peak temperature		8 minutes maximum

Please refer to JEDEC J-STD020E for further information pertaining to reflow soldering of electronic components.

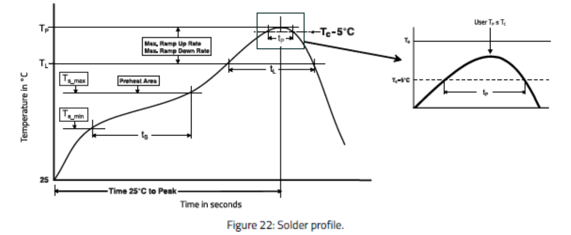

Figure 22: Solder profile.

Reliability / Qualification Summary:

Product approval is according to the specification criteria and is internally released by the Product Management Department.

The following items are part of the internal release process:

- Exposure of samples to five reflow solder cycles using the new reflow solder profile
- Pretesting, intermittent testing and post-testing of samples electrically
- X-ray analysis of samples