

## Cree® Product Change Notification

**PCN Reference Number:** 1149

**Date Issued:** 8/30/2020

Please be advised that Cree has qualified Silicon Carbide (SiC) 900V MOSFETs manufactured on 150mm diameter wafers. The Qualification Report is available upon request.

Be advised that if we do not hear from you within 30 days of the PCN Issue Date, Cree will assume that you have approved the PCN and we will begin shipping the affected product.

### Affected Product

Table 1 provides a list of products affected by this Major change:

*Table 1 Affected Products List*

RDS(on) (mΩ)	Current Bare Die Product (100mm)	Packaging	Back Metal
10	CPM3-0900-0010A-WP2	Waffle Pack	Ni/Au
	CPM3-0900-0010A-FE4	UV-Tape	
30	CPM3-0900-0030A-WP2	Waffle Pack	Ni/Au
	CPM3-0900-0030A-FE4	UV-Tape	
65	CPM3-0900-0065B-WP2	Waffle Pack	Ni/Ag
	CPM3-0900-0065B-FE4	UV-Tape	
RDS(on) (mΩ)	Updated Bare Die Product (150mm)	Packaging	Back Metal
10	CPM3-0900-0010A-WD6	Waffle Pack	Ni/Au
	CPM3-0900-0010A-FE6	UV-Tape	
30	CPM3-0900-0030A-WD6	Waffle Pack	Ni/Au
	CPM3-0900-0030A-FE6	UV-Tape	
65	CPM3-0900-0065A-WD6	Waffle Pack	Ni/Au
	CPM3-0900-0065A-FE6	UV-Tape	

### Description of the Change

Cree’s 3<sup>rd</sup> generation 900V MOSFETs, also known as “C3M™”, are currently manufactured on 100mm diameter wafers at Cree’s fabrication facility in North Carolina, USA. A change of wafer diameter from 100mm to 150mm is planned to increase production capacity and to ensure Cree’s continued ability to provide MOSFETs and Diodes to our customers within our standard delivery times.

All 150mm wafers are shipped with gold (Au) back metal as shown in Figure 2. The change to gold (Au) back metal improves the ability to withstand harsh environments, such as high humidity. The new back metal is also compatible with new sintering die attach methods. With 150mm transition, the layout of the 10mΩ bare die is being changed and is shown in Figure 4.

No change in die dimensions is expected as a result of this transition.

Figure 1: 100mm wafer back metal with Ag



Figure 2: 150mm wafer back metal with Au



## Reason for the Change

Cree continues to increase production capacity and improve manufacturability. This change is necessary to ensure Cree’s continued ability to provide MOSFETs within our standard delivery times.

## Impact of Change

Along with the release of this PCN an update to the existing product datasheets and spice models are included. The new datasheets provide customers with a more accurate dynamic and static behavior of the devices and utilizes the latest advances in characterization test equipment. There is no change to any Min/Max specification, however the datasheets contain all new graphs along with updated typical values which better reflect the latest 150mm process.

It should be noted that the 150mm wafer substrates are manufactured in the same facility and by the same manufacturer as the currently qualified 100mm substrates located in Durham, North Carolina, USA. 150mm manufacturing line is located in the same facility as the currently qualified 100mm manufacturing line located in Research Triangle Park, North Carolina, USA. Products manufactured on 100mm wafers and 150mm wafers will have different part numbers outlined in the Table 1 above.

New die layout was implemented in 900V 10mΩ (CPM3-0900-0010A) 150mm version of the MOSFET and shown below.

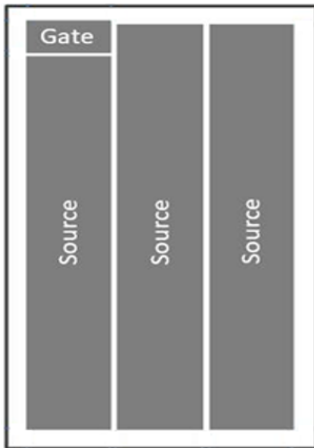


Figure 3: 100mm 900V 10mΩ die layout

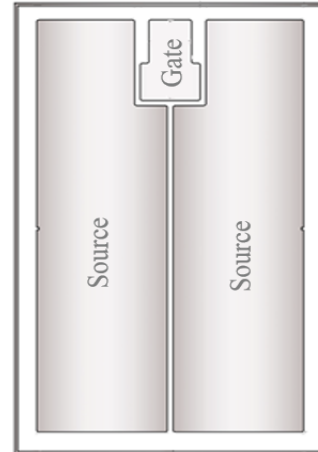


Figure 4: 150mm 900V 10mΩ die layout

MOSFETs were re-qualified using new devices from the 150mm line. All tests were performed to parameters that meet or exceed the test parameters listed in the existing qualification report.

### Effective Implementation Date

Table 2 provides dates for Key PCN Milestones based on information available at the date the PCN was issued. Any updates to these dates can be provided by the Cree contact listed in Table 3.

Table 2 Key PCN Estimated Dates

<b>Qualification Report Availability:</b>	Available upon request
<b>Sample Availability:</b>	Now
<b>Last Time Buy of 100mm:</b>	60 days from PCN Issue Date
<b>Last Date of Unchanged Product:</b>	December 31 <sup>st</sup> 2020

After last time buy notification period is completed, no further orders of 900V 10mΩ, 30mΩ and 65mΩ Power Die Products on 100mm wafers may be submitted.

### Cree Contact Information

If you have any questions regarding this PCN please contact:

Table 3 Cree’s PCN Contact

<b>Cree Contact:</b>	<b>Anri Mikirtichev</b>
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