

Cree, Inc. Product Change Notification

PCN-PW077: Change of Wafer Diameter from 100mm to 150mm for 900V 3rd Generation MOSFET (C3M)

Change

Cree is transitioning the 900V 65mΩ Silicon Carbide (SiC) MOSFETs from existing 100mm wafers to 150mm wafers at its Research Triangle Park, North Carolina, USA facility.

Change Description

Cree SiC 900V 3rd generation MOSFETs also known as “C3M™” are currently manufactured on 100mm diameter wafers at Cree’s fabrication facility in Research Triangle Park, North Carolina, USA. A change of wafer diameter from 100mm to 150mm is undergoing qualification to increase production capacity and to ensure Cree’s continued ability to provide MOSFETs to our customers within our standard delivery times. Along with the change to 150mm wafers the back-metal stack will change from Silver (Ag) to Gold (Au).

Part Description

The 900V MOSFETs in discrete packages part numbers affected by this change are listed in the table below.

R_{DS(on)} (mΩ)	Product	Package	Voltage Rating	Junction temperature rating (°C)
65	C3M0065090D	TO-247-3	900V	150
65	C3M0065090J	TO-263-7	900V	150

Description of change

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. There is no change to the package or published part numbers.





Figure 1: 100mm wafer back metal with Ag



Figure 2: 150mm wafer back metal with Au

Impact of Change

There is no change to fit, function, or reliability of the packaged MOSFET. 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. It should also be noted that the 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 identical part numbers. Customers may continue to place orders using the same part numbers. Customers can identify 100mm versus 150mm products by the package date code “**build number**” as illustrated below:

4" (100mm) Wafer
Wafer Size: 100mm / 4 Inch Package Marking: CREE  ® C3M0065090J XDWWYY Lot Code: [X = Unique Character, D = Build Number as #1-9 WW = Work Week, YY = Year]
6" (150mm) Wafer
Wafer Size: 150mm / 6 Inch Package Marking: CREE  ® C3M0065090J XDWWYY Lot Code: [X = Unique Character, D = Build Number as #A-I WW = Work Week, YY = Year]

Along with the release of this PCN an update to the existing product datasheets and spice models is 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 specifications however the datasheet contains all new graphs along with updated typical values.

Datasheet revision history is summarized below:

Product	Package	Previous Datasheet Revision	New Datasheet revision
C3M0065090D	TO-247-3	Rev. C, 01-2018	Rev. D, 06-2019
C3M0065090J	TO-263-7	Rev. C, 08-2018	Rev. D, 06-2019

Reason for Change

The reason for this change is to increase production capacity and improve manufacturability. This change is necessary to ensure Cree's continued ability to provide MOSFETs to our customers within our standard delivery times.

Effective Implementation Date

Beginning in July 2019, Cree will begin the transition of 900V 65mΩ discrete packaged MOSFETs to production on 150mm wafers. 100mm capacity will begin decreasing from July 2019 through January 2020. Starting in January, 2020 Cree may choose to no longer produce 900V 65mΩ on 100mm wafers.

Please respond to this PCN by indicating your approval on the included approval form at the end of this PCN, sign it and return to your local sales representative by 15th July, 2019 [issue date plus 30 days]. If you have any concerns or questions, please notify your local sales representative. In accordance with JEDEC Standard JESD46D, lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change.

Qualification Plan

All parts have been qualified to all tests listed in the existing qualification reports for each respective part number. All tests have been performed to parameters that meet or exceed the test parameters listed in the existing qualification report.

The results of the qualification testing will be summarized and provided in a separate qualification report.

Implementation Date

- In June 2019, Cree will begin sampling packaged MOSFET C3M0065090J and C3M0065090D which customers can use for evaluation purposes.
- in July 2019, Cree will begin the transition of 900V 65mΩ discrete packaged MOSFETs to 150mm production line
- In September 2019, Cree will begin to ramp production on the new 150mm manufacturing line to all customers.
- Starting in January 2020 Cree may choose to no longer produce 900V 65mΩ on 100mm wafers.

Please respond to this PCN by indicating your approval on the included approval form at the end of this PCN, sign it and return to your local sales representative. If you have any concerns or questions, please notify your local sales representative. In accordance with JEDEC Standard JESD46D, lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change.

Contact

Any questions or requests for additional information should be directed to your sales representative or by contacting Cree, Inc. directly at 919-287-7888, or via email at CreePower_sales@cree.com.

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PCN-PW077 CUSTOMER APPROVAL FORM
Change of Wafer Diameter from 100mm to 150mm 900V 65mOhm C3M MOSFET

Please check the appropriate boxes below:

We agree with this proposed change and its schedule

We need samples:

Sender

Company: _____ Name: _____
Address/Location: _____ Email: _____

Primary Telephone: _____ Fax: _____
Signature: _____ Date: _____

Please return to your Sales Representative

Company: Cree Name: _____
Address/Location: _____ Email: _____

Primary Telephone: _____ Fax: _____

Disclaimer:
If we do not receive any response by the date in the PCN above we consider this as the acceptance of the PCN.