

# Cree, Inc. Product Change Notification

## PCN-PW064: Change of Wafer Diameter from 100mm to 150mm for 1200V 3rd Generation MOSFET (C3M)

### Change

Cree is transitioning its 1200 75mΩ Silicon Carbide (SiC) MOSFETs from existing 100mm wafers to 150mm wafers with gold (Au) back metal at its Research Triangle Park, North Carolina, USA facility. Included with this change is a slight increase to the dimension of the gate pad.

### Change Description

Cree SiC 1200V 3<sup>rd</sup> 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). This change will also include a slight increase to the size of the gate pad dimension to improve package assembly.

### Part Description

The 1200V MOSFETs in discrete packages part numbers affected by this change are listed in the table below.

R <sub>DS(on)</sub> (mΩ)	Product	Package	Voltage Rating	Junction temperature rating (°C)
75	C3M0075120K	TO-247-4	1200	150
75	C3M0075120J	TO-263-7	1200	150

These packaged devices are based on a SiC MOSFET C3M design with a die size of 2.5mm x 2.8mm.

### Description of change

Gate pad size increases from (0.4mm x 0.27mm) to (0.6mm x 0.6mm). This increase in gate pad size improves wire-bonding by providing a larger area for the gate wire. There is no change to the overall die size.

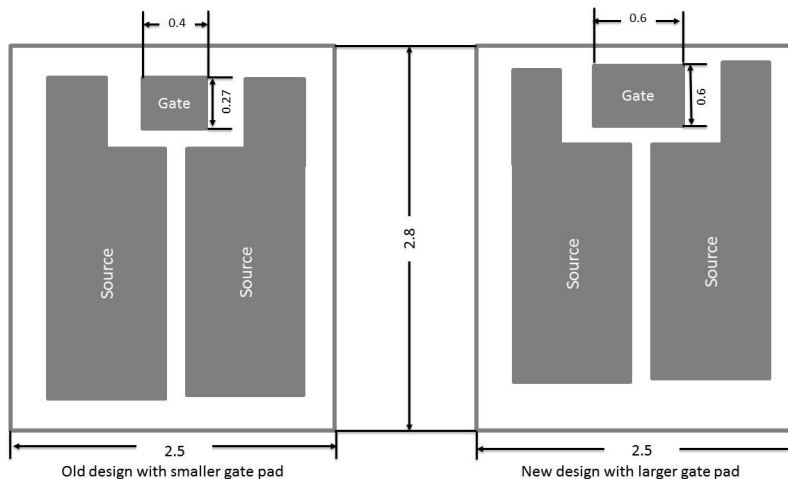
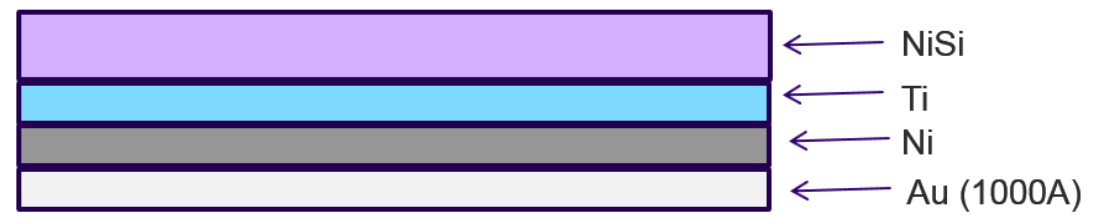


Figure 1: New gate pad dimensions.

Along with this change the product will move from 100mm diameter wafers to 150mm wafers. All 150mm wafers are shipped with gold (Au) back metal as shown in Figure 3. 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 published datasheet specifications and no change to the package or published part numbers.



**Figure 2: 100mm wafer back metal with Ag**



**Figure 3: 150mm wafer back metal with Au**

### **Impact of Change**

There is no change to fit, function, or reliability of the packaged MOSFET. This change impacts the 1200V 75mΩ MOSFET chip only; no changes are being made to the backend assembly processes. 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 will be 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 specifications. Part numbers will not change. Customers may continue to place orders using the same part numbers.

### **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 April 2018, Cree will begin the transition of 1200V 75mΩ discrete packaged MOSFETs to production on 150mm wafers. Starting in June 2018 Cree will no longer produce 1200V 75mΩ 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 February 28, 2017 [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 Schedule**

The qualification will commence in January 2018, with completion scheduled for the end of March 2018. All tests will be performed to parameters that meet or exceed the test parameters listed in the original 100mm qualification report.

Samples will be available starting February 2018

## **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](mailto:CreePower_sales@cree.com).

PCN Originator:

Name: Ayerbe, E.

Title: Product Marketing Manager, Cree Power Devices

Issued: January 19<sup>th</sup>, 2018

# PCN-PW064

Disclaimer:

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

**PCN-PW064 CUSTOMER APPROVAL FORM**

**Change of Wafer Diameter from 100mm to 150mm for 1200V 75mOhm C3M MOSFET**

**Please check the appropriate boxes below:**

We agree with this proposed change and its schedule

We need samples:

**Sender**

Company:  
Address/Location:

Name:  
Email:

Primary Telephone:  
Signature:

Fax:  
Date:

**Please return to your Sales Representative**

Company: Cree  
Address/Location:

Name:  
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.