



8755 W. Higgins Road  
Suite 500  
Chicago, Illinois USA 60631

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Sep 13<sup>th</sup>, 2016,

RE: PCN # EPC51-04 – IGBT Module H and WB Package Changes

Dear Valued Customer:

Littelfuse is writing to notify you of the forthcoming change to be made to the module's frame (i.e., the case and cover plate) of H (107.5 mm x 45 mm x 17 mm) and WB (152 mm x 62 mm x 17 mm) package series of silicon IGBT power modules. The material will be changed from a PBT polymer plastic (Polybutylene Terephthalate, white in color) to a PPS polymer plastic (Polyphenylene Sulfide, brown in color). Please see the enclosed document for technical details and affected part numbers.

This change has been comprehensively evaluated and verified with no change to fit or function. Should you require samples for your own verification and/or qualification, they will be available to you in 2-3 months per standard lead time.

- **Form:** Minor change on the module's frame
- **Fit:** No change
- **Function:** No change
- **Part number:** No change
- **Effective date:** Oct 13<sup>th</sup>, 2016
- **Last-time-buy date:** N/A. Limited stock. Please contact factory.

This notification is for your information and acknowledgement. If you have any other questions or concerns, please contact your local sales team or product team below.

We value your business and look forward to assisting you whenever possible.

Best Regards,

Daisy Wang  
Global Product Manager, Power Control Semi  
+86 510 85277753  
[dwang2@littelfuse.com](mailto:dwang2@littelfuse.com)

Dr. Kevin M. Speer  
Global Business Development Manager, Power Semiconductors  
+1 (440) 463-6296  
[kspeer@littelfuse.com](mailto:kspeer@littelfuse.com)

Michael Ketterer  
Business Development Manager, Europe  
+49 170 782 7233  
[mketterer@littelfuse.com](mailto:mketterer@littelfuse.com)



800 E. Northwest Highway Des Plaines, IL 60016

## Product/Process Change Notice (PCN)

**PCN#:** EPC51-04    **Date:** Sep 13<sup>th</sup>, 2016

**Product Identification:**

H and WB packaged IGBT modules

**Implementation Date for Change:**

Oct 13<sup>th</sup>, 2016

### Contact Information

**Name:** Daisy Wang

**Title:** Global Product Manager

**Phone #:** +86 510 85277753

**Fax#:** N/A

**E-mail:** dwang2@littelfuse.com

### Category of Change:

- Assembly Process
- Data Sheet
- Technology
- Discontinuance/Obsolescence
- Equipment
- Manufacturing Site
- Raw Material
- Testing
- Fabrication Process
- Other: \_\_\_\_\_

### Description of Change:

Approve the material change of the module's frame (i.e., the case and cover plate) to H (107.5 mm x 45 mm x 17 mm) and WB (152 mm x 62 mm x 17 mm) packaged silicon IGBT power modules. Specifically, the material will be changed from a PBT polymer (Polybutylene Terephthalate, white in color) to a PPS polymer (Polyphenylene Sulfide, brown in color).

This change has been comprehensively evaluated and verified without fit or function impact.

All relevant details are included in the supplemental pages.

### Important Dates:

Qualification Samples Available: sample available upon request

Last Time Buy: limited stock

Final Qualification Data Available: Sep 8<sup>th</sup>, 2016

Date of Final Product Shipment:

### Method of Distinguishing Changed Product

- Product Mark,
- Date Code, traceability data available upon request
- Other, appearance

### Demonstrated or Anticipated Impact on Form, Fit, Function or Reliability:

Minor changes on the module's frame.

### LF Qualification Plan/Results:

N/A

**Customer Acknowledgement of Receipt:** Littelfuse requests you acknowledge receipt of this PCN. In your acknowledgement, you can grant approval or request additional information. Littelfuse will assume the change is acceptable if no acknowledgement is received within 30 days of this notice. Lack of any additional response within 90 days of PCN issuance further constitutes acceptance of the change.

# PCN Report

## ETR # Various

**Prepared By** : Orware Liu, Product Engineer  
**Date** : 09/13/2016  
**Device** : IGBT Module; H and WB package series  
**Revision** : A

### 1.0 Objective

We are notifying you of forthcoming changes to be made to the case and cover plate of the H and WB package series of silicon IGBT power modules. Specifically, the material of the frame will be changed from a PBT polymer (white in color) to a PPS polymer (brown in color).

### 2.0 Affected Part Numbers

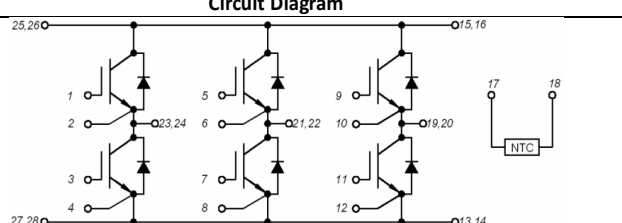
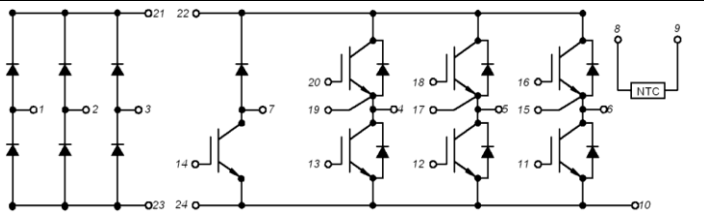
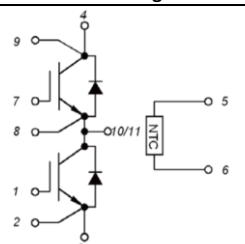
H package series			
Part Numbers	Circuit Symbol	Package Dimension	Circuit Diagram
MG1225H-XN2MM	X	W x L x H 45 x 107.5 x 17(mm)	
MG1250H-XN2MM			
MG1275H-XN2MM			
MG1215H-XBN2MM	XB	W x L x H 45 x 107.5 x 17(mm)	
MG1225H-XBN2MM			
MG1240H-XBN2MM			
WB package series			
Part Numbers	Circuit Symbol	Package Dimension	Circuit Diagram
MG06600WB-BN4MM	B	W x L x H 62 x 152 x 17(mm)	
MG12225WB-BN2MM			
MG12300WB-BN2MM			
MG12450WB-BN2MM			
MG17225WB-BN4MM			
MG17300WB-BN4MM			
MG17450WB-BN4MM			

Fig. 1

### 3.0 Assembly, Process & Material Differences/Changes

#### 3.1 Assembly and Process Changes

There are no changes to the assembly or process method.

#### 3.2 Material Changes

The frame of the H and WB module series will change to a PPS polymer (Polyphenylene Sulfide, brown in color) from a PBT polymer (Polybutylene Terephthalate, white in color). This material change will not affect electrical performance.

Material	Product: Please refer to Section 2.0				
	Package Type: H and WB				
	Original		New		Changed
	Material Name	Supplier	Material Name	Supplier	
Frame	Polybutylene Terephthalate (PBT)	China based	Polyphenylene Sulfide (PPS)	Japan based	Yes

Fig. 2

### 4.0 Packing Method

There are no changes to the packing method.

### 5.0 Physical Differences/Changes

The module's frame color is changed to brown (left side) from white (right side), and the package outlines are optimized for installation (see Fig. 3 - 7). For the WB package, improvements have been made to protect the power terminal nuts (see Fig. 8); again, changes do not affect the installation or use of the module.

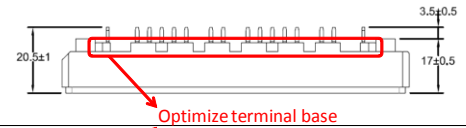
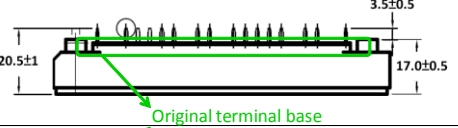
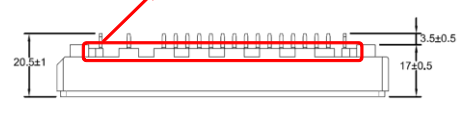
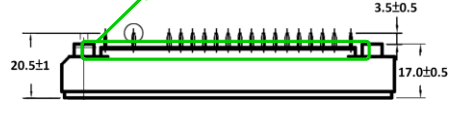
Package Type	Circuit Symbol	New	Existing
H	X		
	XB		

Fig. 3

For H Package\_Circuit X:

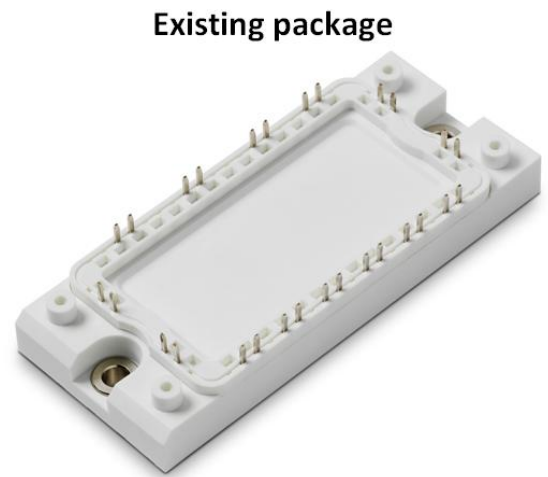


Fig. 4

For H Package\_Circuit XB:

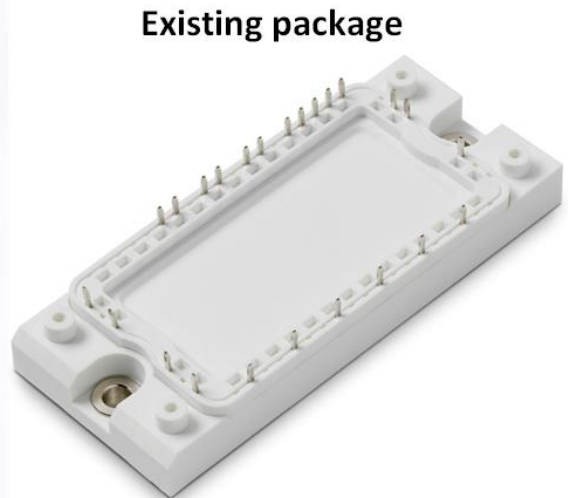


Fig. 5

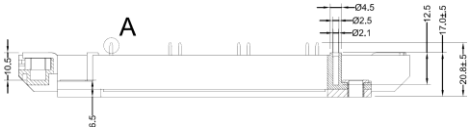
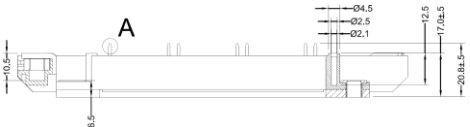
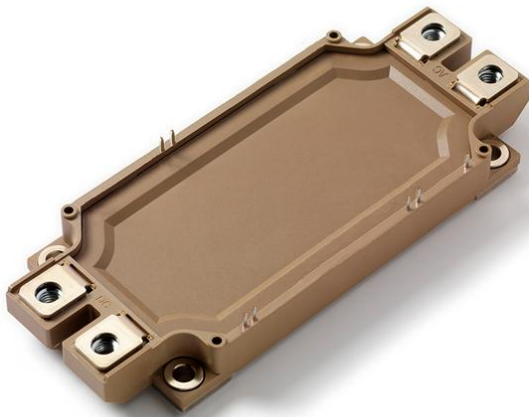
Package Type	Circuit Symbol	New	Existing
WB	B (No change the POD)		

Fig. 6

For WB Package:

**New package**

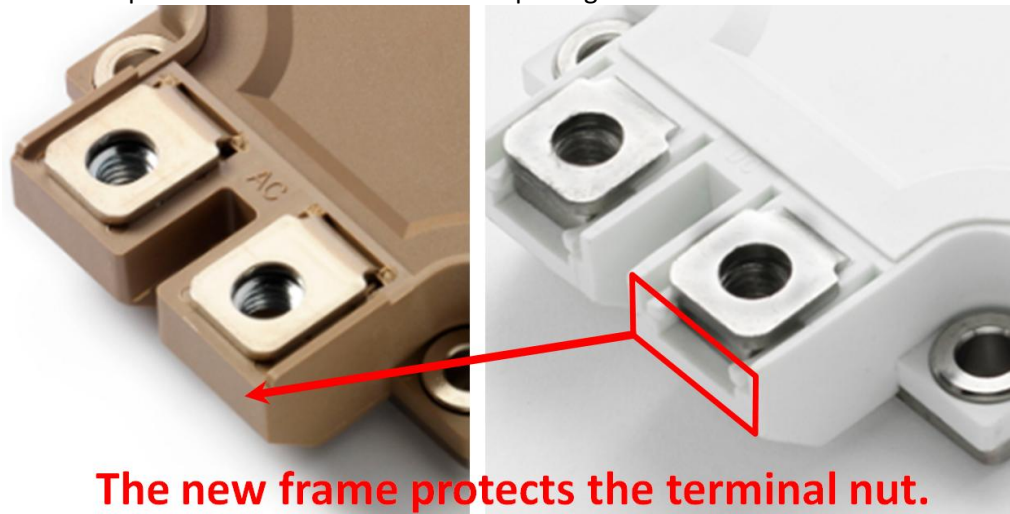


**Existing package**



Fig. 7

Photograph of terminal improvement for both ends of WB package:



**The new frame protects the terminal nut.**

Fig. 8

## 6.0 Reliability Test Results Summary

Test Items	Condition	S/S	Results
HTRB	VCE= 960V, Tj=150°C ;	5	All Passed
	Duration= 168 hours		
HTGB	VGE= 16V, Tj= 150°C ;	5	All Passed
	Duration= 168 hours		
Temperature Cycle	Ta = -55°C to +150°C	5	All Passed
	Duration= 100 Cycles		
Humidity	Ta= 85°C, 85%RH	5	All Passed
	Duration= 168 hours		
Power cycling	Ton= 5Sec, Toff= 5Sec, ΔTJ= 100°C	5	All Passed
	Duration= 30000 Cycles		

Fig. 9

## 7.0 Electrical Characteristic Summary

There is no change in electrical characteristics.

## 8.0 Changed Part Identification

There is no change in part identification.

## 9.0 Recommendations & Conclusions

This change has been qualified and certified for production.

## 10.0 Approvals

**Jordan Hsieh**  
 Product Engineering Manager  
 Littelfuse, Hsinchu