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01 Feb, 2023

**LFPCNUSA2023-001**

**Product Change Notification for Littelfuse**

MOSFET DISCRETE, IGBT DISCRETE over 650V in TO-247 package adding new manufacturing location

To our valued customers and partners,

As an extension to previous PCN for TO247, Littelfuse would like to notify you of a change related to the TO-247 package for over 650V.

**DESCRIPTION OF CHANGE:** As a part of Littelfuse endeavors to improve the manufacturing footprint and to enhance capacity, it has been decided to introduce a new TO-247 backend manufacturing ATXWH in China. The change is affecting the parts listed in appendix B.

The country of origin for TO247 will possibly be Korea, Philippines, and China

**Form, fit, function changes:** No change in the silicon dice used. We would like to notify you of the differences between the existing manufacture and the new manufacture.

1. POD – Package Outline Dimension
2. Package Marking
3. BOM
4. Label

Details can be seen in **APPENDIX A**.

The affected part number list can be found in **APPENDIX B**.

If you have any additional questions or concerns, please contact us or your Regional Sales Manager.

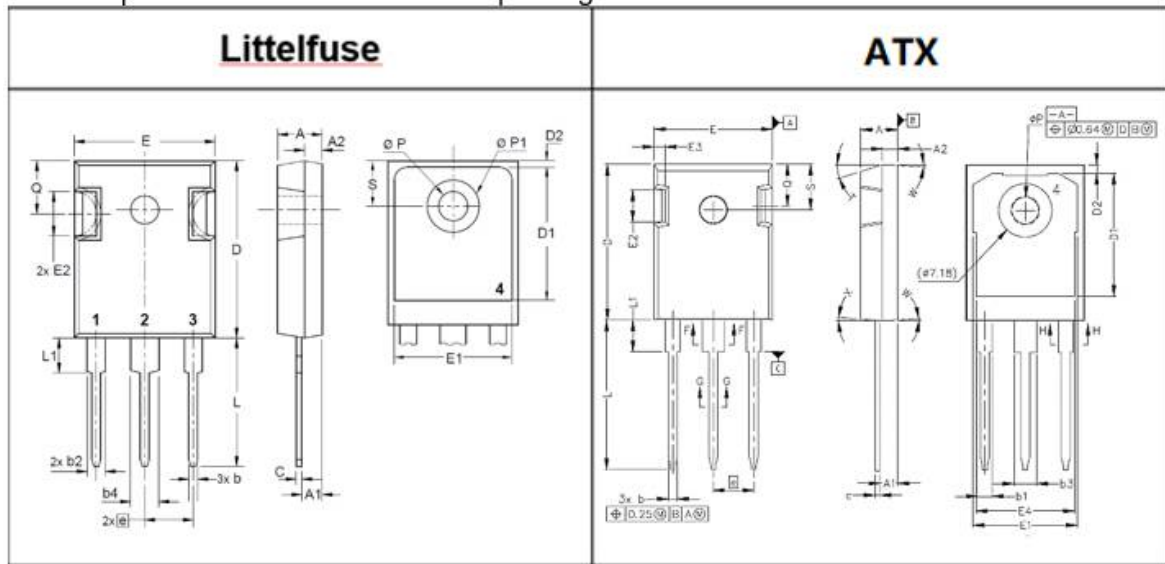
Best Regards,

Raymon Zhou  
Product Marketing Manager  
MOSFET DISCRETE  
Littelfuse Semiconductor  
[RZhou2@littelfuse.com](mailto:RZhou2@littelfuse.com)

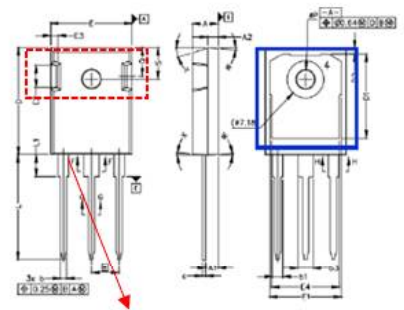
July Chen  
Senior Product Manager  
IGBT DISCRETE  
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## APPENDIX A:

## 1. POD – Package Outline Dimension

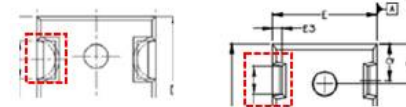


Items	Littelfuse		ATXWH		Remark
	Min	Max	Min	Max	
A	4.70	5.30	4.83	5.21	
A1	2.21	2.59	2.29	2.54	
A2	1.50	2.49	1.91	2.16	
D	20.79	21.45	20.80	21.10	
E	15.48	16.24	15.75	16.13	
E2	4.31	5.48	3.68	5.10	Body Notch Area
e	5.46BSC		5.44BSC		
L	19.80	20.30	19.81	20.32	Lead Length
L1	-	4.49	4.10	4.40	
ΦP	3.55	3.65	3.51	3.65	
Q	5.38	6.19	5.49	6.00	
S	6.14BSC		6.04	6.30	
b	0.99	1.40	1.07	1.33	
b2	1.65	2.39	1.91	2.41	
b4	2.59	3.43	2.87	3.38	
c	0.38	0.89	0.55	0.68	
D1	13.07	-	16.25	17.65	
D2	0.51	1.35	0.95	1.25	
E1	13.45	-	12.38	13.43	
ΦP1	-	7.39	7.18BSC		



Littelfuse

ATX

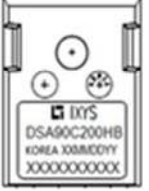





ATX POD has different dimension and shape on body notch area compared to Littelfuse Original POD

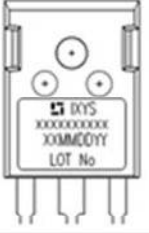



**Conclusion:** There is variance between the POD of Littelfuse and ATXWH on outline E2 and L. The variance is not critical which has no significant impact on the application in customer side.

Datasheets will be updated.

## 2. Package Marking

SPS		PKG	TO-247	Physical marking
		Marking line 1	IXYS logo	
		Marking line 2	Product name	
		Marking line 3	KOREA XXMMDDYY ( XX Foundry code+Assy plan Code, MM Month, DD Day, YY Year)	
		Marking line 4	Wafer Lot no: XXXXXXXXXX	
		Remark	All marking lines align center except Date code	
ATX		PKG	TO-247	Physical marking
		Marking line 1	IXYS logo	
		Marking line 2	Product name	
		Marking line 3	CHINA XXMMDDYY ( XX Foundry code+Assy plan Code, MM Month, DD Day, YY Year)	
		Marking line 4	Wafer Lot no: XXXXXXXXXX	
		Remark	All marking lines align center except Date code	

**Conclusion:** No change on the marking rule between SPS and ATXWH

TPC		PKG	TO-247	Physical marking
		Marking line 1	IXYS logo	
		Marking line 2	Product name	
		Marking line 3	XXXXMMDDYY ( XX Foundry code+Assy plan Code, MM Month, DD Day, YY Year)	
		Marking line 4	Wafer Lot no: XXXXXXXXXX	
		Remark	All marking lines align center except Date code	
ATX		PKG	TO-247	Physical marking
		Marking line 1	IXYS logo	
		Marking line 2	Product name	
		Marking line 3	CHINA XXMMDDYY ( XX Foundry code+Assy plan Code, MM Month, DD Day, YY Year)	
		Marking line 4	Wafer Lot no: XXXXXXXXXX	
		Remark	All marking lines align center except Date code	

**Conclusion:** Slight change on the marking rule between TPC and ATXWH, ATX has added original country in the marking, which is aligned with the marking rule in SPS.

### 3. BOM

BOM Information		TO-247 BOM Gap analysis		
		SP Semi	TPC	ATX-TO247
EMC	Green/Non Green	Non-Green	Non-Green	Non-Green
Lead Finish	Type	Pure Tin	Solder dip finish	Pure Tin

**Conclusion:** There is variance between the BOM of SP Semi/TPC and ATXWH on Lead-frame, Solder wire, and lead finish.

#### 4. Label



**Note:** (1). No additional change in Label layout for Logo/Part No/Lot No/Qty/Date Code between SPS and ATX. The only change is for assembly location from Korea to China.



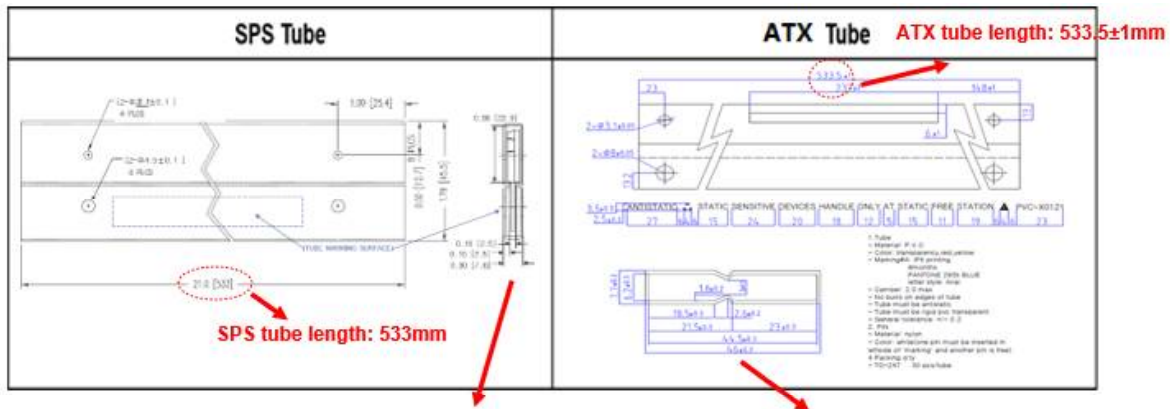
**Note:** (2). No additional change in Label layout for Logo/Part No/Lot No/Qty/Date Code between TPC and ATX. However, there is a change on the logo location (TPC: Right-up corner VS ATX: Left-up corner) and assembly location from Philippines to China.

**Note:** (3). For ATX labeling, there will be ATX super lot# printed in a separate label and this label will only be attached to inner box as below.

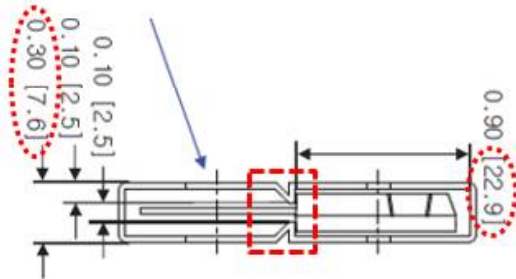




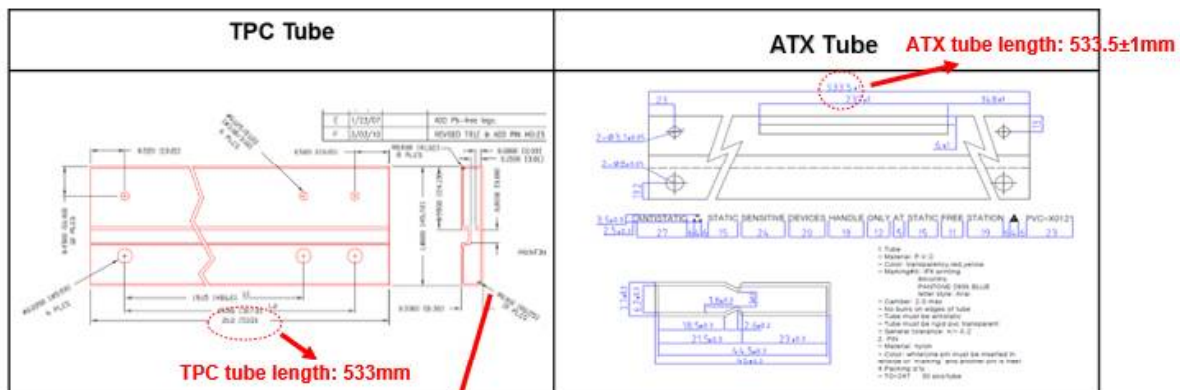
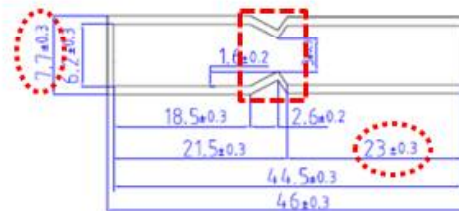
5. Tube Comparison:



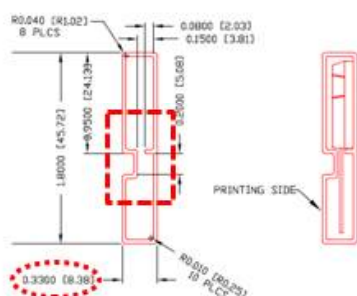
SPS Tube Cross-section View



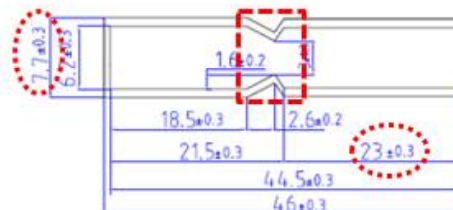
ATXWH Tube Cross-section



TPC Tube Cross-section View



ATXWH Tube Cross-section



**Conclusion:** There is variance on the packing materials between SPS/TPC and ATXWH, especially on the size and shape of tube cross-section view. The tube variance may affect the units loading/uploading in customer side.

Table of Packing Specification

Item	Description	SPS	TPC	ATX
1	Size of Inner Box	563*90*60mm	550*90*60mm	565*155*53mm
2	Size of Outer box	585*205*167mm	590*300*110mm	585*330*125mm
3	Size of Tube	<b>533*45.5mm</b>	<b>533*45.7mm</b>	<b>533.5*46mm</b>
4	Packing Qty per Tube	30pcs	30pcs	30pcs
5	Packing Qty per Inner Box	450pcs	300pcs	450pcs
6	Packing Qty per Outer Box	1800pcs	1200pcs	1800pcs

**\*Note: Variance exists on Packing Qty (Inner Box/Outer Box) of SPS/TPC and ATXWH.**

### 6. Reliability test:

Passed, more details can be made available on request.

## APPENDIX B:

Part Number	Product Series	Part Number	Product Series
IXGH6N170A	Discrete IGBT	IXTH2N150	Discrete MOSFET
IXBH12N300	Discrete IGBT	IXTH3N150	Discrete MOSFET
IXGH10N170A	Discrete IGBT	IXTH4N150	Discrete MOSFET
IXBH16N170	Discrete IGBT	IXFH14N85X	Discrete MOSFET
IXBH10N170	Discrete IGBT	IXTH3N120	Discrete MOSFET
IXBH16N170A	Discrete IGBT	IXTH02N250	Discrete MOSFET
IXGH16N170	Discrete IGBT	IXTH3N100P	Discrete MOSFET
IXGH32N120A3	Discrete IGBT	IXFH7N100P	Discrete MOSFET
IXBH2N250	Discrete IGBT	IXFH10N80P	Discrete MOSFET
IXGH25N160	Discrete IGBT	IXFH4N100Q	Discrete MOSFET
IXGH16N170A	Discrete IGBT	IXFH5N100P	Discrete MOSFET
IXGH6N170	Discrete IGBT	IXTH2R4N120P	Discrete MOSFET
IXGH30N120B3D1	Discrete IGBT	IXTH12N70X2	Discrete MOSFET
IXGH10N170	Discrete IGBT	IXFH20N85X	Discrete MOSFET
IXGH24N120C3	Discrete IGBT	IXFH40N85X	Discrete MOSFET
IXGH20N120A3	Discrete IGBT	IXFH20N100P	Discrete MOSFET
IXGH12N120A3	Discrete IGBT	IXFH50N85X	Discrete MOSFET
IXGP12N120A3	Discrete IGBT	IXFH12N120P	Discrete MOSFET
IXBH6N170	Discrete IGBT	IXFH26N100X	Discrete MOSFET
IXGH2N250	Discrete IGBT	IXFH6N120P	Discrete MOSFET
IXGH30N120C3H1	Discrete IGBT	IXFH15N100Q3	Discrete MOSFET
IXGH30N120B3	Discrete IGBT	IXFH30N85X	Discrete MOSFET
IXGH24N120C3H1	Discrete IGBT	IXFH12N100F	Discrete MOSFET
IXBH42N170	Discrete IGBT	IXTH6N150	Discrete MOSFET
IXGH32N170	Discrete IGBT	IXFH24N80P	Discrete MOSFET
IXGH50N90B2D1	Discrete IGBT	IXTH6N120	Discrete MOSFET
IXBH24N170	Discrete IGBT	IXFH16N80P	Discrete MOSFET
IXBH42N250	Discrete IGBT	IXFH20N80P	Discrete MOSFET
IXGH40N120B2D1	Discrete IGBT	IXTH2N170D2	Discrete MOSFET
IXBH32N300	Discrete IGBT	IXTH12N150	Discrete MOSFET
IXGH32N170A	Discrete IGBT	IXFH16N120P	Discrete MOSFET
IXBH20N300	Discrete IGBT	IXFH12N100P	Discrete MOSFET
IXBH42N170A	Discrete IGBT	IXFH15N80Q	Discrete MOSFET
IXGH12N100	Discrete IGBT	IXTH1N250	Discrete MOSFET
IXGH50N120C3	Discrete IGBT	IXFH24N90P	Discrete MOSFET
IXGH45N120	Discrete IGBT	IXTH10N100D2	Discrete MOSFET
IXGH24N170A	Discrete IGBT	IXFH15N100P	Discrete MOSFET
IXGH25N250	Discrete IGBT	IXFH10N100P	Discrete MOSFET



<b>IXGH40N120C3D1</b>	Discrete IGBT	<b>IXTH6N100D2</b>	Discrete MOSFET
<b>IXGH40N120C3</b>	Discrete IGBT	<b>IXFH6N100Q</b>	Discrete MOSFET
<b>IXGH24N170</b>	Discrete IGBT	<b>IXFH16N90Q</b>	Discrete MOSFET
<b>IXGH50N90B2</b>	Discrete IGBT	<b>IXFH23N80Q</b>	Discrete MOSFET
<b>IXGH40N120A2</b>	Discrete IGBT	<b>IXTH13N110</b>	Discrete MOSFET
<b>IXYH20N120C3D1</b>	Discrete IGBT	<b>IXFH14N100Q</b>	Discrete MOSFET
<b>IXYH30N120C3D1</b>	Discrete IGBT	<b>IXFH15N100</b>	Discrete MOSFET
<b>IXYH10N170CV1</b>	Discrete IGBT	<b>IXFH15N100Q</b>	Discrete MOSFET
<b>IXYH30N120C3</b>	Discrete IGBT	<b>IXFH20N80Q</b>	Discrete MOSFET
<b>IXYH40N120C3D1</b>	Discrete IGBT	<b>IXFH32N100X</b>	Discrete MOSFET
<b>IXYH20N120C3</b>	Discrete IGBT	<b>IXFH18N100Q3</b>	Discrete MOSFET
<b>IXYH16N170C</b>	Discrete IGBT	<b>IXFH12N100Q</b>	Discrete MOSFET
<b>IXYH16N170CV1</b>	Discrete IGBT	<b>IXFH12N90Q</b>	Discrete MOSFET
<b>IXYH40N120C3</b>	Discrete IGBT	<b>IXTH10N100D</b>	Discrete MOSFET
<b>IXYH30N120B4</b>	Discrete IGBT	<b>IXFH12N100</b>	Discrete MOSFET
<b>IXYH10N170C</b>	Discrete IGBT	<b>IXFH14N100Q2</b>	Discrete MOSFET
<b>IXYH40N120B3D1</b>	Discrete IGBT	<b>IXFH18N90P</b>	Discrete MOSFET
<b>IXYH40N90C3D1</b>	Discrete IGBT	<b>IXFH10N100</b>	Discrete MOSFET
<b>IXYH30N120A4</b>	Discrete IGBT	<b>IXFH12N90</b>	Discrete MOSFET
<b>IXYH40N90C3</b>	Discrete IGBT	<b>IXFH13N100</b>	Discrete MOSFET
<b>IXYH30N120C4</b>	Discrete IGBT	<b>IXFH13N90</b>	Discrete MOSFET
<b>IXYH24N90C3</b>	Discrete IGBT	<b>IXFH11N80</b>	Discrete MOSFET
<b>IXYH24N90C3D1</b>	Discrete IGBT	<b>IXFH15N80</b>	Discrete MOSFET
<b>IXYH40N120B3</b>	Discrete IGBT	<b>IXTH13N80</b>	Discrete MOSFET
<b>IXYH20N120C4</b>	Discrete IGBT	<b>IXFH13N80</b>	Discrete MOSFET
<b>IXYH50N120C3D1</b>	Discrete IGBT	<b>IXTH14N80</b>	Discrete MOSFET
<b>IXYH50N120C3</b>	Discrete IGBT	<b>IXFH14N80P</b>	Discrete MOSFET
<b>IXYH82N120C3</b>	Discrete IGBT	<b>IXFH6N100</b>	Discrete MOSFET
<b>IXYH80N90C3</b>	Discrete IGBT	<b>IXTH5N100A</b>	Discrete MOSFET
<b>IXYH24N170CV1</b>	Discrete IGBT	<b>IXFH6N120</b>	Discrete MOSFET
<b>IXYH30N170C</b>	Discrete IGBT	<b>IXFH6N100F</b>	Discrete MOSFET
<b>IXYX25N250CV1</b>	Discrete IGBT	<b>IXFH12N90P</b>	Discrete MOSFET
<b>IXYH24N170C</b>	Discrete IGBT	<b>IXFH12N80P</b>	Discrete MOSFET
<b>IXYH60N90C3</b>	Discrete IGBT		
<b>IXYH40N120A4</b>	Discrete IGBT		
<b>IXYH40N120C4</b>	Discrete IGBT		
<b>IXYH40N120B4</b>	Discrete IGBT		
<b>IXCH36N250</b>	Discrete IGBT		