



## Qualification of ASE as an Additional Assembly and Test Site of SOT-223 Commercial Power Mosfets

**DESCRIPTION OF CHANGE:** Vishay Siliconix would like to announce the approval of Advanced Semiconductor Engineering (ASE) as an additional assembly and test facility for SOT-223, High Voltage MOSFET (HVM) devices. This facility will join the current qualified facility, Carsem, in providing additional capacity for HVM devices built and tested in the SOT-223 package. The manufacturing process to be used in ASE will be similar to that used in the Carsem facility. No electrical or mechanical changes in the device are expected.

The dimensions of the Tape and the Reel supplied by ASE are slightly different than that provided by Carsem, our current sub-contractor for SOT-223 packages. A comparison with details can be found in Appendix A below.

Marking capability at ASE limits marking only to the top of the package. The marking comparison is shown in Appendix B below.

**CLASSIFICATION OF CHANGE:** Manufacturing Expansion

**REASON FOR CHANGE:** Increased capacity, second source.

**EXPECTED INFLUENCE ON QUALITY/RELIABILITY/PERFORMANCE:** None

**PRODUCT CATEGORY:** High Voltage MOSFET

**PART NUMBERS/SERIES/FAMILIES AFFECTED:** Refer to list of part numbers included with this PCN

**VISHAY BRAND(s):** Vishay-Siliconix

**TIME SCHEDULE:** Shipment of production volumes will begin in October, 2013.

**SAMPLE AVAILABILITY:** Appendix C provides a list of parts that will be built for sampling to customers. Please contact your regional Vishay Sales office for sample ordering.

**PRODUCT IDENTIFICATION:** SOT-223 products manufactured in ASE will have part marking in the form of **N37K** where the **N** is the factory designator for ASE.

**QUALIFICATION DATA:** Qualification data is contained below.

**This PCN is considered approved, without further notification, unless we receive specific customer concerns before October 22 or as specified by contract.**

**ISSUED BY:** Don Larson, Vishay Siliconix, Technical Marketing Manager.  
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# Product Change Notification



Product Group: Vishay Siliconix/July 22, 2013/PCN-SIL-0382013 Rev 0

For further information, please contact your regional Vishay office.

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## Affected Parts

Part Number	Part Number	Part Number
IRFL014PBF	IRFL9110TRPBF	SIHFL214-GE3
IRFL014TRPBF	IRLL014PBF	SIHFL214TR-GE3
IRFL110PBF	IRLL014TRPBF	SIHFL9014-GE3
IRFL110TRPBF	IRLL110PBF	SIHFL9014TR-GE3
IRFL210PBF	IRLL110TRPBF	SIHFL9110-GE3
IRFL210TRPBF	SIHFL014-GE3	SIHFL9110TR-GE3
IRFL214PBF	SIHFL014TR-GE3	SIHLL014-GE3
IRFL214TRPBF	SIHFL110-GE3	SIHLL014TR-GE3
IRFL9014PBF	SIHFL110TR-GE3	SIHLL110-GE3
IRFL9014TRPBF	SIHFL210-GE3	
IRFL9110PBF	SIHFL210TR-GE3	

Vishay Intertechnology, Inc.

Corporate Headquarters 63 Lincoln Highway, Malvern, PA 19355-2143 U.S.A. Phone (610) 644-1300 Fax (610) 296-0657 [www.vishay.com](http://www.vishay.com)

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Procedure #



# Product Change Notification



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## Qualification Results

EVAL	STRESS	STEP	TEST CONDITION	HR-CYC	S S	FAIL	DONE	TEST TYPE	FAIL CODE
*****	*****	****	*****	*****	****	****	****	****	****
13B0031	HAST	0	+130°C, 85%RH	0	80	0	X	ET	
		1	+130°C, 85%RH	100	80	0	X	ET	
	HTGB	1	HTGB (150 C)	168	77	0	X	ET	
		2	HTGB (150 C)	500	77	0	X	ET	
	HTRB	1	HTRB (150 C)	168	77	0	X	ET	
		2	HTRB (150 C)	500	77	0	X	ET	
	SOLDER DUN	1	SOLDER DUNK	3	50	0	X	ET	
	SOLDERABIL	1	SOLDERABILITY	0	30	0	X	VM	
	PARAMETRIC DRIFT ANALY	0	PARAMETRIC DR	0	200	0	0	ET	
		1	PARAMETRIC DR	3	200	0	0	ET	
		2	PARAMETRIC DR	250	200	0	0	ET	
	PRESSURE P	0	+121°C, 15 PSIG	0	80	0	X	ET	
		1	+121°C, 15 PSIG	96	80	0	X	ET	
	TEMP CYCLE	1	-65°C to +150°C	250	80	0	X	ET	
		2	-65°C to +150°C	500	80	0	X	ET	
		3	-65°C to +150°C	1000	80	0	X	ET	
	DPA	1	EXT VISUAL	0	15	0	X	VM	
		2	X-RAY	0	5	0	X	VM	
		3	CROSS SECTION	0	5	0	X	VM	
	PLATING THIC	1	Plating Thickness	0	20	0	X	VM	
1320449	WHISKER GROWTH	1	TC (-55C, 85C)	500	3	0	X	VM	
		1	TEMP (30C, 60%)	1000	3	0	X	VM	
		1	HI TEMP (55C, 85%RH)	1000	3	0	X	VM	

PART NUMBER: IRFL214TRPBF

GEOMETRY: 714484TS

LOT #:

DATE CODE:

PURPOSE: QUAL Q1

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EVAL	STRESS	STEP	TEST CONDITION	HR-CYC	S S	FAIL	DONE	TEST TYPE	FAIL CODE
*****	*****	****	*****	*****	****	****	****	****	****
13B0032	HAST	0	+130°C, 85%RH	0	80	0	X	ET	
		1	+130°C, 85%RH	100	80	0	X	ET	
	HTGB	1	HTGB (150 C)	168	77	0	X	ET	
		2	HTGB (150 C)	500	77	0	X	ET	
	HTRB	1	HTRB (150 C)	168	77	0	X	ET	
		2	HTRB (150 C)	500	77	0	X	ET	
	PRESSURE P	0	+121°C, 15 PSIG	0	80	0	X	ET	
		1	+121°C, 15 PSIG	96	80	0	X	ET	
	TEMP CYCLE	1	-65°C to +150°C	250	80	0	X	ET	
		2	-65°C to +150°C	500	80	0	X	ET	
		3	-65°C to +150°C	1000	80	0	X	ET	

PART NUMBER: IRFL014TRPBF  
 GEOMETRY: 698845TS  
 LOT #:  
 DATE CODE:  
 PURPOSE: QUAL Q2

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# Product Change Notification



Product Group: Vishay Siliconix/July 22, 2013/PCN-SIL-0382013 Rev 0

EVAL	STRESS	STEP	TEST CONDITION	HR-CYC	S	S	FAIL	DONE	TEST	FAIL
*****	*****	****	*****	*****	****	****	****	****	****	****
13B0033	HAST	0	+130°C, 85%RH	0	80	0	0	X	ET	
		1	+130°C, 85%RH	100	80	0	0	X	ET	
	HTGB	1	HTGB (150 C)	168	77	0	0	X	ET	
		2	HTGB (150 C)	500	77	0	0	X	ET	
	HTRB	1	HTRB (150 C)	168	77	0	0	X	ET	
		2	HTRB (150 C)	500	77	0	0	X	ET	
	SOLDER DUN	1	SOLDER DUNK	3	50	0	0	X	ET	
	MSL	1	RELI-0013	Pro/Post	11	0	0	X	VM	
	PARAMETRIC DRIFT ANALY	0	PARAMETRIC DR	0	200	0	0	0	ET	
		1	PARAMETRIC DR	3	200	0	0	0	ET	
		2	PARAMETRIC DR	250	200	0	0	0	ET	
	PRESSURE P	0	+121°C, 15 PSIG	0	55	0	0	X	ET	
		1	+121°C, 15 PSIG	96	55	0	0	X	ET	
	TEMP CYCLE	1	-65°C to +150°C	250	55	0	0	X	ET	
		2	-65°C to +150°C	500	55	0	0	X	ET	
		3	-65°C to +150°C	1000	55	0	0	X	ET	

PART NUMBER: IRFL9014TRPBF  
 GEOMETRY: 754411TS  
 LOT #:  
 DATE CODE:  
 PURPOSE: QUAL Q3

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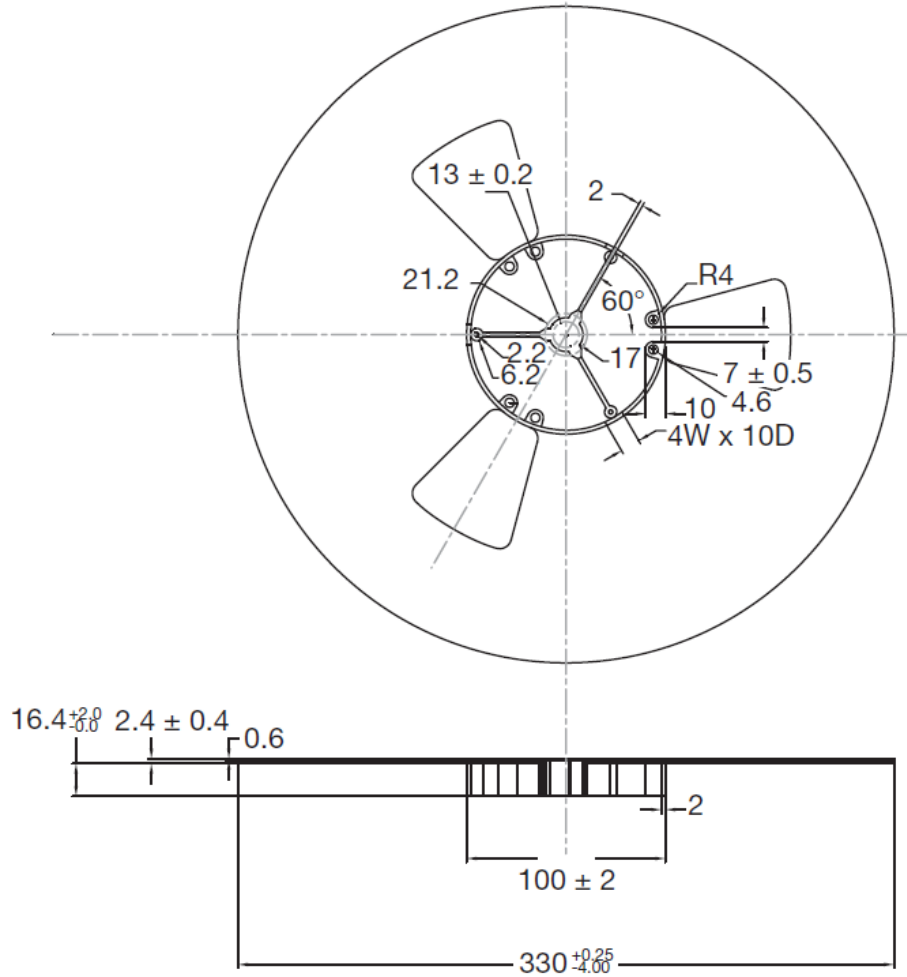
## Appendix A: Tape and Reel Comparison

### SOT-223 Carrier Tape Comparison

Dimension Description	EIA Carrier Tape Standard Dim	Vishay Siliconix Carrier Tape		ASE Weihai Carrier Tape	
		Min	Max	Min	Max
Sprocket Hole Diameter	<b>D0</b>	1.5	1.6	1.5	1.6
Pocket center hole diameter	<b>D1</b>	1.50	1.60	1.5	
Sprocket hole center to tape edge	<b>E1</b>	1.65	1.85	1.65	1.85
Sprocket hole pitch	<b>P0</b>	3.90	4.10	3.90	4.10
10xP0	<b>P10</b>			39.80	40.20
Sprocket Hole center to pocket hole center, x	<b>P2</b>	1.90	2.10	1.90	2.10
	<b>R (ref)</b>				
pocket edge to tape edge(btm)	<b>S1</b>	NA	NA	NA	NA
Carrier tape thickness	<b>T</b>	0.25	0.35	0.25	0.35
cover tape thickness	<b>T1</b>	0.048	0.058	0.04	0.06
Pocket length (measured at pocket top side)	<b>B1</b>	NA	NA	NA	NA
Sprocket hole center to edge of tape	<b>E2</b>	<b>13.85</b>	<b>14.65</b>	<b>10.05</b>	<b>10.5</b>
Sprocket Hole center to pocket hole center, y	<b>F</b>	<b>7.40</b>	<b>7.60</b>	<b>5.45</b>	<b>5.55</b>
Pocket pitch	<b>P1</b>	<b>11.90</b>	<b>12.10</b>	<b>7.9</b>	<b>8.1</b>
Cover tape + T+Ko	<b>T2</b>	2.398	2.708	2.09	2.41
Carrier tape width	<b>W</b>	<b>15.7</b>	<b>16.3</b>	<b>11.9</b>	<b>12.15</b>
Pocket width	<b>A0</b>	6.9	7.1	6.95	7.15
Pocket length (measured at pocket top side)	<b>B0</b>	7.4	7.6	7.3	7.5
Pocket depth	<b>K0</b>	2.1	2.3	1.8	2



## SOT-223 Reel Comparison



Dimension	Vishay-Siliconix	ASE
Center Hole	12.8 – 13.2	13.3 – 13.7
Width (inside)	16.4 – 16.6	12.65 – 15.15
Width (outside)	17.0 – 17.2	19.5 max

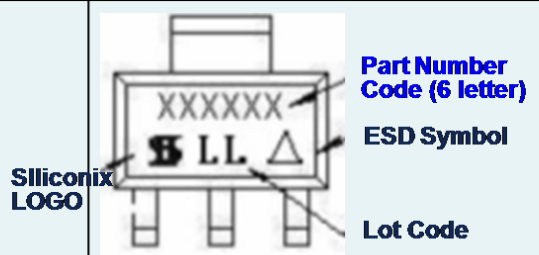
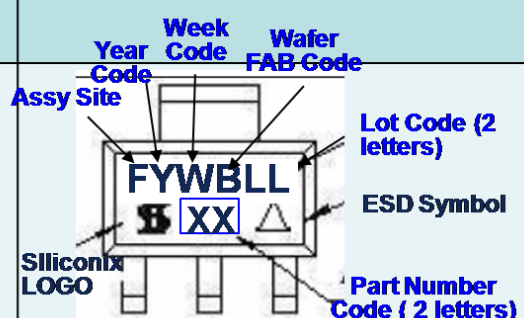
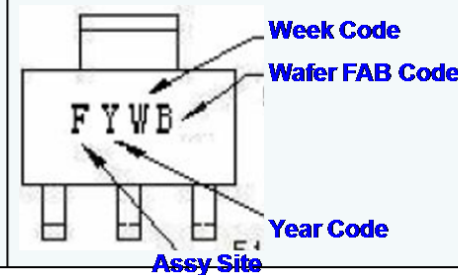
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## Appendix B: Marking Comparison

	Existing	ASE
Top	 <p>Part Number Code (6 letter) ESD Symbol Lot Code</p>	 <p>Year Code Week Code Wafer FAB Code Assy Site Lot Code (2 letters) ESD Symbol Part Number Code (2 letters)</p>
Bottom	 <p>Week Code Wafer FAB Code Year Code Assy Site</p>	

## Appendix C: Samples

500 pcs of each of the following parts will be built to support customer sampling:

- IRFL9014TRPBF
- IRL110TRPBF
- IRFL110TRPBF
- IRFL9110TRPBF
- IRFL210TRPBF