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Chicago, Illinois USA 60631

March 31th, 2017

RE: Communication Letter of Production Transfer for Acquired ON Semiconductor Automotive TVS Diodes,

To our valued customers,

On August 29, 2016, Littelfuse completed the acquisition of select ON Semiconductor product lines. The acquired product lines include TVS Diodes, Thyristors, and IGBT's for ignition applications as well as all relevant intellectual property.

As agreed in the Transition Services Agreement (TSA), ON Semiconductor has been producing and will continue to produce all automotive grade TVS diodes during the transition period. Meanwhile Littelfuse is working very closely with ON Semiconductor for the production transfer into Littelfuse manufacturing site based in Wuxi, China..

To ensure a smooth transition and serve our customers better, we are providing this communication package with key information about the production transfer and ask that you contact Littelfuse local sales teams for any specific questions or requests.

Qualification plan and Part Number List

Enclosed separately are the part numbers that will be transferred to our Wuxi, China site, along with the qualification plan that we will perform to qualify these products at our site for mass production.

Project Milestones	
Date	Milestone
2/27/2017	SAP Go live: ordering/shipment of ON Semi part numbers through Littelfuse
5/30/2017	Clean Rooms and Facility Hook Up completed by Littelfuse
10/31/2017	FAB & ASSY Equipment and Process Qualification completed by Littelfuse
4/1/2018	Internal Product Qualification Completed, Start Sampling and Initial Production from Littelfuse facilities
12/31/2018	Last Order Date of ON Semi part numbers from ON Semi facilities for customers
6/30/2019	Automotive Customer Qualification Completed by Littelfuse
7/31/2019	Last Shipment Date of ON Semi part numbers from ON Semi facilities to customers
8/29/2019	Automotive TSA completed and Full MP from Littelfuse Wuxi site

Littelfuse will obsolete all commercial grade TVS Diodes (those PNs without the **SZ/SC** prefix) in Dec 2017, and also obsolete SMA-FL (SZNS6A), and replace it with the TPSMA6L series.

ON Semiconductor will continue to manufacture the automotive grade TVS Diodes (with **SZ/SC** prefix) for up to 3 years to ensure customers will have ample time to transition to the Littelfuse made TVS Diodes. All production from ON Semiconductor during this time will continue to use the same processes, equipment, etc as before

Although we are working with the ON Semiconductor team to duplicate their processes as much as possible, there are still some changes we would like to draw your attention to below.

	Current	Change to
Raw Silicon	ON Semiconductor, 6 inches	Littelfuse , 5 inches
Wafer Fab	ON Semiconductor	Littelfuse Wuxi
Backend	ON Semiconductor (DO-214AA,SMB)	Littelfuse Wuxi
	ON Semiconductor (DO-214AB,SMC)	Littelfuse Wuxi
	ON Semiconductor (DO-214AC,SMA)	Littelfuse Wuxi
	ON Semiconductor (SOD-123)	Littelfuse Wuxi
	ON Semiconductor (SMA-FL)	Obsolete SZNS6A and replace it with Littelfuse TPSMA6L series

Once Littelfuse is able to sample products we will support audits from customers and your customer as required.

This communication package is for your information and acknowledgement. We will issue the official PCN when internal qualification is completed in Q2 2018. If you require specific data or product samples to certify this change, please contact Littelfuse® within 180 days of the notification date.

If you have any other questions or concerns, please contact your Littelfuse® local sales office or Charlie Cai (ccai@littelfuse.com) Global Product Manager Automotive TVS Diodes.

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

Best Regards,
Charlie Cai
Product Manager Automotive and Hi-Rel TVS

Discrete Semiconductor Component Qualification Plan

User P/N: TBD
 User Spec #: TBD
 Supplier: Littelfuse, Inc.
 Supplier Generic P/N:

User Component Engineer:
 General Specification:
 Supplier Manufacturing Site:
 Required PPAP Submission date:

Supplier Internal P/N:

Family Type: TVS

Reason for Qual: Onsemi transfer project qualification

Item #	Test	Test Conditions	Comments	Ref. Spec	# Lots	S.S.	Criteria	Remarks
1	Pre- and Post-Stress Electrical Test	Electrical Characterization @ 25C	MSL1	Spec	all	all	Note 1	
2	Pre-conditioning	Per AEC-Q101	SMD Device onlyPb Free Processing, 3 passes 260C	JA113	all	320	Note 1	Test samples for TC, AC, H ² TRB & UHAST only, take
3	External Visual	Per AEC-Q101		MIL750-2071	all	all	Note 1	
4	Parametric Verification	Electrical Characterization @ -65C, 25C & TJ		Spec	3	30	Note 1	
5a	DC Blocking voltage	Tj=150°C, 1,008hr, biased at VR		MIL750-1040	3	80	Note 1	
6	High Temperature storage	Tj=50C, 1008 hrs		JA103	3	80	Note 1	
7	Temperature Cycling	TA: -65°C→+150°C, dwell time >15mins, 1,000 cycle		JA104	3	80	Note 1	
8-alt	Autoclave	TA:121°C,RH=100%, P=15psig, 96hours, no bias	Only as for reference	JA102	3	80	Note 1	
8	UHAST	96 hours at TA=130°C/85%RH.	Littelfuse use UHAST to replace autoclave	AEC-Q101	3	80	Note 1	
9-alt	High Humidity High Temp. Reverse Bias	TA: 85°C, RH: 85%, 1000hr, Reverse biased at DC 100V or 80% VD	LF use H3TRB to replace HAST	JA101	3	80	Note 1	
9	HAST	96 hours at TA=130°C/85%RH, or 264hrs TA=110°C /85%RH with part reverse bias at 80% of rated voltage up to a voltage above which arcing in the chamber will likely occur (typically 42V). TEST before and after HAST.		JESD22 A-110	3	80	Note 1	
11	ESD Characterization	Per AEC-Q101		AEC Q101	3	10ea	Note 1	30 ea for HBM/IEC-61000-4-2
12	D.P.A	Per AEC-Q101		AEC-Q101-004	3	2 ea	Note 2	2 ea from passed H ² TRB and TC only.
13	Physical Dimension	Per JEDEC TO-263 dimension specification		JB-100	1	30	Note 1	Factory generic data
14	Terminal Strength	Per AEC-Q101	N/A for SMD device	MIL750-2006	1	30	Note 1	
15	Resistance to Solvents		N/A: Laser-marked	AEC Q101	3	10	Note 1	
20	Resistance to Solder Heat	Per AEC-Q101		JB-106-A	1	30	Note 1	
21	Solderability	Per AEC-Q101		J-STD002, both of B test methods and test method	3	15	Note 1	
22	Thermal Resistance	Per AEC-Q101		JESD-24-3, 24-4, 24-6	1	10	Note 1	Per SPEC
26	Surge Out (10*1000us)				3	10	Note1	
27	Capcitanace	Bias=0, 1MHZ			3	15	Note 1	

Note

1. Criteria1:Test failures after stress are defined as devices exhibiting any of the following criteria:

a.Devices not meeting the electrical test limits defined in the first user's device specification or appropriate supplier generic device specification.

b. Devices not remaining within ± 20% of the initial reading of each test (with the exception of leakage limits which are not to exceed 10 times the initial value for moisture tests and 5 times the initial value for all others) after completion of environmental testing exceeding these guidelines must be justified by the supplier and approved by the user. For leakages below 100 nA, tester accuracy may prevent a post stress analysis to initial reading

Transferred Parts	Comment
SZNS6A13AFT3G	Obselete
SZNS6A15AFT3G	Obselete
SZNS6A24AFT3G	Obselete
SZNS6A28AFT3G	Obselete
SZNS6A30AFT3G	Obselete
SZNS6A33AFT3G	Obselete
SZNS6A36AFT3G	Obselete
SZNS6A64AFT3G	Obselete
SZP6SMB18AT3G	To be Transferred
SZ1SMA70CAT3G	To be Transferred
SZP6SMB24CAT3G	To be Transferred
SZ1SMB100AT3G	To be Transferred
SZ1SMB10CAT3G	To be Transferred
SZP6SMB12CAT3G	To be Transferred
SZP6SMB20CAT3G	To be Transferred
SZ1SMA13AT3G	To be Transferred
SZ1SMA54AT3G	To be Transferred
SZ1SMB7.0AT3G	To be Transferred
SZSMF5.0AT1G	To be Transferred
SZ1SMB43AT3G	To be Transferred
SZ1SMB43CAT3G	To be Transferred
SZP6SMB24AT3G	To be Transferred
SZ1.5SMC30AT3G	To be Transferred
SZ1SMA24CAT3G	To be Transferred
SZ1SMB11CAT3G	To be Transferred
SZP6SMB36AT3G	To be Transferred
SZP6SMB39CAT3G	To be Transferred
SZ1SMB40CAT3G	To be Transferred
SZ1SMA48AT3G	To be Transferred
SZ1.5SMC20AT3G	To be Transferred
SZ1.5SMC47AT3G	To be Transferred
SZP6SMB36CAT3G	To be Transferred
SZ1SMC33AT3G	To be Transferred
SZP6SMB68CAT3G	To be Transferred
SZ1SMB12CAT3G	To be Transferred
SZ1.5SMC62AT3G	To be Transferred
SZ1SMA18CAT3G	To be Transferred
SZ1SMB18AT3G	To be Transferred
SZ1SMB28AT3G	To be Transferred
SZSMF13AT1G	To be Transferred
SZSMF24AT1G	To be Transferred
SZSMF33AT1G	To be Transferred
SZ1SMA20AT3G	To be Transferred
SZ1SMA48CAT3G	To be Transferred
SZ1SMA58AT3G	To be Transferred
SZ2841T3G	To be Transferred
SZSMF6.5AT1G	To be Transferred
SZ1SMB5.0AT3G	To be Transferred
SZ1SMB60AT3G	To be Transferred
SZP6SMB22AT3G	To be Transferred
SZ1.5SMC22AT3G	To be Transferred
SZ1.5SMC24AT3G	To be Transferred
SZ1.5SMC27AT3G	To be Transferred
SZ1.5SMC56AT3G	To be Transferred
SZ1SMA40CAT3G	To be Transferred

SZP6SMB27AT3G	To be Transferred
SZP6SMB30CAT3G	To be Transferred
SZP6SMB39AT3G	To be Transferred
SZ1SMB36AT3G	To be Transferred
SZ1SMB58AT3G	To be Transferred
SZ1SMB7.5AT3G	To be Transferred
SZ1SMB15AT3G	To be Transferred
SZ1SMB13AT3G	To be Transferred
SZP6SMB180AT3G	To be Transferred
SZP6SMB18CAT3G	To be Transferred
SZ1SMB12AT3G	To be Transferred
SZ1SMB15CAT3G	To be Transferred
SZSMF36AT1G	To be Transferred
SZ1SMA22AT3G	To be Transferred
SZ1SMA26CAT3G	To be Transferred
SZ1SMA30CAT3G	To be Transferred
SZ1SMA5.0AT3G	To be Transferred
SZ1SMB20CAT3G	To be Transferred
SZ1SMB33AT3G	To be Transferred
SZ1SMB51AT3G	To be Transferred
SZ1SMB60CAT3G	To be Transferred
SZ1SMB64CAT3G	To be Transferred
SZP6SMB56AT3G	To be Transferred
SZP6SMB6.8AT3G	To be Transferred
SZ1SMC17AT3G	To be Transferred
SZ1SMB75CAT3G	To be Transferred
SZ1SMA16CAT3G	To be Transferred
SZ1SMA18AT3G	To be Transferred
SZ1SMC51AT3G	To be Transferred
SZP6SMB16AT3G	To be Transferred
SZP6SMB82CAT3G	To be Transferred
SZP6SMB91AT3G	To be Transferred
SZP6SMB33CAT3G	To be Transferred
SZP6SMB11CAT3G	To be Transferred
SZP6SMB13AT3G	To be Transferred
SZ1SMA16AT3G	To be Transferred
SZSMF6.0AT1G	To be Transferred
SZ1SMB14CAT3G	To be Transferred
SZP6SMB30AT3G	To be Transferred
SZ1.5SMC7.5AT3G	To be Transferred
SZ1SMC22AT3G	To be Transferred
SZ2985AT3G	To be Transferred
SZ1SMA15CAT3G	To be Transferred
SZ1SMA43AT3G	To be Transferred
SZ1SMA33CAT3G	To be Transferred
SZ1SMB24AT3G	To be Transferred
SZ1SMC30AT3G	To be Transferred
SZ2887AT3G	To be Transferred
SZP6SMB15AT3G	To be Transferred
SZP6SMB20AT3G	To be Transferred
SZP6SMB100AT3G	To be Transferred
SZP6SMB16CAT3G	To be Transferred
SZP6SMB120AT3G	To be Transferred
SZP6SMB15CAT3G	To be Transferred
SZP6SMB200AT3G	To be Transferred
SZ1SMA13CAT3G	To be Transferred
SZ1SMB26AT3G	To be Transferred

SZSMF20AT1G	To be Transferred
SZSMF8.0AT1G	To be Transferred
SZ1SMB160AT3G	To be Transferred
SZP6SMB22CAT3G	To be Transferred
SZP6SMB75AT3G	To be Transferred
SZ1SMA24AT3G	To be Transferred
SZP6SMB62AT3G	To be Transferred
SZ1SMB48AT3G	To be Transferred
SZ1SMB58CAT3G	To be Transferred
SZ1SMC24AT3G	To be Transferred
SZ1SMC26AT3G	To be Transferred
SZ1SMA70AT3G	To be Transferred
SZ2845T3G	To be Transferred
SZ1SMC40AT3G	To be Transferred
SZP6SMB150AT3G	To be Transferred
SZ1SMB30CAT3G	To be Transferred
SZP6SMB12AT3G	To be Transferred
SZP6SMB130AT3G	To be Transferred
SZ1SMA15AT3G	To be Transferred
SZ1SMB22AT3G	To be Transferred
SZ1SMB26CAT3G	To be Transferred
SZSMF10AT1G	To be Transferred
SZ1SMB17CAT3G	To be Transferred
SZ1SMB45CAT3G	To be Transferred
SZ1SMB51CAT3G	To be Transferred
SZ1.5SMC15AT3G	To be Transferred
SZP6SMB51CAT3G	To be Transferred
SZP6SMB56CAT3G	To be Transferred
SZ1.5SMC39AT3G	To be Transferred
SZ1.5SMC51AT3G	To be Transferred
SZ1SMB36CAT3G	To be Transferred
SZ1SMC16AT3G	To be Transferred
SZ1SMC20AT3G	To be Transferred
SZ1SMB33CAT3G	To be Transferred
SZ1SMA36CAT3G	To be Transferred
SZ1.5SMC18AT3G	To be Transferred
SZ1SMB13CAT3G	To be Transferred
SZ1SMB14AT3G	To be Transferred
SZSMF14AT1G	To be Transferred
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SZ1.5SMC43AT3G	To be Transferred
SZ1.5SMC6.8AT3G	To be Transferred
SZ1SMA26AT3G	To be Transferred
SZP6SMB33AT3G	To be Transferred
SZP6SMB62CAT3G	To be Transferred
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SZ1SMA28CAT3G	To be Transferred
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SCP6SMB68AT3G	To be Transferred
SC1SMB5.0AT3G	To be Transferred
SC1SMA12AT3G	To be Transferred