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PRODUCT/MANUFACTURING CHANGE NOTIFICATION

Control No. PCN-07121 **Date: 23-Mar-2007**

Type of Change: **Design:** ☐ **Manufacturing** ☒ **Other** ☐

In accordance with Power Integrations policy of critical change notification and JEDEC standard EIA/JESD-46 guidelines, we take this opportunity to serve you this notice. If you have any questions or need further assistance, please contact your area sales manager.

DESCRIPTION OF THE CHANGES:

1. Addition of Oki Electric, Miyazaki, Japan for fabrication of all products in the DPA-Switch family.
2. Addition of ZMD Wafer Foundry, Dresden, Germany for fabrication of DPA423 product only.

Both Oki and ZMD wafer foundries have been previously qualified to fabricate wafers in high volume for other PI products for several years.

EFFECT ON PRODUCTS PREVIOUSLY SHIPPED: None

EFFECT ON PRODUCT QUALITY: None. Reliability testing results are included in the attached reliability report. There are no reliability issues. Both Oki and ZMD have been manufacturing wafers in high volume for other PI products for several years with excellent quality and reliability records.

PART NUMBERS AFFECTED:

1. The following products will be fabricated at Oki, Miyazaki, Japan for the first time
   DPA423-425 with PN, GN, and R package options.
   DPA426 with R package option.
2. The following products will be fabricated at ZMD, Dresden, Germany for the first time
   DPA423 with PN and GN package options

REASON FOR CHANGE: To increase manufacturing capacity and to ensure supply from multiple sources.

EFFECTIVE DATE: 23-Jun-2007

Please note that products with the above changes may begin to be shipped after the effective date stated above without further notice.

Reliability Engineering ***Qualification Report***

Qualification Report No: Q060201
Date: 03/12/2007
Author: Nick Stanco
Product Engineer: Ron Quach

Project: Qualification of ZMD and OKI Fabricated DPA-Switch Products
Summary: Reliability testing was conducted on six OKI DPA426R and DPA425PN lots and three ZMD DPA423PN lots for transfer of selected DPA-Switch products into OKI and ZMD wafer fabs. All reliability tests, including DOPL, HTRB, THBT and TMCL, were completed without any failures. Latch-up testing at 125°C was completed on the OKI DPA426R and the ZMD DPA423PN with passing results and MM ESD and HBM ESD testing produced results that were acceptable and equivalent to those from the current wafer fab. Parametercharacterization of all of the above products were completed with acceptable results. Based on these results, DPA423-426 products fabricated at OKI and DPA423 fabricated at ZMD are now fully qualified and approved for production. The products qualified are the following: OKI: DPA423-DPA425 in PN and GN packages and DPA423-426 in R package ZMD: DPA423 in PN and GN packages.
Qualification Vehicles: ZMD DPA423; OKI DPA425PN and DPA426R

Reliability Test Descriptions and Conditions

Test Name	Conditions	Reference Specification
DOPL (Dynamic Operating Life Test)	Tj=125°C, $Vd_{(peak)}$ = 176V	EIA/JESD22-A108-C
HTRB (High Temperature Reverse Bias)	Tj=150°C, Vd =176V	EIA/JESD22-A108-C
THBT (Temperature Humidity Bias Test)	Tj=125°C, 85% RH, Vd = 30V	EIA/JESD22-A101-B
TMCL (Temperature Cycle Test)	-65°C to +150°C, unbiased	EIA/JESD22-A104-C
HBM ESD (Human Body Model)	±1000V to ±2500V	JESD22-A114-D
MM ESD (Machine Model)	±100V to ±250V	JESD22-A115-A
MSL4 Preconditioning	96-hour 30°C/60% RH soak + 3 passes 260C Pb-free solder reflow	IPC-JEDEC J-STD-020C
Latch-up	+125°C, ±100 mA minimum	JESD78A

OKI DPA426R Reliability Test Results

Test Name	DPA426R OKI Qual Lot 1 Lot 36573A	DPA426R OKI Qual Lot 2 Lot 36675A	DPA426R OKI Qual Lot 3 Lot 37843C	Duration/Conditions
MSL4 + DOPL	0/35	0/35	0/47	1000 hours, Ta=95°C, Vd=176V
MSL4 + HTRB	0/47	0/47	0/47	1000 hours, Ta=150°C, Vd=176V
MSL4 + THBT	0/47	0/47	0/47	1000 hours, 85°C/85% RH, Vd=30V
MSL4 + TMCL	0/47	0/47	0/47	1000 cycles, -65°C to +150°C
CSAM	Passed	Passed	Passed	Parts scanned at 0-hr and post-MSL4
Latch-up	0/6	--- N/A ---	--- N/A ---	Per JESD78 at 125C; all pins >±100ma
Yield Analysis & Temp CHAR	Passed	Passed	Passed	Acceptable results reported by P/E.

OKI DPA425PN Reliability Test Results

Test Name	DPA425PN MEI Control Lot 39591A	DPA425PN OKI Qual Lot 1 Lot 40424A	DPA425PN OKI Qual Lot 2 Lot 40504A	Duration/Conditions
MSL4 + HTRB	0/47	0/47	0/47	1000 hours, Ta=150°C, Vd=176V
MSL4 + THBT	0/47	0/47	0/47	1000 hours, 85°C/85% RH, Vd=30V
MSL4 + TMCL	0/47	0/47	0/47	1000 cycles, -65°C to +150°C
CSAM	Passed	Passed	Passed	Parts scanned at 0-hr and post-MSL4
Yield Analysis & Temp CHAR	Passed	Passed	Passed	PI ATE Test Program.

ZMD DPA423PN Reliability Test Results

Test Name	DPA423PN ZMD Qual Lot 1 Lot 38651C	DPA423PN ZMD Qual Lot 2 Lot 38652A	DPA423PN ZMD Qual Lot 3 Lot 38653A	Duration/Conditions
MSL4 + DOPL	0/47	0/47	0/47	1000 hours, Ta=95°C, Vd=176V
MSL4 + HTRB	0/47	0/47	0/47	1000 hrs, Ta=150°C, Vd=176V (peak)
MSL4 + THBT	0/47	0/47	0/47	1000 hrs, 85°C/85% RH, Vd=30V
MSL4 + TMCL	0/47	0/47	0/47	1000 cycles, -65/150°C
CSAM	Passed	Passed	Passed	Parts scanned at 0-hr and post-MSL4
HBM ESD	Passed ±2000V	Passed ±2000V	-----	Per JESD22-A114-B
MM ESD	Passed ±200V	Passed ±150V	-----	Per JESD22-A115-A
Latch-up	0/6	0/6	-----	Per JESD78 at 125C; all pins >±100ma
Critical Parameter Characterization	Acceptable	Acceptable	Acceptable	PI ATE Test Program

Conclusion

Based on these results, DPA423-426 wafers fabricated at OKI and DPA423 wafers fabricated at ZMD are now fully qualified and approved. The products qualified are the following:

OKI: DPA423-DPA425 in PN and GN packages and DPA423-426 in R package

ZMD: DPA423 in PN and GN packages.

Approvals

Approved By	Signature	Date
Reliability Engineer:	On File	On File
Product Engineering Manager:	On File	On File
Reliability Engineering Manager:	On File	On File
Director of Technology Development:	On File	On File
Director of Quality:	On File	On File