



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

September 18th, 2021

PCN # ESW490-40 – Thyristor/Diode I4Pac&GUPF Packaging Location Transfer

To our valued customers,

Littelfuse would like to notify you that we will transfer our backend assembly process of Thyristor/Diode products I4Pac & GUPF Package to our new inhouse assembly factory in Lipa, Philippines. This brand-new assembly factory is to fulfill our strategy to invest in state-of-the-art power semiconductor assembly capabilities to dramatically improve our service levels to customers. Our target is to build this factory as a world class facility with automated, error proof processes to meet the highest quality standards. Contact our local Sales team in case you would like to understand more about this new factory.

Below is the detail changes associate with this Assembly Location change:

- 1) **Silicon Die:** No change
- 2) **Backend Assembly Bill of Materials:** No change
- 3) **Backend Assembly Process Flow:** No change
- 4) **Backend Assembly Equipment:** Equal or better
- 5) **Marking & Labeling:** Yes. Changes pls refer to below details.

I4Pac Package products:

DESCRIPTION	EXISTING	SBU-LIPA	CHANGE (Y/N)	RISK	REMARKS
Unit Marking					
Logo			Y	NR	Change to Littelfuse Logo
UL Sign	Yes	Yes	N	NR	No change
Trademark Sign	Yes	Yes	N	NR	No change
Product Name	Yes	Yes	N	NR	No change
Date Code	YYWW	YYWW	N	NR	No change
Assembly Line Code	G	M	Y	LOW	Site location code
FKT No	6 digits	6 digits	N	NR	No Change
Box Label					
ROHS Compliant			N	NR	No change
Logo			Y	NR	Change to Littelfuse Logo
Qty per Box	Yes	Yes	N	NR	No change
Part Number	Yes	Yes	N	NR	No change
Lot No	Yes	Yes	N	NR	No change
Country of Origin	Not available	Available	Y	LOW	Additional information
Code Type	Barcode	Barcode + 2D Code	Y	LOW	Additional scanning code to access information
Lot ID	FKT #	Lipa LotID format	Y	NR	SBU-Lipa uses global format
Date Code	Yes	Yes	N	NR	No change
Assy Line Code	L	M	Y	LOW	Site location code
Product code	Yes	Yes	N	NR	No change
Tube Label					
Logo			Y	NR	Change to Littelfuse Logo
Qty per Box	Yes	Yes	N	NR	No change
Part Number	Yes	Yes	N	NR	No change
Lot No	Yes	Yes	N	NR	No change
Country of Origin	Not available	Available	Y	LOW	Additional information
2D Code	Not available	Available	Y	LOW	Additional scanning code to access information
SAP Part Number	Not available	Available	Y	NR	Additional information
Date Code+Assy Line Code	Not available	YYWWM	Y	NR	Additional information for site location code
Product code	Yes	Yes	N	NR	No change

GUPF Package products:

DESCRIPTION	EXISTING	LIPA	CHANGE (Y/N)	RISK	REMARKS
Unit Marking					
Logo			Y	NR	Change to Littelfuse Logo
UL Sign	Yes	Yes	N	NR	No change
Date Code	YYWW	YYWW	N	NR	No change
Assembly Line Code	G	M	Y	LOW	Site location code
Product Name	GUOXX-XXN01	GUOXX-XXN01	N	NR	No change
FKT No	6 digits	6 digits	N	NR	No change
Leads Polarity	Yes	Yes	N	NR	No change
Inner Box Label					
ROHS Compliant		None	Y	LOW	ROHS Compliance and 2nd Level Interconnection level already included in the tube
Logo			Y	LOW	Change to Littelfuse Logo
Qty	Yes	Yes	N	NR	No change
Product Name	GUOXX-XXN01	GUOXX-XXN01	N	NR	No change
Lot No	No	Yes	Y	LOW	Use Lot No
Product Code	Yes	Yes	N	NR	No change
Date Code + Assy Line Code	YYWWG	YYWWM	Y	LOW	Site location code
Lot ID	FKT	Lipa LotID format	Y	LOW	SBU-Lipa uses global format
2D Code	No	Yes	Y	LOW	Standardzation
Tube Label					
Logo			Y	LOW	Change to Littelfuse Logo
Product Type	Yes	Yes	N	NR	No Change
Lot No	GUOXX-XXN01	GUOXX-XXN01	N	NR	No change
Product Code	Yes	Yes	N	NR	No change
Date Code + Assy Line Code	YYWWG	YYWWM	Y	LOW	Site location code
Leads Polarity	Yes	Yes	N	NR	No change
2d Code	No	Yes	Y	LOW	Standardzation

For both I4Pac & GUPF Package products:

Form, fit, function changes: None
Part number changes: None
Effective date: Dec 20th, 2021
Replacement products: N/A
Last time buy: N/A

This notification is for your information and acknowledgement. If you have any other questions or concerns, please contact your local sales team or Zhiwei Wang, Power Thyristor/Diode Discrete, Product Marketing Manager.

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

Thank you very much!

Best Regards,

Zhiwei Wang
 Product Marketing Manager of Power Thyristor/Diode Discrete
 Semiconductor Business Unit, Wuxi, China
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Littelfuse Phils, Inc. Lipa, Philippines



- Established since November 1997
- New Building 3 be opened in March 2020
- A two stories building (EBU & SBU)
- Total production space ~8400 m²
- 3400 m² used in phase 1
- Dedicated to semiconductor products



Saw, Die Bond, Wirebond, & Assy Line



Mold, Oven, Deflash & Plating



Tester & Handler



800 E. Northwest Highway Des Plaines, IL 60016

Product/Process Change Notice (PCN)

PCN#: ESW490-40 **Date:** Sep 18th, 2021

Product Identification:

Thyristor/Diode I4Pac & GUPF Package Products

Implementation Date for Change:

Dec 20th , 2021

Contact Information

Name: Zhiwei Wang

Title: Product Marketing Manager

Phone #: +86 510 85277701 - 7927

Fax#: N/A

E-mail: zwang@littelfuse.com

Category of Change:

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

Description of Change:

Littelfuse would like to notify you that we will transfer our backend assembly process of Thyristor/Diode I4Pac & GUPF Package Products to our inhouse new factory in Lipa, Philippines.

- 1) Silicon Die: No change
- 2) Backend Assembly Bill of Materials: No change
- 3) Backend Assembly Process Flow: No change
- 4) Backend Assembly Equipment: Equal or better
- 5) Marking & Labeling: Yes. (refer to PCN letter)

Product form, fit, function changes: None

Part number changes: None

Important Dates:

- Qualification Samples Available: Last Time Buy:
- Final Qualification Data Available:
- Date of Final Product Shipment:

Method of Distinguishing Changed Product

- Product Mark,
- Date Code,
- Other,

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

None

LF Qualification Plan/Results:

Available

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

Prepared By : Zhiwei Wang, Product Marketing Manager
Date : Sep 18th, 2021
Products : Thyristor/Diode I4Pac & GUPP Package Products
Revision : A

1.0 Objective:

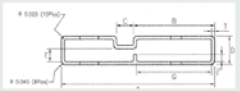

This qual report covers Thyristor/Diode I4Pac & GUPP Package Products Assembly location Transfer.

2.0 Applicable Products:

Thyristor/Diode I4Pac & GUPP Package Products. Refer to Appendix A for detail part number list.

3.0 Physical Differences/Changes:

I4Pac: Small change on Tube but not affect customer usage. No change for GUPP.

Point of Comparison	Existing	SBU-LIPA	GAP	RISK
Length, in	20.95 - 21.05	20.95 - 21.05	No gap	No risk
Width, in	1.79 - 1.81	1.79 - 1.81	No gap	No risk
Height, in	0.32 - 0.34	0.28 - 0.33	Yes	Low risk. Gap is not significant. No unit jamming during actual use
Material Thickness, in	0.03	0.03	No gap	No risk
Tube Opening, in	0.26 x 1.74	0.24 x 1.75	Yes	Low risk. Gap is not significant. No unit jamming during actual use
Quantity	25	25	No gap	No risk
Anti-static	Yes	Yes	No gap	No risk
Design			Yes	Low risk

4.0 Electrical Parameter Test Result

Part Number	Blocking Voltage	Reverse Current	Forward Voltage	Gate Trigger Voltage	Trigger Gate Current	Holding Current
CS20-25MO1F	Pass	Pass	Pass	Pass	Pass	Pass
CS9241	Pass	Pass	Pass	Pass	Pass	Pass
DHH55-36N1F	Pass	Pass	Pass	N/A	N/A	N/A
GUO40-16NO1	Pass	Pass	Pass	N/A	N/A	N/A

5.0 Qualification Test Result

All samples passed parametric and reliability test standard by Littelfuse/IXYS.



DEVICE	REL - TEST	CONDITIONS	SAMPLE SIZE PER LOT	STATUS	E21C10L1	E21C10L2	E21C10L3	RESULT
CS20-25MO1F	HTRB	3000 Cycles, 1 min. on/5 min off 70°C, 2100 Vdc/Vdrum	20	finished	passed	passed	passed	Completed; Passed reliability
	UHAST	96h, 130°C/85%r.H.	20	finished	passed	passed	passed	Completed; Passed reliability
	T/C	100 cycles, -40/+150°C	20	finished	passed	passed	passed	Completed; Passed reliability
	P/C	delta T = 80°C, Tj = 8125°C	20	finished	passed	passed	passed	Completed; Passed reliability
	ITSM	Datasheet	3	finished	passed	passed	passed	Completed; Passed reliability
DEVICE	REL - TEST	CONDITIONS	SAMPLE SIZE PER LOT	STATUS	E21C10L1	E21C10L2	E21C10L3	RESULT
CS9241	HTRB	3000 Cycles, 1 min. on/5 min off 70°C, 2100 Vdc/Vdrum	20	passed	passed	passed	passed	Completed; Passed reliability
	Autoclave	168h, 85°C/85%r.H.	20	passed	passed	passed	passed	Completed; Passed reliability
	T/C	100 cycles, -40/+150°C	20	passed	passed	passed	passed	Completed; Passed reliability
	P/C	delta T = 80°C, Tj = 8125°C	20	passed	passed	passed	passed	Completed; Passed reliability
	ITSM	Datasheet	3	passed	passed	passed	passed	Completed; Passed reliability
DEVICE	REL - TEST	CONDITIONS	SAMPLE SIZE PER LOT	STATUS	E21C12L1	E21C12L1#	E21C12L1#	RESULT
DHH55-36N1F	HTRB	1000hrs, 125°C/150°C, 80% Vrrm	20	finished	passed	passed	passed	Completed; Passed reliability
	Autoclave	1000hrs, 85°C/ 85%r.H.	20	finished	passed	passed	passed	Completed; Passed reliability
	T/C	100 cycles, -40/+150°C	20	finished	passed	passed	passed	Completed; Passed reliability
	P/C	4000 cycles, delta Tj= 80K, delta Tj = 100K	20	finished	passed	passed	passed	Completed; Passed reliability
	ITSM	Datasheet	3	finished	passed	passed	passed	Completed; Passed reliability
Part Number	Test	Test condition	Sample Size	Status	E21C12L1	E21C12L2	E21C12L3	RESULT
GUO40-16NO1	HTRB	1000hrs, 125°C, 1120V AC	20	Finished	Passed	Passed	Passed	Passed
	Autoclave	1000hrs, 85°C, 85%r.H., recovery time 48hrs.@RT	20	Finished	Passed	Passed	Passed	Passed
	T/C	100 cycles, -40/+150°C	20	Finished	Passed	Passed	Passed	Passed
	P/C	20,000 cycles, Delta T 80K	20	Finished	Passed	Passed	Passed	Passed
	ITSM	Datasheet	3	Finished	Passed	Passed	Passed	Passed

6.0 Recommendations & Conclusions:

Base on the above qualification test results, Littelfuse/IXYS judged that SBU Lipa Assembly Location can pass the release criterion and ready to start mass production for affected products.

Appendix A: Detail Part Number list affected

Package Type	SAP Part Number	Package Type	SAP Part Number
i4-Pac	CS9241	i4-Pac	FBS10-12SC-TDI
i4-Pac	FUO50-16N	i4-Pac	FUO22-12N
i4-Pac	DNA30E2200FE	i4-Pac	FUS45-0045B
i4-Pac	CS20-25MO1F	i4-Pac	FBO40-12N
i4-Pac	FUO22-16N	i4-Pac	CMA50P1600FC
i4-Pac	FUE30-12N1	i4-Pac	CNA30E2200FB
i4-Pac	CS20-22MOF1	i4-Pac	DHG55I3300FE
i4-Pac	FBE22-06N1	i4-Pac	FBO16-12N
i4-Pac	DHH55-36N1F	GUPP	GUO40-16NO1
i4-Pac	CLA40P1200FC	GUPP	DMA40U1800GU
i4-Pac	DSEE55-24N1F	GUPP	GUO40-12NO1
i4-Pac	CMA30P1600FC	GUPP	GUO40-08NO1
i4-Pac	FBS10-12SC-TDI	GUPP	DNA40U2200GU
i4-Pac	FUO22-12N	GUPP	GUO40-12NO1-UTC