

PCN Report

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Date : June 13th, 2023
Products : Thyristor/Diode TO247_ISO247_PLUS247_ISOPLUS247 Package Products
Revision : C

1.0 Objective:

This qual report covers Thyristor/Diode TO247_ISO247_PLUS247_ISOPLUS247 Package Products Assembly location Transfer.

2.0 Applicable Products:

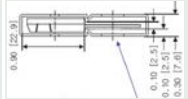
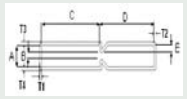
Thyristor/Diode TO247_ISO247_PLUS247_ISOPLUS247 Package Products.
Refer to Appendix A for detail part number list.

3.0 Qualification Report Available Timeline:

	Qual Report Available Y/N	Date
TO247 Thyristor	Yes	June'2022
TO247 Diode	Yes	Apr'2023
PLUS247 Thyristor	Yes	June'2023
ISOPLUS247 Thyristor/Diode	Yes	June'2023
ISO247 Thyristor/Diode	No	TBD

4.0 Physical Differences/Changes:

Small change on Tube but not affect customer usage.

Point of Comparison	Existing Location	SBU-LIPA	GAP	RISK
Length, in	21	20.95 – 21.05	No gap	No risk
Width, in	1.79	1.79 -1.81	No gap	No risk
Height, in	0.3	0.28 - 0.33	With gap	Low risk. Gap is not significant. No unit jamming during actual use
Material Thickness, in	No data	0.03	No gap	No risk
Tube Opening, in	0.3 x 1.79	0.24 x 1.75	With gap	Low risk. Gap is not significant. No unit jamming during actual use
Quantity	30	30	No gap	No risk
Anti-static	No data	Yes	No gap	No risk
Design			With gap	Lipa designed was based on open tool

5.0 Qualification Test Result

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

DEVICE	REL - TEST	CONDITIONS	SAMPLE SIZE PER LOT, pc	1E21K43A2	2E21K43A3	1E21K43A3	RESULT
CLA50E1200HB Rel Report No.: Q11-8228	HTRB	1000hrs, 125°C, 840V AC mounted on heatsink	20	passed	passed	passed	Completed; Passed reliability
	AUTOCLAVE	96hrs, 121°C, 100%r.H; 48hrs recovery time @ RT	20	passed	passed	passed	Completed; Passed reliability
	T/C	100cycles, -40°C/150°C; EOL	20	passed	passed	passed	Completed; Passed reliability
	P/C	4000cycles, I_FAV=35A, I_FRMS=64A, P~62.3W, T_J=125°C, dT=80K, TH=45-75,1°C, t_off=65s	20	passed	passed	passed	Completed; Passed reliability
	Surge Current	650A, t = 10ms, 50Hz	3	passed	passed	passed	Completed; Passed reliability
	HAST	42VDC; 0hr;96hrs	30	passed	passed	passed	Completed; Passed reliability

DEVICE	REL - TEST	CONDITIONS	SAMPLE SIZE PER LOT, pc	1E21K43A2	RESULT
CLA100E1200HB Rel Report No.: Q11-8286	HTRB	1000hrs, 125°C, 840V AC mounted on heatsink	20	passed	Completed; Passed reliability
	AUTOCLAVE	96hrs, 121°C, 100%r.H; 48hrs recovery time @ RT	20	passed	Completed; Passed reliability
	T/C	100cycles, -40°C/150°C; EOL	20	passed	Completed; Passed reliability
	P/C	4000cycles, I_FAV=35A, I_FRMS=64A, P~62.3W, T_J=125°C, dT=80K, TH=45-75,1°C, t_off=65s	20	passed	Completed; Passed reliability
	Surge Current	650A, t = 10ms, 50Hz	3	passed	Completed; Passed reliability
	HAST	42VDC; 0hr;96hrs	30	passed	Completed; Passed reliability

DEVICE	REL - TEST	CONDITIONS	SAMPLE SIZE PER LOT, pc	Lot A	Lot B	Lot C	RESULT
DPG60C300HB Rel Report No.: Q11-8295	HTRB	1000hrs, 150°C, 240VDC mounted on heatsink	20	passed	passed	passed	Completed; Passed reliability
	AUTOCLAVE	96hrs, 121°C, 100%r.H; 48hrs recovery time @ RT	20	passed	passed	passed	Completed; Passed reliability
	T/C	200cycles, -55°C/150°C	20	passed	passed	passed	Completed; Passed reliability
	P/C	4000 cycles, IL = 25A, P~26W, T_J = 150°C, dT = 100°C ton = 70sec, toff = 148sec	20	passed	-	passed	Completed; Passed reliability
	Surge Current	360A, t = 10ms, 50Hz	3	passed	passed	passed	Completed; Passed reliability

Updated

DEVICE	REL - TEST	CONDITIONS	SAMPLE SIZE PER LOT	STATUS	Lipa	RESULT
CS60-16IO1 Rel Report No.: Q11-8286	Autoclave/U-HAST	168h, 85°C/85%r.H.	20	finished	passed	Completed; Passed reliability
	T/C	100 cycles, -40°C/150°C; until 200 cycles	20	finished	passed	Completed; Passed reliability
	Surge Current	1400A, t = 10ms, 50Hz	5	finished	passed	Completed; Passed reliability
	HTRB	1000hrs, 125°C, 1120V AC	20	finished	passed	Completed; Passed reliability
	P/C	4000cycles, IFAV=43A, P~67.5W, T_J=125°C, dT=80°C, ton = 70sec, toff = 66sec	20	finished	passed	Completed; Passed reliability

DEVICE	REL - TEST	CONDITIONS	SAMPLE SIZE PER LOT	STATUS	E22D13E1	E22D13E2	E22D13E3	RESULT
DSI45-16AR Rel Report No.: Q11-8330	T/C	-40/150°C, 200cycles	20	finished	passed	passed	passed	Completed; Passed reliability
	Surge Current	480A 50Hz, t = 10ms	3	finished	passed	passed	passed	Completed; Passed reliability
	HTRB	150°C, 1000h, 1120V AC	20	finished	passed	passed	passed	Completed; Passed reliability
	Autoclave/U-HAST	168h, 85°C/85%r.H.	20	finished	passed	N/A	N/A	Completed; Passed reliability
	P/C	400cycles, IFAV=45A, T_J=145°C, dT=100°C,	20	finished	passed	passed	passed	Completed; Passed reliability

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	Qualification Status
PLUS247 Thyristor	CS60-16IO1	Completed
PLUS247 Thyristor	CLA80E1200HF	Completed
PLUS247 Thyristor	CS60-14IO1-SMD	Completed
PLUS247 Thyristor	CS60-16IO1-SMD	Completed
PLUS247 Thyristor	CS60-12IO1	Completed
ISOPLUS247 Thyristor/Diode	DSI45-16AR	Completed
ISOPLUS247 Thyristor/Diode	DPG60C300HJ	Completed
ISOPLUS247 Thyristor/Diode	DPH30IS600HI	Completed
ISOPLUS247 Thyristor/Diode	DSEI30-10AR	Completed
ISOPLUS247 Thyristor/Diode	DSEK60-02AR	Completed
ISOPLUS247 Thyristor/Diode	DSEP30-06BR	Completed
ISOPLUS247 Thyristor/Diode	DSEP30-12AR	Completed
ISOPLUS247 Thyristor/Diode	DSEP30-12CR	Completed
ISOPLUS247 Thyristor/Diode	DSIK45-16AR	Completed
ISOPLUS247 Thyristor/Diode	DSS17-06CR	Completed
ISOPLUS247 Thyristor/Diode	DSSK60-015AR	Completed
ISOPLUS247 Thyristor/Diode	DSSK60-02AR	Completed
ISOPLUS247 Thyristor/Diode	DSSS35-008AR	Completed
ISOPLUS247 Thyristor/Diode	CS45-16IO1R	Completed
ISOPLUS247 Thyristor/Diode	DSP25-16AR	Completed
ISOPLUS247 Thyristor/Diode	DSEP60-12AR	Completed
ISOPLUS247 Thyristor/Diode	DSP45-16AR	Completed
ISOPLUS247 Thyristor/Diode	DSEP15-12CR	Completed
ISOPLUS247 Thyristor/Diode	DSI45-16AR	Completed
ISO247 Thyristor/Diode	CLA80MT1200NHR	Ongoing
ISO247 Thyristor/Diode	CMA60MT1600NHR	Ongoing
ISO247 Thyristor/Diode	CMA80MT1600NHR	Ongoing
ISO247 Thyristor/Diode	DMA10P1600HR	Ongoing
ISO247 Thyristor/Diode	DMA30P1600HR	Ongoing
ISO247 Thyristor/Diode	DMA50P1200HR	Ongoing
ISO247 Thyristor/Diode	DPF30P600HR	Ongoing
ISO247 Thyristor/Diode	CLA40E1200HR	Ongoing
ISO247 Thyristor/Diode	CLA60MT1200NHR	Ongoing
TO247 Thyristor	CLA50E1200HB	Completed
TO247 Thyristor	CLA100E1200HB	Completed
TO247 Thyristor	CS20-16IO1	Completed

TO247 Thyristor	CS45-16IO1	Completed
TO247 Thyristor	CLA30E1200HB	Completed
TO247 Thyristor	CS30-16IO1	Completed
TO247 Thyristor	CMA80E1600HB	Completed
TO247 Thyristor	CS45-12IO1	Completed
TO247 Thyristor	CLA80MT1200NHB	Completed
TO247 Thyristor	CMA50E1600HB	Completed
TO247 Thyristor	CS30-14IO1-DIE-COA	Completed
TO247 Thyristor	CS45-08IO1	Completed
TO247 Thyristor	CS30-12IO1	Completed
TO247 Thyristor	CS20-14IO1-DIE-COA	Completed
TO247 Thyristor	CMA80MT1600NHB	Completed
TO247 Thyristor	CLA60MT1200NHB	Completed
TO247 Thyristor	CS20-12IO1	Completed
TO247 Thyristor	CS30-16IO1-DIE-COA	Completed
TO247 Thyristor	CS20-16IO1-DIE-COA	Completed
TO247 Thyristor	CLE40E1200HB	Completed
TO247 Thyristor	CS30-14IO1	Completed
TO247 Thyristor	CS20-14IO1	Completed
TO247 Diode	DPG60C300HB	Completed
TO247 Diode	DSEI30-06A	Completed
TO247 Diode	DSI45-12A	Completed
TO247 Diode	DSEI60-06A	Completed
TO247 Diode	DSP45-12A	Completed
TO247 Diode	DSEP30-06B	Completed
TO247 Diode	DSEP60-06A	Completed
TO247 Diode	DSEI30-10A	Completed
TO247 Diode	DSEC30-06A	Completed
TO247 Diode	DSEK60-06A	Completed
TO247 Diode	DPG30C400HB	Completed
TO247 Diode	DLA60I1200HA	Completed
TO247 Diode	DSEI60-10A	Completed
TO247 Diode	DPG60I400HA	Completed
TO247 Diode	DPG60C400HB	Completed
TO247 Diode	DSEP30-06A	Completed
TO247 Diode	DSA90C200HB	Completed
TO247 Diode	DSEI60-12A	Completed
TO247 Diode	DSEI30-12A	Completed
TO247 Diode	DSP25-12A	Completed

TO247 Diode	DSEP60-12A	Completed
TO247 Diode	DSEC60-06A	Completed
TO247 Diode	DSEP30-12B	Completed
TO247 Diode	DSSK60-015A	Completed
TO247 Diode	DSEI120-06A	Completed
TO247 Diode	DSI45-16A	Completed
TO247 Diode	DPG30C300HB	Completed
TO247 Diode	DSA70C200HB	Completed
TO247 Diode	DSP45-16A	Completed
TO247 Diode	DSEK60-02A	Completed
TO247 Diode	DPG80C400HB	Completed
TO247 Diode	DSSK60-02A	Completed
TO247 Diode	DSEP30-12A	Completed
TO247 Diode	DPG30I400HA	Completed
TO247 Diode	DSSK30-018A	Completed
TO247 Diode	DSEI60-02A	Completed
TO247 Diode	DSEI120-12A	Completed
TO247 Diode	DSP25-16A	Completed
TO247 Diode	DPG80C300HB	Completed
TO247 Diode	DSA70C150HB	Completed
TO247 Diode	DH60-18A	Completed
TO247 Diode	DSSK50-01A	Completed
TO247 Diode	DSSK70-008A	Completed
TO247 Diode	DSA60C60HB	Completed
TO247 Diode	DMA50P1600HB	Completed
TO247 Diode	DSEC60-12A	Completed
TO247 Diode	DSDI60-18A	Completed
TO247 Diode	DSSK80-0008D	Completed
TO247 Diode	DSSK80-006B	Completed
TO247 Diode	DSSK80-0045B	Completed
TO247 Diode	DH40-18A	Completed
TO247 Diode	DSS60-0045B	Completed
TO247 Diode	DHG30I600HA	Completed
TO247 Diode	DSA30C100HB	Completed
TO247 Diode	DSSK80-003B	Completed
TO247 Diode	DSA50C100HB	Completed
TO247 Diode	DPG30C200HB	Completed
TO247 Diode	DH20-18A	Completed
TO247 Diode	DSDI60-16A	Completed

TO247 Diode	DSA50C150HB	Completed
TO247 Diode	DSSK80-0025B	Completed
TO247 Diode	DPG60C200HB	Completed
TO247 Diode	DMA30E1800HA	Completed
TO247 Diode	DSEC30-12A	Completed
TO247 Diode	DSEK60-12A	Completed
TO247 Diode	DSEE30-12A	Completed
TO247 Diode	DSI45-08A	Completed
TO247 Diode	DMA80IM1600HB	Completed
TO247 Diode	DMA50P1200HB	Completed
TO247 Diode	DSEC30-06B	Completed
TO247 Diode	DSSK40-006B	Completed
TO247 Diode	DH60-16A	Completed
TO247 Diode	DPG60I300HA	Completed
TO247 Diode	DPF60C300HB	Completed
TO247 Diode	DPG30I300HA	Completed
TO247 Diode	DSA70C100HB	Completed
TO247 Diode	DHG30I1200HA	Completed
TO247 Diode	DHG40C1200HB	Completed
TO247 Diode	DMA30P1600HB	Completed
TO247 Diode	DHG60I1200HA	Completed
TO247 Diode	DSB80C45HB	Completed
TO247 Diode	DSSK40-008B	Completed
TO247 Diode	DPF60C200HB	Completed
TO247 Diode	DSSK30-01A	Completed
TO247 Diode	DSSK60-0045B	Completed
TO247 Diode	DSSK50-015A	Completed
TO247 Diode	DSSK70-0015B	Completed
TO247 Diode	DSP45-18A	Completed
TO247 Diode	DHG20I1200HA	Completed
TO247 Diode	DPF80C200HB	Completed
TO247 Diode	DSEC60-06B	Completed
TO247 Diode	DSA30C150HB	Completed
TO247 Diode	DSDI60-14A	Completed
TO247 Diode	DSA60C45HB	Completed
TO247 Diode	DSSK60-0045A	Completed
TO247 Diode	DSSK40-0015B	Completed
TO247 Diode	DPF60IM400HB	Completed
TO247 Diode	DHG40C600HB	Completed



TO247 Diode	DSEP60-12B	Completed
TO247 Diode	DMA50I1600HA	Completed
TO247 Diode	DMA50I1200HA	Completed
TO247 Diode	DMA50I800HA	Completed
TO247 Diode	DHG60C600HB	Completed
TO247 Diode	DH60-14A	Completed
TO247 Diode	DSS40-0008D	Completed
TO247 Diode	DFE60C600AHB	Completed
TO247 Diode	DHG60I600HA	Completed
TO247 Diode	DHG20I600HA	Completed