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Chicago, Illinois USA 60631

September 12, 2025

PCN # ESW490-63 Low Power Thyristor TO-220(Isolated and Non-Isolated) and TO-263 (D2Pak) Package Alternate Molding Compound Approval

To our valued customers,

Littelfuse would like to notify you of a newly approved molding compound for all TO-220 (Isolated and Non-Isolated) and TO-263 (D2Pak) packaged Low Power Thyristor products. The new molding compound is fully approved internally. This change does not affect UL certification of electrical isolation applied to the TO-220 isolated package under file # E71639. There are no changes to fit, form, and function of the finished product. Slight color changes only because of the new compound.

Please see the attached documentation for change detail and affected part numbers.

All affected products have been fully qualified in accordance with established performance and reliability criteria. The attached pages summarize the qualification results. Full qualification data and/or samples will be available upon request.

Form, fit, function changes: None
Part number changes: None
Effective date: December 11, 2025
Replacement products: N/A
Last time buy: N/A

This notification is for your information and acknowledgment. If you require specific data or product samples to certify this change, please contact Littelfuse within 90 days of the notification date.

If you have any other questions or concerns, please contact your local sales team or Maggie XU, Technical Support Manager of Low Power Thyristor Discrete.

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

Best Regards,

Maggie Xu
Technical Support Manager
Power Thyristor/Diode Discrete
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800 E. Northwest Highway Des Plaines, IL 60016

Product/Process Change Notice (PCN)

PCN#: ESW490-63 **Date:** Sep 12th, 2025

Product Identification:

All TO-220(Isolated and Non-Isolated) and TO-263(D2PAK) packaged Low Power Thyristor products

Implementation Date for Change:

December 11, 2025

Contact Information

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Category of Change:

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

Description of Change:

Approve a new molding compound for all TO-220(Isolated and Non-Isolated) and TO-263(D2Pak) packaged Low Power Thyristor products.

There are no changes to fit, form & function of the finished product. The affected products have been fully qualified in accordance with all established criteria for performance and reliability

All relevant detail is included in the supplemental pages.

Important Dates:

☒ Qualification Samples Available: 9/12/2025, sample available upon request

☐ Last Time Buy:

☒ Final Qualification Data Available: 9/12/2025

☐ Date of Final Product Shipment:

Method of Distinguishing Changed Product

- ☐ Product Mark,
- ☒ Date Code, Traceability data available upon request
- ☐ Other,

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

N/A

LF Qualification Plan/Results:

All affected products have been fully qualified in accordance with established performance and reliability criteria.

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 : Black Wang, Jane Xu, Product Engineering
Maggie XU, Product Marketing Engineering
Date : Sep 12th, 2025
Products : TO-220/TO-263 Packaged Low Power Thyristor Product
Revision : A

1.0 Objective:

This report documents the qualification of a second source material for the Power product, aimed at enhancing business continuity. The following sections summarize the physical, electrical, and reliability tests conducted on the qualification lots to ensure the material meets required standards.

2.0 Applicable Products:

TO-220 (Isolated and Non-Isolated) and TO-263 (D2Pak) packaged Low Power Thyristor Products. Please see the attachments for a full list of affected part numbers.

3.0 Physical Differences/Changes:

There is no change in mechanical specification or package outline dimension (POD).

There is slight change in surface texture which affects visual appearance of epoxy body and laser marking, but difference is visually negligible.

4.0 Qualification Test Result

All samples passed parametric and reliability test standard by Littelfuse.

Description	Sample P/N	Sample QTY'	Littelfuse test Ref#	Contents/ Conditions	Standard	Result Summary
Electrical Parameters	D4020LTP	415	TR24-07-010057	IDRM/IRRM IGT V _{GT} I _H V _T I _{TSM} R _{THJC} I _{GM} di/dt	Per Datasheet	100% meet published spec.
	D12KD6015LTP	426	TR24-07-010058			
	DK025LTP	415	TR24-07-010061			
	L4004R3TP	415	TR23-11-005163			
	BTA12-600BW3GF	415	TR23-11-005164			
	SK025LTP	415	TR23-11-005164			
	QK025L6TP	415	TR23-12-005507			
	QV8025LH4TP	415	TR24-02-006869			
	SV6020L1QTP-N	415	TR24-02-006869			
	QJ8030RH4TP	415	TR24-03-007476			
	QV8025NH5RP	415	TR24-03-007574			
	S6006NS2TP	415	TR23-12-005378			
	S4040NQR	415	TR23-12-005507			
	QK025NH6TP	415	TR23-12-005507			
	SJ4012N1TP	415	TR24-03-007155			
AC Blocking (HTRB)	D4020LTP	77	TR24-01-006545	T _j , 1008hr, Reverse biased at peak AC voltage	MIL-STD-750	PASS
	D12KD6015LTP	77	TR24-02-006898			
	DK025LTP	77	TR24-01-006547			
	L4004R3TP	77	TR23-11-005163			
	BTA12-600BW3GF	77	TR23-11-005164			
	SK025LTP	77	TR23-11-005164			
	QK025L6TP	77	TR23-12-005507			
	QV8025LH4TP	77	TR24-02-006869			

	SV6020L1QTP-N	77	TR24-02-006869			
	QJ8030RH4TP	77	TR24-03-007476			
	QV8025NH5RP	77	TR24-03-007574			
	S6006NS2TP	77	TR23-12-005378			
	S4040NQR	77	TR23-12-005507			
	QK025NH6TP	77	TR23-12-005507			
High Humidity High Temp, Reverse Bias (H3TRB)	SJ4012N1TP	77	TR24-03-007155	1008 hours; 160V & 320V - DC: 85°C; 85% relative humidity	JESD22-A101	PASS
	D4020LTP	77	TR24-01-006545			
	D12KD6015LTP	77	TR24-02-006898			
	DK025LTP	77	TR24-01-006547			
	L4004R3TP	77	TR23-11-005163			
	BTA12-600BW3GF	77	TR23-11-005164			
	SK025LTP	77	TR23-11-005164			
	QK025L6TP	77	TR23-12-005507			
	QV8025LH4TP	77	TR24-02-006869			
	SV6020L1QTP-N	77	TR24-02-006869			
	QJ8030RH4TP	77	TR24-03-007476			
	QV8025NH5RP	77	TR24-03-007574			
	S6006NS2TP	77	TR23-12-005378			
	S4040NQR	77	TR23-12-005507			
Unbiased Highly Accelerated Stress Test (UHAST)	QK025NH6TP	77	TR23-12-005507	96 hours at TA=130°C/85% RH.	JESD22-A-118	PASS
	SJ4012N1TP	77	TR24-03-007155			
	D4020LTP	77	TR24-01-006545			
	D12KD6015LTP	77	TR24-02-006898			
	DK025LTP	77	TR24-01-006547			
	L4004R3TP	77	TR23-11-005163			
	BTA12-600BW3GF	77	TR23-11-005164			
	SK025LTP	77	TR23-11-005164			
	QK025L6TP	77	TR23-12-005507			
	QV8025LH4TP	77	TR24-02-006869			
	SV6020L1QTP-N	77	TR24-02-006869			
	QJ8030RH4TP	77	TR24-03-007476			
	QV8025NH5RP	77	TR24-03-007574			
	S6006NS2TP	77	TR23-12-005378			
Temperature Cycling (TC)	S4040NQR	77	TR23-12-005507	-55°C&150°C (air to air) Dwell time 15mins, 1000cycles	JESD22-A104	PASS
	QK025NH6TP	77	TR23-12-005507			
	SJ4012N1TP	77	TR24-03-007155			
	D4020LTP	77	TR24-01-006545			
	D12KD6015LTP	77	TR24-02-006898			
	DK025LTP	77	TR24-01-006547			
	L4004R3TP	77	TR23-11-005163			
	BTA12-600BW3GF	77	TR23-11-005164			
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	QK025L6TP	77	TR23-12-005507			
	QV8025LH4TP	77	TR24-02-006869			
	SV6020L1QTP-N	77	TR24-02-006869			
	QJ8030RH4TP	77	TR24-03-007476			
	QV8025NH5RP	77	TR24-03-007574			
Intermittent Operational Life (IOL)	S6006NS2TP	77	TR23-12-005378	TA:25°C, TJ:125°C (ΔTJ=100°C), TON/OFF: 4 minutes, 15,000cycles	MIL-STD-750	PASS
	S4040NQR	77	TR23-12-005507			
	QK025NH6TP	77	TR23-12-005507			
	SJ4012N1TP	77	TR24-03-007155			
	D4020LTP	77	TR24-01-006545			
	D12KD6015LTP	77	TR24-02-006898			
	DK025LTP	77	TR24-01-006547			
	L4004R3TP	77	TR23-11-005163			
	BTA12-600BW3GF	77	TR23-11-005164			
	SK025LTP	77	TR23-11-005164			
	QK025L6TP	77	TR23-12-005507			
	QV8025LH4TP	77	TR24-02-006869			
	SV6020L1QTP-N	77	TR24-02-006869			
	QJ8030RH4TP	77	TR24-03-007476			
Resistance to Solder Heat (RSH)	QV8025NH5RP	77	TR24-03-007574	260°C, 10 secs /270°C, 7 secs	JESD22-B-106 JESD22-A-111	PASS
	S6006NS2TP	77	TR23-12-005378			
	S4040NQR	77	TR23-12-005507			
	QK025NH6TP	77	TR23-12-005507			
	SJ4012N1TP	77	TR24-03-007155			
	D4020LTP	77	TR24-01-006545			
	D12KD6015LTP	77	TR24-02-006898			
	DK025LTP	77	TR24-01-006547			
	L4004R3TP	77	TR23-11-005163			



	L4004R3TP	30	TR23-11-005163			
	BTA12-600BW3GF	30	TR23-11-005164			
	SK025LTP	30	TR23-11-005164			
	QK025L6TP	30	TR23-12-005507			
	QV8025LH4TP	30	TR24-02-006869			
	SV6020L1QTP-N	30	TR24-02-006869			
	QJ8030RH4TP	30	TR24-03-007476			
	QV8025NH5RP	30	TR24-03-007574			
	S6006NS2TP	30	TR23-12-005378			
	S4040NQRP	30	TR23-12-005507			
	QK025NH6TP	30	TR23-12-005507			
	SJ4012N1TP	30	TR24-03-007155			
	S6006NS2TP	11	TR23-12-005378			
MSL	QK025NH6TP	11	TR24-05-008976		J-STD-020	PASS
	QV8025NH5RP	11	TR24-03-007574			

5.0 Recommendations & Conclusions:

Based on the above qualification test results, Littelfuse concluded the new molding compound is qualified and certified for TO-220 (Isolated and Non-Isolated) and TO-263 (D2Pak) packaged Low Power Thyristor Products.

6.0 Appendix I – Affected part number list