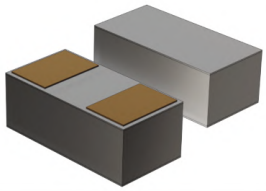
FEATURES

- High thermal conductivity
- High insulation resistance
- High precision package sizing
- Low coefficient of thermal expansion (CTE)
- RoHS compliant

APPLICATIONS

- High-power LEDs
- PIN and laser diodes
- Power converters and amplifiers
- xPU and FPGA boards
- Semiconductor packages

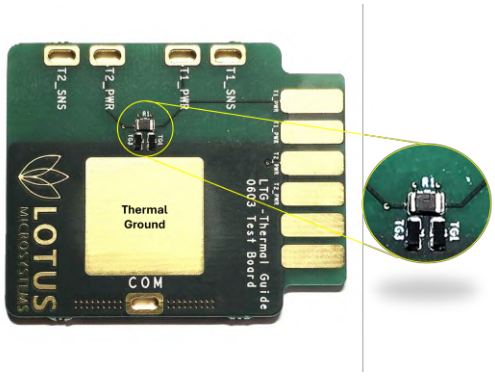


DESCRIPTION

LTG devices from Lotus Microsystems are thermally conductive yet electrically isolated, silicon-based thermal jumpers. They are designed to guide heat away from hot electronic components, toward heat sinks or cooler areas (such as ground planes), without establishing an electrical connection. LTG devices significantly enhance thermal conductivity, particularly in scenarios with limited or no direct access to a ground plane or heat sink, such as high-side switch, current sense resistors, power inductors in SMPS and laser diodes

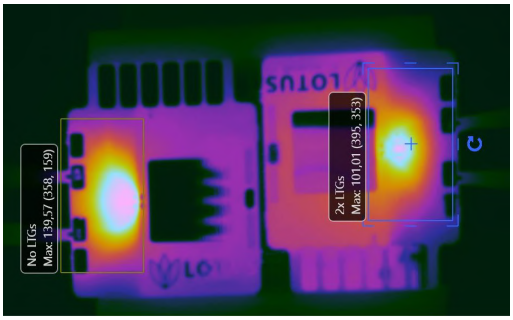
Silicon, as an alternative to traditional ceramic materials, offers a cost-effective substrate with high thermal conductivity and excellent thermomechanical properties, as well as reliable manufacturing process. The incorporation of LTG devices both improves circuit reliability and reduces the overall cost of a thermal management system. They are currently available in three standard EIA sizes (0402, 0603, and 0805), as well as custom sizes.

THERMAL PERFORMANCE

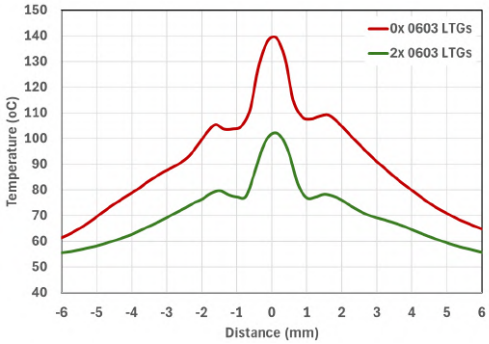


Top view of evaluation board.

The LTGs are characterized using a thermal camera. The evaluation board is a 35 x 35 x 1.6 mm mm 2-layer board with a copper thickness of 35 µm. The target cooling device is a resistor connected to a power supply and is stressed such that the surface temperature stabilizes at approximately 140 °C with no thermal aid, creating the reference case when populating the LTG devices. More details about the evaluation board can be found in the LTG Evaluation Board Manual.



Thermal image comparing with and without LTG.



Heat distribution across the PCB

ABSOLUTE MAXIMUM RATINGS[1]

Operating Temperature Range ..... -65 °C to +150 °C
Storage Temperature Range ..... -65 °C to +150 °C
Maximum Reflow Temperature ..... +260 °C

MATERIAL COMPOSITION

Substrate Material	Silicon (150 W/mK)
Termination Material	Copper with solder balls
Solder Material	SnAg (1.8%)

TYPICAL CHARACTERISTICS

All data is specified at +25 °C unless otherwise noted.

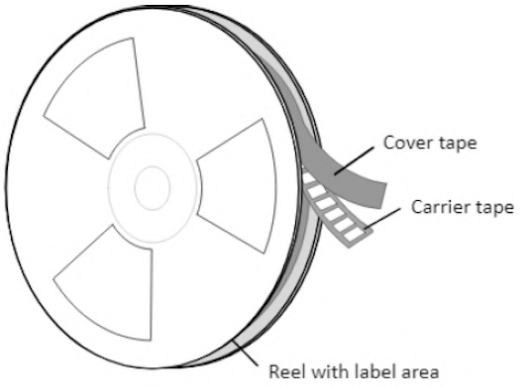
Case Size	Length (mm)	Width (mm)	Height (mm)	Terminal (mm)	Thermal Resistance w/ solder °C/W	Thermal Resistance w/o solder °C/W
0402	1.0 ± 3%	0.5 ± 3%	0.8 ± 3%	0.24 x 0.43	42.2	29.7
0603	1.6 ± 3%	0.8 ± 3%	0.8 ± 3%	0.40 x 0.70	19.0	15.0
0805	2.0 ± 3%	1.2 ± 3%	0.8 ± 3%	0.50 x 1.10	11.3	9.4

ELECTRICAL PARASITICS

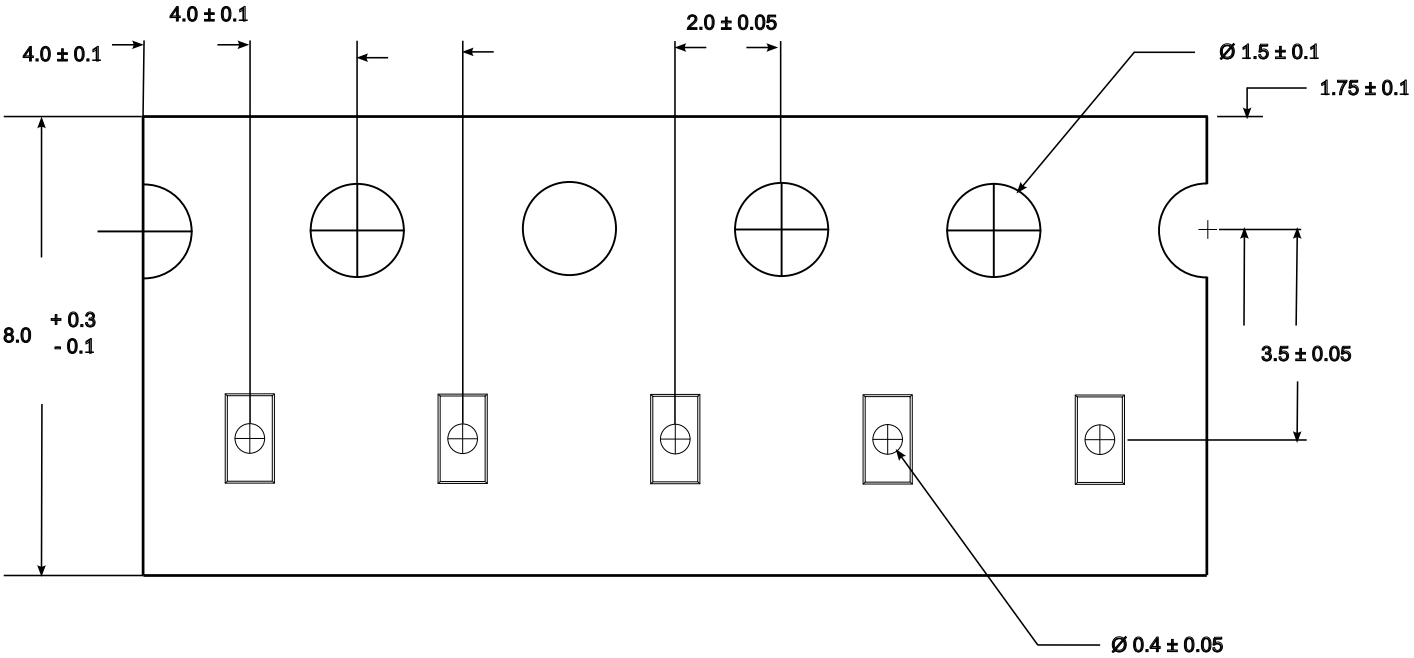
Case Size	Capacitance (pF)	Isolation Resistance (GΩ)
0402	1.4	2.1
0603	3.9	0.7
0805	5.6	0.5

[1]Exposing the device to conditions beyond what is listed under “Absolute maximum ratings” may affect the reliability of the device or cause permanent damage.

TAPE AND REEL INFORMATION

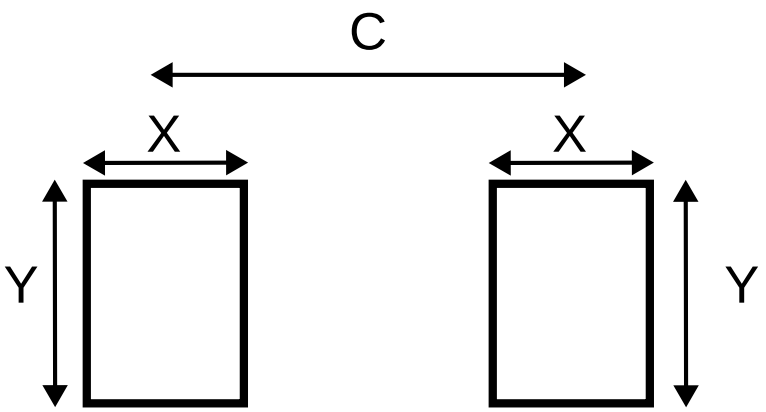


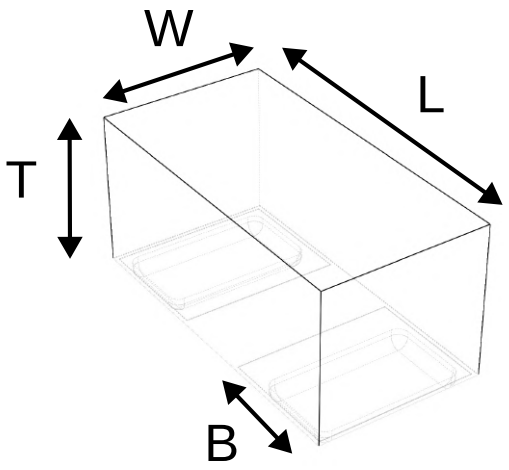
7 inch reel



All units are in mm

PACKAGE INFORMATION





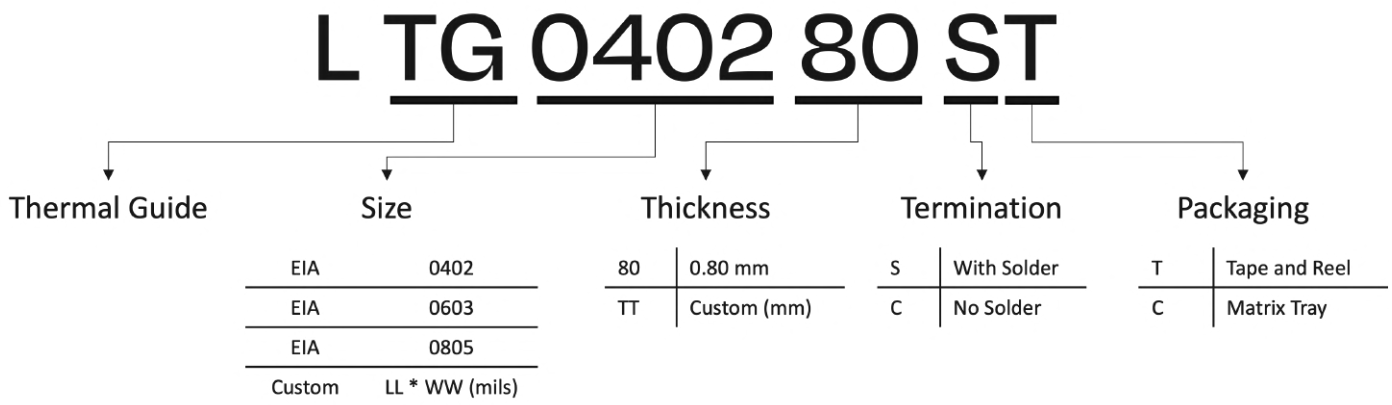
Case Size	L	W	T	B
0402	1.0	0.5	0.8	0.24
0603	1.6	0.8	0.8	0.43
0805	2.0	1.2	0.8	0.50

Standard package sizes. All units are displayed in mm

Recommended footprint		C	X	Y
0402	Least	0.90	0.50	0.55
	Nominal	0.95	0.55	0.55
	Most	1.00	0.60	0.60
0603	Least	1.35	0.75	0.80
	Nominal	1.45	0.85	0.90
	Most	1.55	0.95	1.00
0805	Least	1.75	0.85	1.20
	Nominal	1.85	0.95	1.30
	Most	1.95	1.05	1.40

Landing pattern (IPC7351). All units are displayed in mm

PART NUMBER INFORMATION



Revision History

Revision number	Revision date	Description	Pages changed
1.0	21/05/2025	Public release	-

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