

Protecting ADAS/Autonomous Driving Systems

We are global innovators in materials science.

Our team of engineers applies extensive industry knowledge about sub-assembly design to help safeguard ADAS electronic components from EMI and excessive heat.

Progressive ADAS sensor designs consume more power and emit more heat.

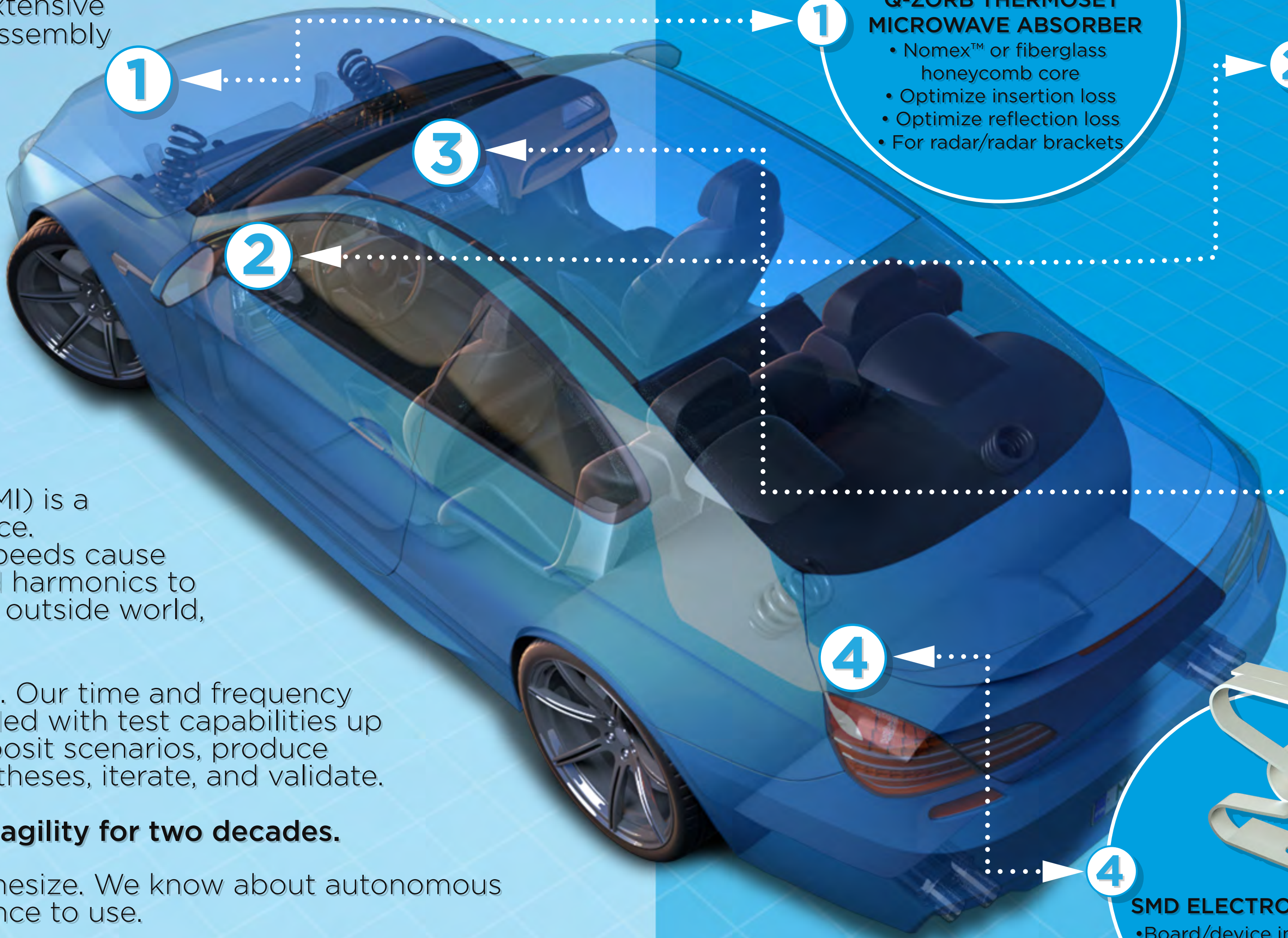
To remain competitive, manufacturers must ensure optimum sensor efficiency or face the risk of throttled power, in turn sacrificing sensitivity, range and performance.

Electromagnetic interference (EMI) is a barrier to function and compliance. Increasing transistor switching speeds cause various device fundamentals and harmonics to interact with each other, and the outside world, in unanticipated ways.

We get behind the wheel to help. Our time and frequency domain EM modeling tools coupled with test capabilities up to 90 GHz enable our teams to posit scenarios, produce simulations, refine working hypotheses, iterate, and validate.

We are automotive grade. With agility for two decades.

We listen. We question. We synthesize. We know about autonomous driving systems. Put our experience to use.



1

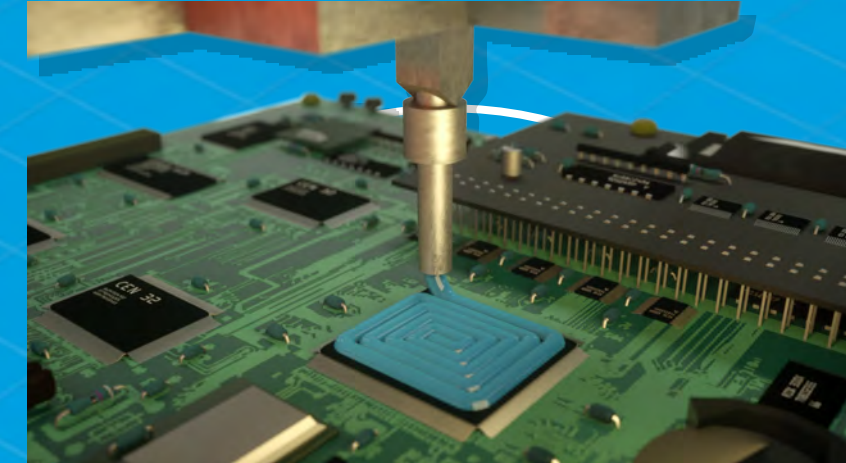
Q-ZORB THERMOSET MICROWAVE ABSORBER

- Nomex™ or fiberglass honeycomb core
- Optimize insertion loss
- Optimize reflection loss
- For radar/radar brackets

2

TGREASE 2500

- 3.8 W/m-K thermal conductivity
- Silicone free thermal grease
- Ends migration issues
- Environmentally friendly



3

TPUTTY 607 ONE-PART DISPENSABLE GAP FILLER

- 6.4 W/m-K thermal conductivity
- Vertical reliability
- Low outgassing
- For PCB apps/lidar

4

SMD ELECTRONIC CONTACT

- Board/device interconnections
- Nickel, tin, gold, silver platings
- 0.13mm thickness



We Make Technology Work™

Protecting ADAS/Autonomous Driving Systems

Protecting LED Component Systems



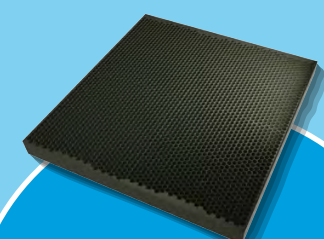
TGREASE 2500

- 3.8 W/m-K thermal conductivity
- Silicone free thermal grease
- Ends migration issues
- Environmentally friendly



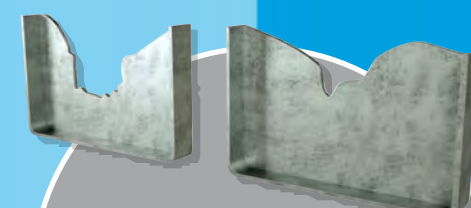
TPUTTY 607 ONE-PART DISPENSABLE GAP FILLER

- 6.4 W/m-K thermal conductivity
- Vertical reliability
- Low outgassing
- For PCB apps/lidar



Q-ZORB THERMOSET MICROWAVE ABSORBER

- Nomex™ or fiberglass honeycomb core
- Optimize insertion loss
- Optimize reflection loss
- For radar/radar brackets



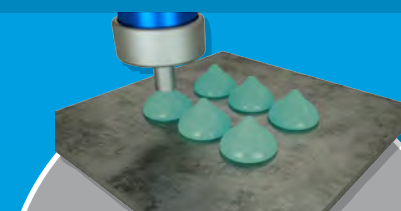
BEAM SHADING STAMPED METAL

- Beam shading and steering
- Rapid prototyping
- Long term performance simulation
- *NAL Patent Pending



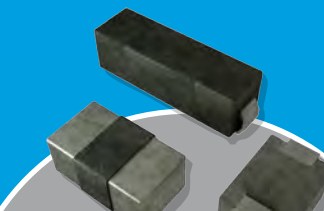
TFLEX SF800 GAP FILLER

- 8.0 W/mK conductivity
- Superior pressure vs. deflection
- Low total thermal resistance
- Excellent surface wetting



TPUTTY 508 SINGLE PART DISPENSABLE GAP FILLER

- 3.7 W/mK thermal conductivity
- Designed for automation
- Vertical stability
- Minimum component stress
- RoHS compliant



EMI LOW CURRENT MAGNETIC CERAMIC CHIP BEADS

- Superior noise suppression
- Currents up to 10A; low DCR
- Vibration resistant
- Small footprint



TGREASE 2500 THERMALLY CONDUCTIVE GREASE

- 3.8 W/mK thermal conductivity
- Environmentally friendly; silicone free
- Thoroughly wets out thermal surfaces
- No migration issues



TFLEX CR200 CURE-IN-PLACE GAP FILLER

- 2.0 W/mK thermal conductivity
- 2-part silicone base
- Low viscosity
- Ideal for large gap tolerances



BROADBAND WIRE WOUND COMMON MODE CHOKE

- Nanocrystalline core
- Enables higher switching mode designs
- High power/high efficiency apps



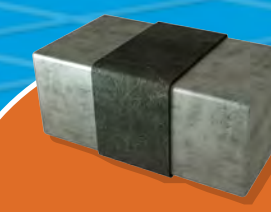
LOW PROFILE SMD DC-DC POWER INDUCTOR

- Lowest cost design goal
- Maximum shielding
- Down to 1.8mm part height
- For space conscious designs



TPUTTY 607 SINGLE PART DISPENSABLE GAP FILLER

- Low stress on components
- Designs for low cost
- Maximum thermal transfer
- PCB apps



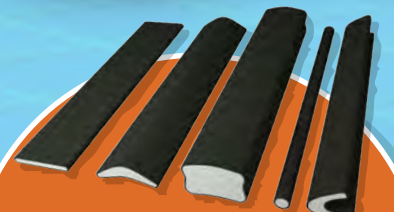
EMI LOW CURRENT MAGNETIC CERAMIC CHIP BEAD

- Superior noise suppression
- Currents up to 10A; low DCR
- Vibration resistant
- Small footprint



MGV POWER INDUCTOR

- Lowest cost design goal
- Magnetic shielded
- High current/low profile
- Low DCR/high efficiency



FABRIC-OVER-FOAM GASKET

- Plated, conductive fabrics/foams
- EMI shielding effectiveness >100dB
- Low surface resistivity
- RoHS compliant; Halogen free



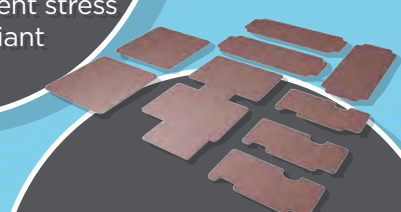
TFLEX 400 HD THERMAL PAD

- 40 W/mK conductivity
- High deflection gap filler
- 1mm to 4mm thicknesses
- Excellent surface wetting



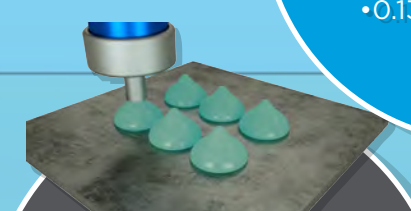
TFLEX CR200 CURE-IN-PLACE GAP FILLER

- 2.0 W/mK thermal conductivity
- 2-part silicone base
- Low viscosity
- Ideal for large gap tolerances



TFLEX SF600 THERMALLY CONDUCTIVE GAP PAD

- 3.0 W/mK conductivity
- Silicone-free for sensitive apps
- 0.25mm to 3.56mm thickness
- In 0.010-inch increments
- RoHS compliant



TPUTTY 508 SINGLE PART DISPENSABLE GAP FILLER

- 3.7 W/mK thermal conductivity
- Designed for automation
- Vertical stability
- Minimum component stress
- RoHS compliant



SMD ELECTRONIC CONTACT

- Board/device interconnections
- Nickel, tin, gold, silver platings
- 0.13 mm thickness



Protecting Infotainment/Cluster Systems

Protecting EV/PHEV Battery Packs

Protecting EV Powertrain Electronics