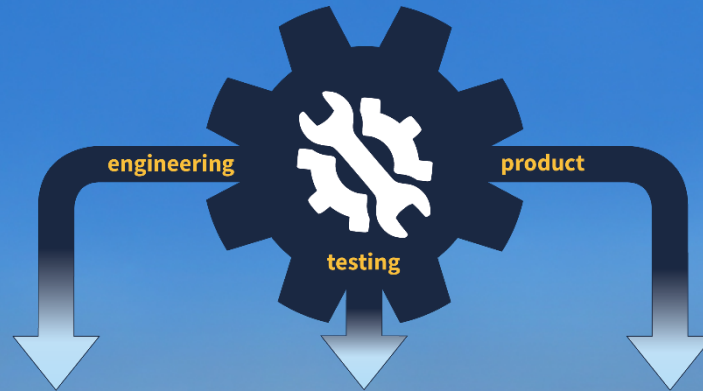


Custom Discrete Solutions



Rethink the PossibilitiesTM

Discretes do MatterTM



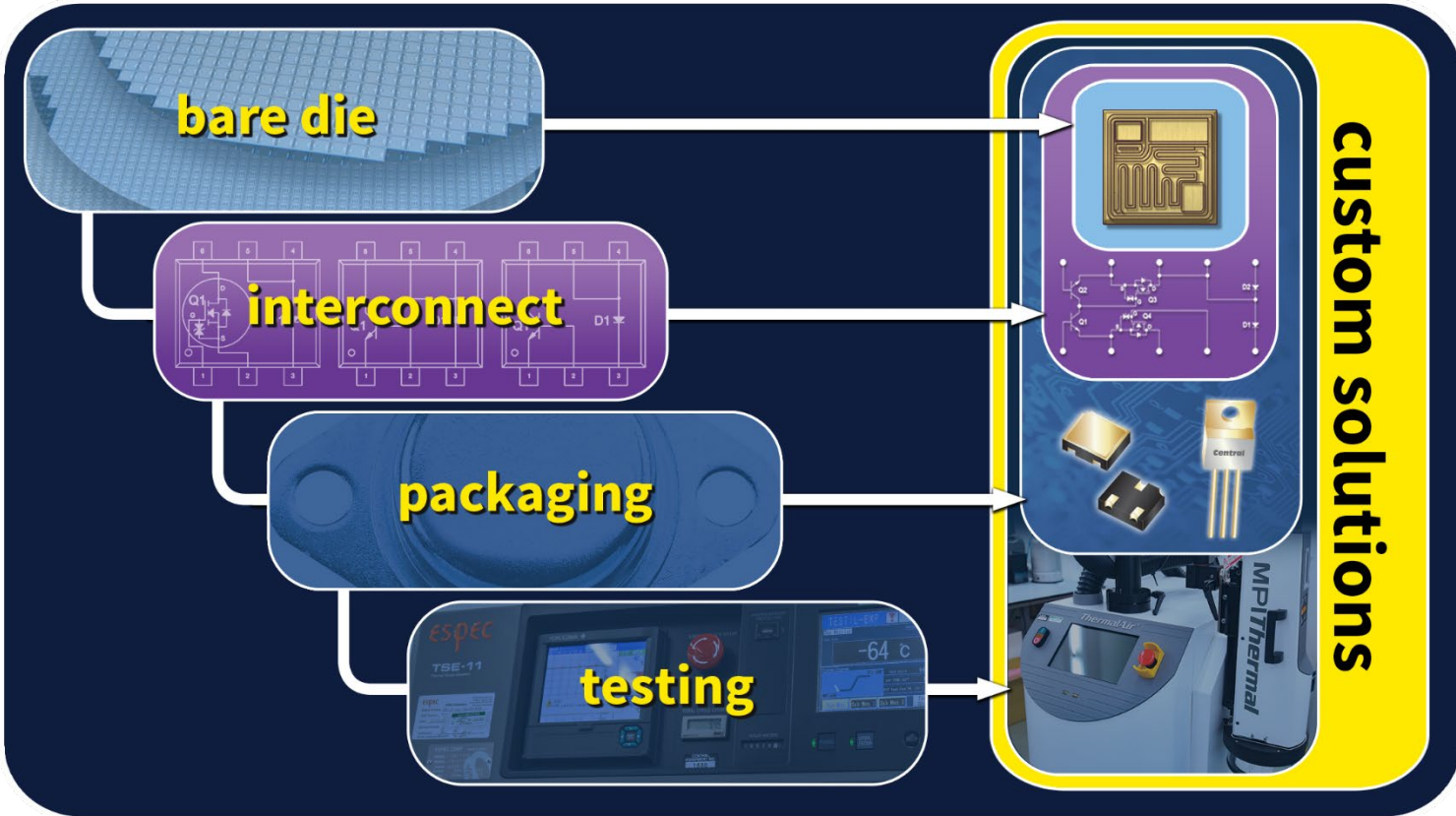
A problem is only a problem
when viewed as a problem.
All change is hard at first,
messy in the middle and
gorgeous at the end.

- Robin Sharma -

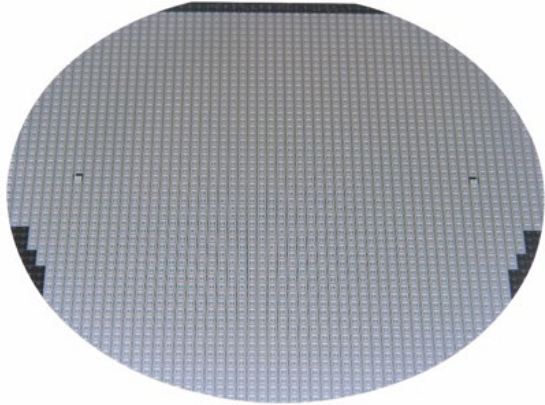
Why do I need a custom solution?

- Standard device does not meet the **design requirements**
 - Looking for an **advantage** over the competition
 - Device **no longer exists** in the market (Discontinued)
 - Need standard device in a smaller or custom package to **reduce product size**
 - Need a **lower profile** (product height)
 - Product will be used in a **harsh environment**
 - Add **design security**
 - Device will be used in **Space 2.0/LEO applications** and need high reliability at a lower cost
 - Need to improve **operational efficiency**

From Silicon to Solution



bare die



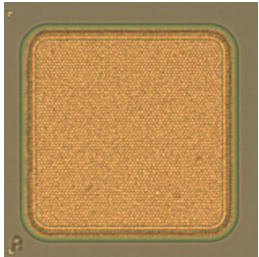
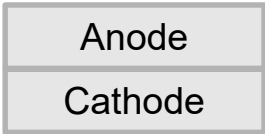
- Screen the wafer for **specific electrical characteristics** and specifications
- Wafer **metallization**
- Metallization **removal (Silver)**
- Integrate die into a **monolithic die**
- **Custom diffuse the wafer** to achieve the desired characteristics and specifications



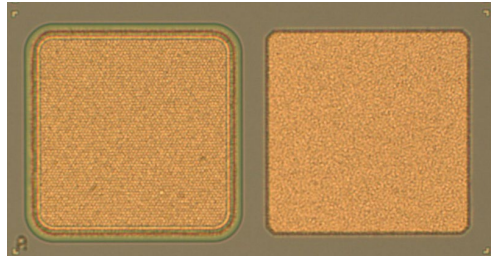
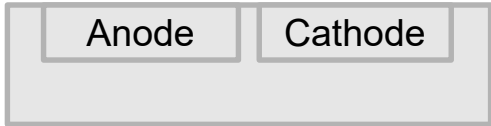
New innovative technologies include: Lateral silicon die development

FEATURES

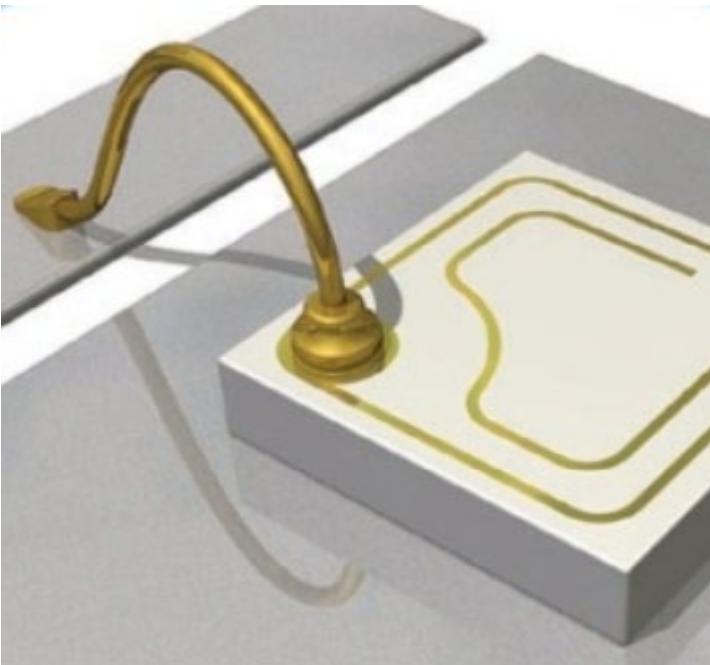
Standard
Top-side/
Bottom-side die



Innovative
Same-side
lateral die



interconnect

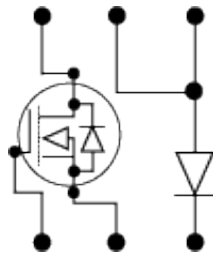


- From single to Multi Discrete configurations
- Interconnect can also specify the bonding wire and bonding type
 - Gold wire
 - Eutectic, Epoxy die attach
 - Wedge and ball wire bonding
- Custom lead frame development available

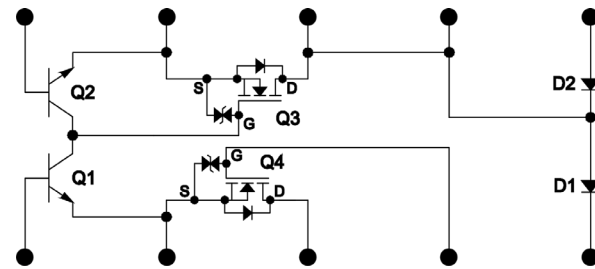
interconnect

Central can integrate multiple discrete devices into one package. We call these MDMs or Multi Discrete Modules.

MDM[™]
Multi Discrete Module



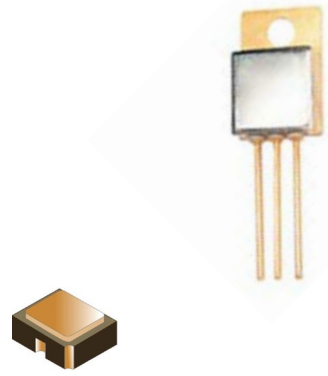
Two device integration



Multi device integration

packaging

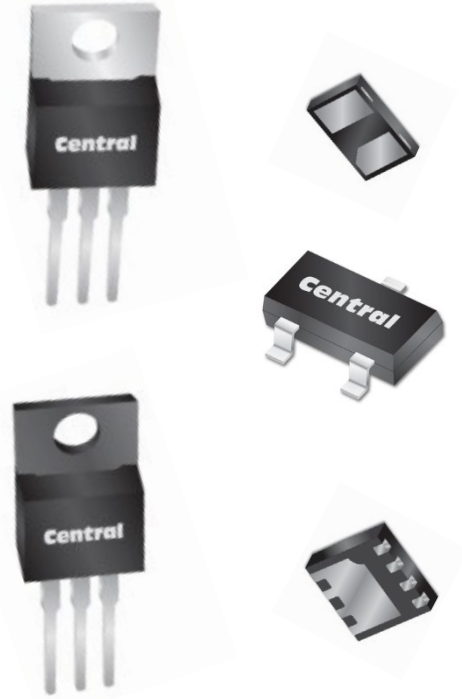
From Standard to Custom package development



High Temp Hermetic



Hermetic



Epoxy (Plastic)





Central has both in-house capability and contracted services to perform most high reliability testing.

Testing includes: **MIL-PRF-38534 Class H:**

- ✓ 100% in-house process
- ✓ Customer Specific Testing possible
- ✓ Very fast turn-around time
- ✓ Class K screening also available

MIL-PRF-38534
Class H equivalent

MIL-PRF-19500:

- ✓ JANTX, JANTXV, JANS equivalents
- ✓ Expanding in-house process and capabilities
- ✓ Increased number of external testing partners
- ✓ Focusing on Spacellite™ products

Customer Specified:

- ✓ Testing can also be performed to customer specific requirements or SCD specifications



Testing capabilities:



Thermal stream testing



Temperature cycle testing



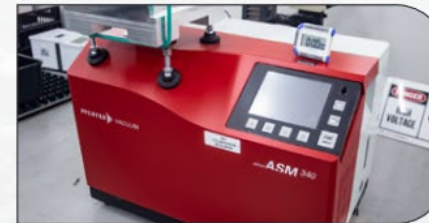
Particle Impact Noise Detection (PIND)



Burn-in testing



High temperature & humidity testing



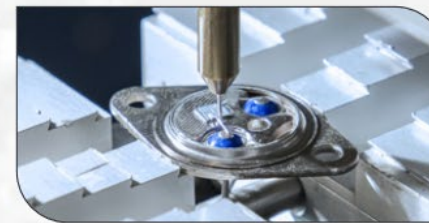
Fine leak testing



Scanning Electron Microscopy (SEM)



Highly-accelerated stress testing (HAST)



Wire pull & die shear testing

All tests performed to MIL-STD-750 test methods. Central provides dependable management of the work flow with accurate device identification throughout the process.

Testing capabilities:



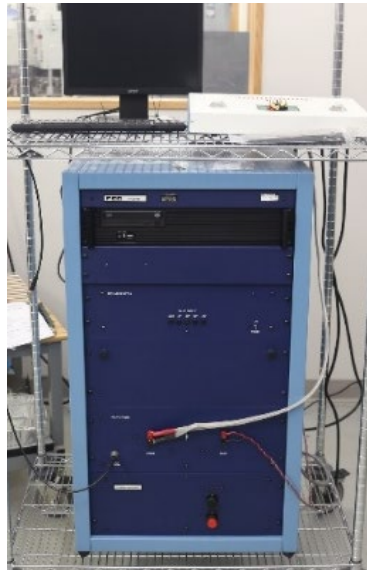
X-Ray



One Box test chambers



PIND Tester



Multiple waveform surge tester



C-SAM



De-cap station



Application Solutions



Super Industrial™ solutions provide superior performance at extreme environmental conditions



Spacellite™ solutions provide high reliability, ideal for LEO applications as a more economical solution

Application Solutions



Example



Customer A:

Market: Communications

End Product: Repeater

Environment: Cold temperature, High Neutron interference

Challenge: Develop custom device

Solutions:

1. Custom packaging
2. Custom interconnect
3. Enhanced operating parameters
4. Custom production level testing



Application Solutions

Example

Customer B:

- Market: Alternative Energy
- End Product: Smart Meter
- Environment: Extreme moisture
- Challenge: Eliminate failures due to operating environment
- Solutions:
1. Enhanced interconnect
 2. Perform life test to insure low MTBF.



bare die

packaging

interconnect

testing

Application Solutions

Example

Customer is looking to use a MOSFET for their new design.

In order to be competitive the customer must find more economic alternative to the available devices

Solution: **Spacellite™**

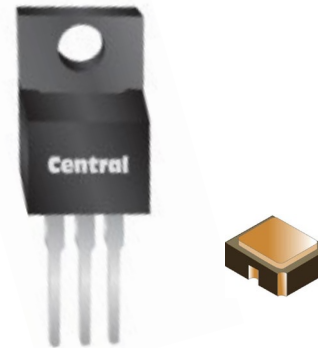


bare die

packaging

interconnect

testing



Application Solutions

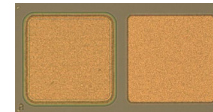


Example

Customer required a lateral die for a satellite solar panel array



Solution: **Spacellite™**



bare die

packaging

interconnect

testing

Need a Custom Discrete Semiconductor Solution?

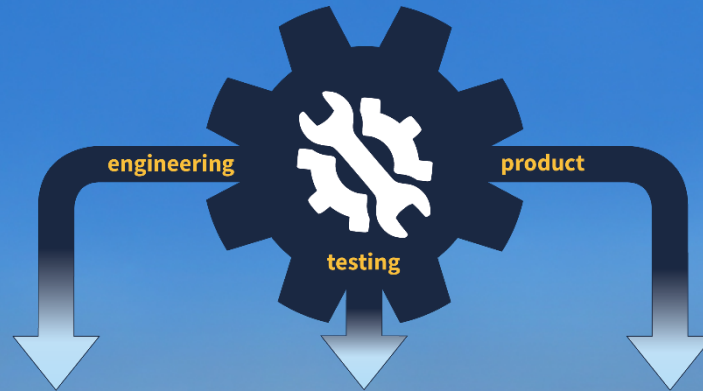


Contact your Central Sales representation.

www.centrasemi.com

Tel: 631.435.1110

Custom Discrete Solutions



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Discretes do MatterTM

