



SGA
Technologies

connecting the future

Munitions & Defence



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About Us

SGA Technologies have been supplying high quality, high reliability hermetic components and packages since 1969. SGA devices are used globally in applications where performance, quality and reliability are critical. Equipment as diverse as satellite communications, military and civil aviation, oil drilling platforms, medical systems, utilities and scientific equipment are all using SGA products.

Our experience, knowledge and expertise in hermetic glass to metal seals, lends itself perfectly with our military and defence customer base. Over our 50+ years, we have designed, developed and manufactured a number of different seals that can be used in munition applications.

JOSCAR registered, SGA are proud to support land, sea, air and space applications globally.



Over **50** years of experience

SGA's product offerings to the military and defence industry can be divided into our range of:

- Ignitor & Ignition Seals
- Squibs
- Detonator caps
- Fuse head blasting caps
- RF feedthroughs & custom packaging



Why use a GTMS?

Why use SGA Glass to Metal Seals?

- Hermetically sealed, vacuum tight
- Long-life, reducing replacement time and cost
- Extreme temperature capability $<250^{\circ}\text{C}$
- High Pressure resistance able to withstand high pressure applications
- Chemically robust to withstand corrosive environments
- Corrosion resistant
- Material Options allow for new design ease

Mechanical Characteristics

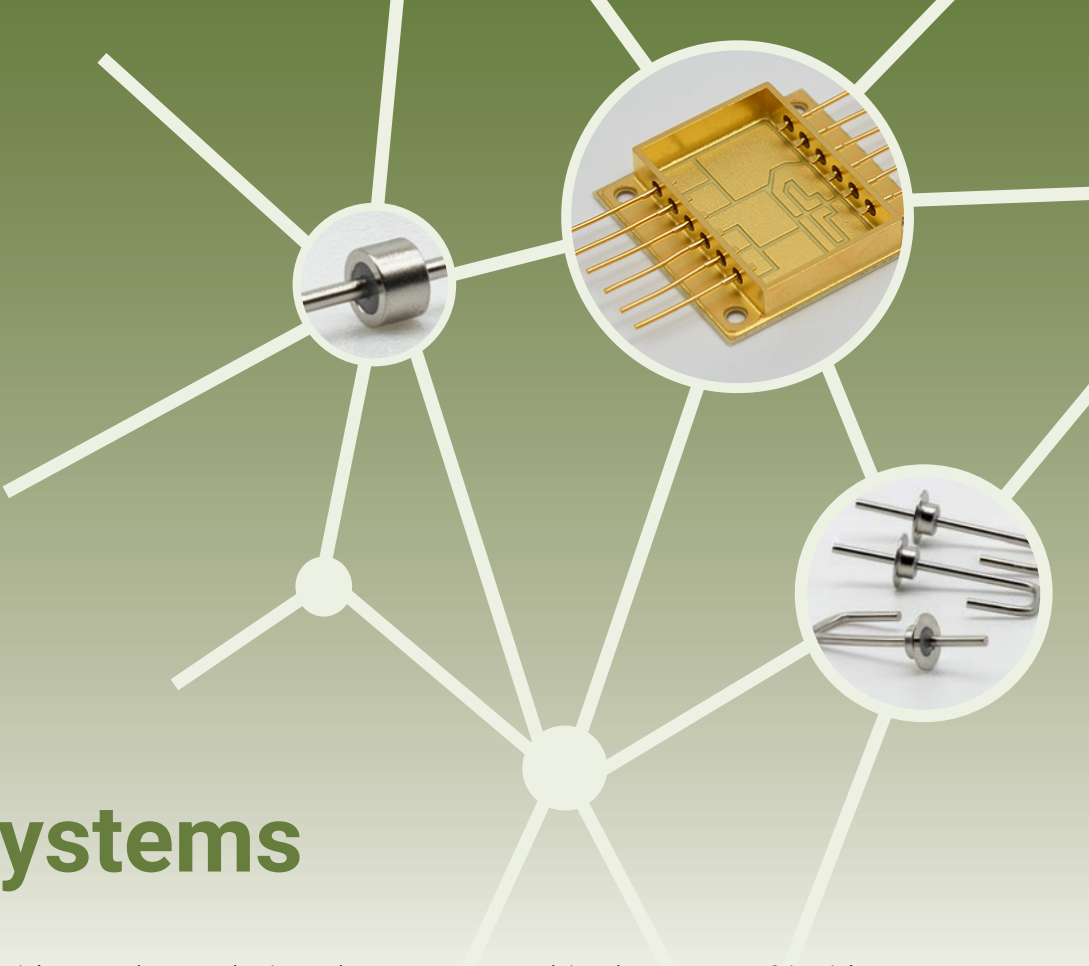
- Multi-pin configurations available
- Pins suitable for automated assembly, manual soldering or mating connectors
- Orientation features can be added for PCB mounting or automation
- Small, space saving design
- Finishes available for wire bonding
- Soldering and Brazing can be offered
- SnPb termination for Mil applications available

Electrical & Functionality Characteristics

- Tested to 1×10^{-10} atm.cc/sec
- High insulation resistance
- High DWV
- Operational at high temperatures over 250°C
- Can be tested to MIL and JEDEC Standards

Applications

- Military defence artillery
 - Land and Sea Missile systems
 - Ignitor circuits & connectors
 - Counterintelligence
 - Nucleonics
 - Defence countermeasures
-



Ignition Systems

SGA's range of ignitor and ignition seals are designed to protect and in the event of ignition, direct pyrotechnic and explosive charges whilst isolating them from the local environment.

Used in high-pressure military applications, including detonators, explosive initiators, squibs, gas generators and other explosive devices.

SGA also offer additional services for attaching fuse wires or foils and associated components such as capacitive filtering.

- Ignition of fuel in missile propulsion units & subsea turbines
- Ignition of fuel in subsea turbines
- Ignition of solid material in gas generators & rocket launch systems
- Flares and pyrotechnics
- Space satellite propulsion systems
- Electronic Safe & Arm Devices (ESAD)





Aircraft Safety Components



Squibs

Squibs are small, pencil-like tubes which contain explosive material used to transmit a flame to ignite certain devices. Resembling a blasting cap, this is a specific ignitor seal used in several different applications in a military aircraft including:

- Deploy countermeasures in flight combat
- Ignite rocket ignitors
- Aids propulsion of the canopy and ejection seat in the event of a pilot ejecting from the aircraft
- Parachute deployment



Multipin Feedthrough

SGAs' single and multipin feedthroughs can be found throughout a military aircraft. We understand the complexities of mission critical applications, their development and eventual deployment in the field. As a result, our precision-engineered products are designed to perform reliably in harsh environments, such as extreme temperature, vibration, moisture and pressures required by MIL STD testing.

We can offer a custom hermetic solution for your application, regardless if it's an external or onboard system.



Detonations & Blasting Caps

A Detonator cap, also known as a Blasting Cap is a small, sensitive device used to provoke a larger, more powerful explosion.

Commonly used in commercial applications such as mining, excavation and demolition, the traditional fuse-ignited style has been updated to be initiated using electrical current via an RF Source.

Traditional explosive bridge wire or EBW detonators use a high voltage electric charge and a very thin bridge wire, the EBW detonator wire is heated so quickly by the high firing current that the wire actually vaporizes and explodes due to electric resistance heating

SGA manufactures specific detonator caps for this kind of application. Our design gives the user a flat surface on one end of the seal, where a fuse wire can be welded or foil placed between the pin and outer case. This wire/foil has to sit flat on the glass or the "composition" then put on the seal, which if to be ignited, would risk breaking the wire /foil.

In defence applications, such devices are used in:

- Anti-Tank and Anti-withdrawal vehicles where the removal of IEDs and the immobilization of land mines are required, for the safety of troops.
- Where a bursting charge is needed to break off the casing of a shell, grenade or rocket.
- Contrived explosives
- Blasting machines; often referred to as 'Hell-boxes'



For more information on our range, please get in touch with us.



Electronic Warfare & Sensors

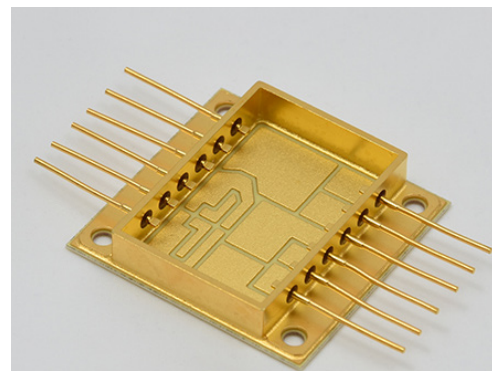
At SGA Technologies, we bring more than 50 years of experience and expertise to construct and supply high reliability hermetic components and packages.

All design, production, plating and testing is conducted in-house by our team to the highest standards including ISO9001 and ISO14001.

Our RF/Microwave packages incorporate RF and DC feed-throughs which can either be sealed directly into the package or high reliability soldered, or a combination of both methods depending on materials and applications. Optoelectronic connections are often combined into these packages.

Optical Interfaces Available

- Brazed or integral fibre snouts or tubes (ferrules)
- To customer requirements DC connections
- Lead frames to min. 1.27mm pitch Power connections
- Larger pins for higher power requirements
- With bonding flats as an option Multi-metallic alloys and skins, as required
- All pins and lead frames can be cut, radiused and formed as required
- Bespoke connections are also available on request.
- Hermeticity tested to 1×10^{-8} atm cc/sec (mbar litre/sec) as standard
- Suitable for 250°C subsequent processes
- Suitable for operation with respect to Mil-Std and Telcordia standards
- Suitable for temperature cycling, thermal shock, corrosion resistance etc.
- CTE Matched construction for extended lifetime capability (25+ years)



RF Connections:

- SSMP
- SMP
- SMA
- SMB
- W-Connector
- K&V type glass beads



Electronic Warfare & Sensors

Not only are our products in land and air applications, but our bulkhead seals and sensors are also in sea and marine based applications.

- Anti-Disturbance & anti vibration switches
- Electronic sensors for trigger points
- Acoustic countermining
- Torpedo launch base
- Submarine launched ballistic missiles (SLBM)



- Hermetically tested to 1×10^{-8} atm cc/sec (mbar litre/sec) as standard.
- Operating temperatures of -55°C to $+250^{\circ}\text{C}$
- Tested to MIL-STD-883, MIL-STD-810 & Telcordia standards
- Corrosion tested.
- CTE matched for extended lifetime capability.





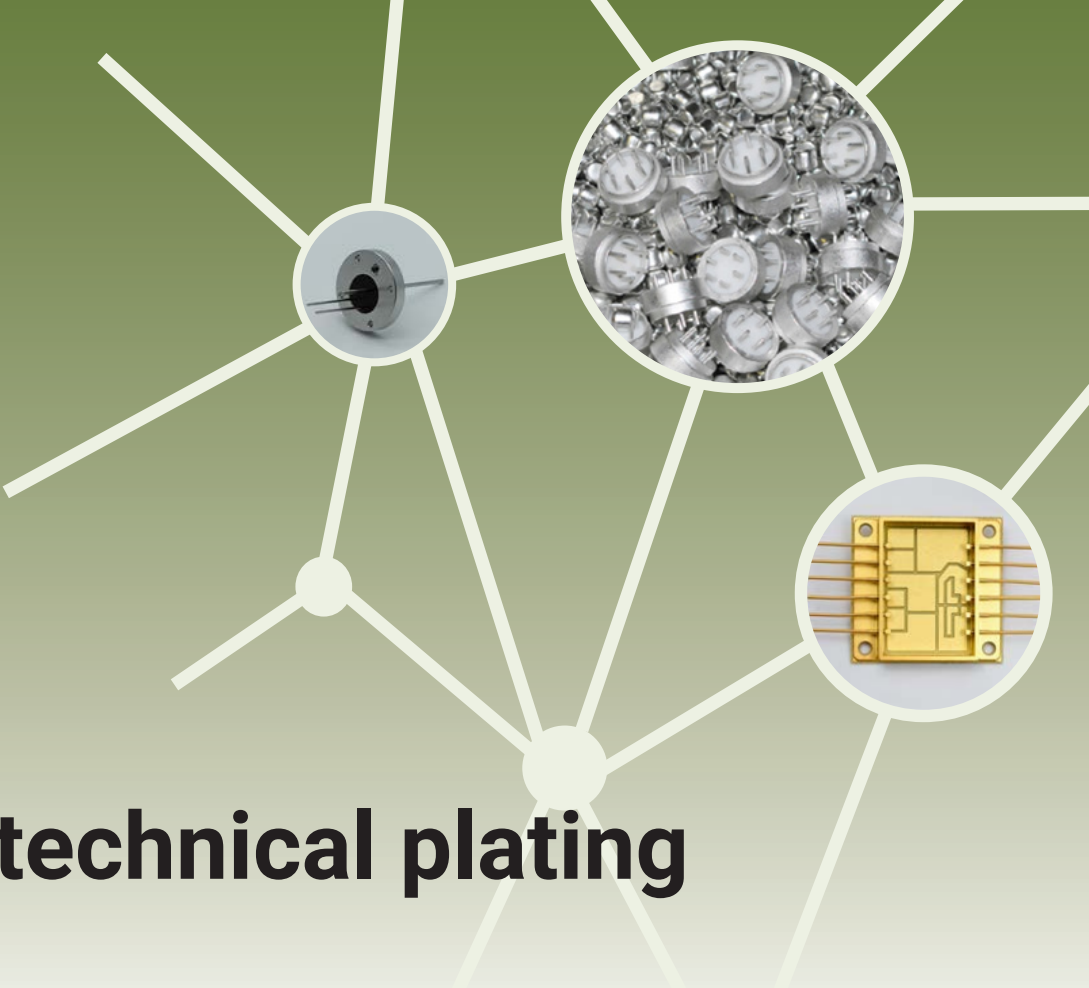
In-house technical plating

SGA Technologies are able to offer in-house technical plating to a number of different specification and requirements. Our vast knowledge of chemistries and metallisations, allows us to manufacture high quality plating finishes. Our standard plating portfolio as well as our selective plating, gives our customers more options for their design.



Our standard plating portfolio as well as our selective plating, gives our customers more options for their design.

- Steel & its alloys
- Copper & its alloys
- Stainless Steel
- Aluminum
- Copper Tungsten
- Invar
- Kovar
- Nickel Iron
- MMC (Aluminum/SiC metal composite)



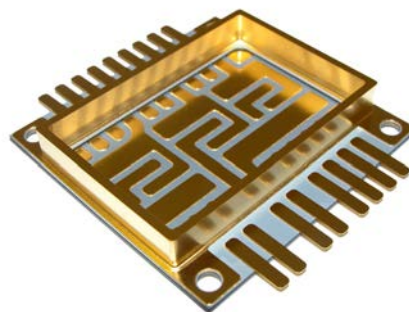
In-house technical plating

Plating Services Available (Rack and Barrell)

- Electroless Nickel; Medium Phosphorous
- Electrolytic Nickel; Sulphamate Watts
- Culmo Tin, bright & dull
- Tin Reflow
- Tin / Lead (60/40)
- Gold; Ni hard, Cobalt hard, Pure & Immersion
- Silver; fully bright, electronic grade bright & dull
- Surtec 650I
- Cyanide Copper; Bright & Dull
- Chemical Polishing; Stainless Steel, Copper & Brass
- Selective plating options available (design applicable)

Lab & Test Services

- Scanning Electron Microscopy
- Micro-sectioning Equipment
- XRF & EDX Analysis
- Failure Analysis
- Ultra Sonic bath for specialist cleaning
- Plating Test 'Hull' Cells
- Detailed analysis of plating bath performance





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