HERMETIC CIRCULAR TO HEADERS

GSP GLASSEAL PRODUCTS™

AMETEK ENGINEERED INTERCONNECT AND PACKAGING





Transistor Outline (TO) headers are a critical component in hermetic packaging solutions, providing a robust platform for mounting and sealing electronic devices in demanding environments. These headers are designed to ensure long-term reliability, electrical integrity, and environmental protection for sensitive components such as semiconductors, sensors, and optoelectronic devices.

TO Headers are part of EIP's hermetic packaging solutions designed for harsh environments and reliability-sensitive applications. Manufactured at Glasseal Products (GSP) in Penang, Malaysia, ensuring compliance with AS9100D / ISO 9001:2015 standards.

Key Applications

- Aerospace & Defense
- Optical Communications (TOSA/ROSA)
- High-Performance Electronics
- Energy & Medical Devices

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Features & Benefits

- **Hermeticity:** Leak rate ≤ 1×10^{-8} cc/sec He for vacuum-tight sealing.
- **Glass-to-Metal Sealing (GTMS)** for superior electrical insulation and mechanical stability.
- **Material Options:**
  - Headers: Kovar, Cold-Rolled Steel, 42 alloy, Stainless Steel.
  - Pins: Kovar, 52 alloy, 52 alloy copper-cored, Copper, Inconel.
- **Plating:** Gold over nickel for solderability and corrosion resistance.
- **Temperature Range:** -65°C to +300°C.
- Compliance: Meets MIL-STD-883 reliability standards.

Manufacturing Capabilities

- **Penang Facility:**
  - Glass-to-Metal Sealing for TO headers
  - Pressure testing and furnace brazing
  - CNC machining
- **Vertical Integration:** Tooling, prototyping, and custom fixture design for rapid turnaround.

Typical Configurations

- **JEDEC Outlines:** TO-3, TO-5, TO-8, TO-37, TO-39, TO-46, TO-66.
- **Custom Designs:** Available for optical, RF, and high-power applications.

Pin Counts: Single-pin to multi-pin headers with individual or solid glass insulators.

CURRENT CARRYING CAPACITY (AMPS)

Pin Diameter (inch)	Copper	Kovar	52 Alloy	52 Alloy CC	Inconel
.030	7.5	2.3	3.5	4.5	1.7
.040	13.0	3.9	5.5	8.2	3.0
.050	23.0	6.9	8.8	11.2	5.3
.060	30.0	10.0	12.3	16.0	8.0

Copper alloy pins offer high conductivity and allow for overall size reduction.

PERFORMANCE PARAMETERS

Parameter	EIP Hermetic TO Headers
Hermeticity (cc He/sec)	Up to 1×10^{-8}
Thermal Cycle	-65°C to +300°C
Insulation Resistance	> 5 GΩ @ 500 VDC
Dielectric Withstanding Voltage (DWV)	> 750 VAC
Body Finish	Ni or Au over Ni
Contact Finish	Au over Ni

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