

Hybrid Products Group

**Standard and
Custom Products
for HiRel Applications**



Microsemi®

Microsemi Hybrid Products Group

Microsemi's Hybrid Products Group designs and manufactures high-reliability micro-circuit assemblies incorporating multi-technology semiconductor components in a variety of hermetic packages.

Our products include linear and digital microcircuits, op-amps, logic arrays, multiple discrete assemblies, analog control circuits and power hybrids.

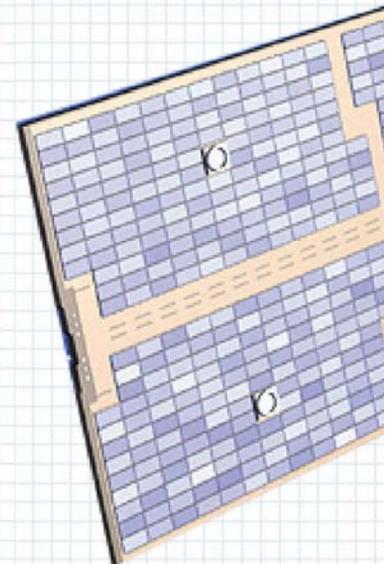
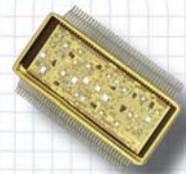
In addition to custom manufacturing, Microsemi also produces a standard product line consisting of linear and switching regulators and solid-state relays. Our products have applications in ground-based military equipment, missiles, aircraft and satellites.

The Hybrid Products Group has more than 40 years experience producing reliable, high-quality components and hermetic assemblies. We can provide fast prototype turnaround on your new designs.

Call Microsemi today. Our engineers are ready to help you find solutions and achieve your design goals.

Markets

- Defense
- Space
- Aerospace
- Medical
- Communications



Product Types

- Linear & Digital Microcircuits
- Custom SCD Assemblies
- Replacements for Burr-Brown, Teledyne, Fairchild, National Hybrids
- Linear Regulators
- Point-of-Load Switchers
- Solid-State Relays

Product Applications

- Rad-Hard Power Supplies
- Rad-Hard Satellite Heater Controls
- Launch Systems
- Avionics Power Control
- Booster Controls
- Guidance System Power

Meeting High Reliability Requirements for

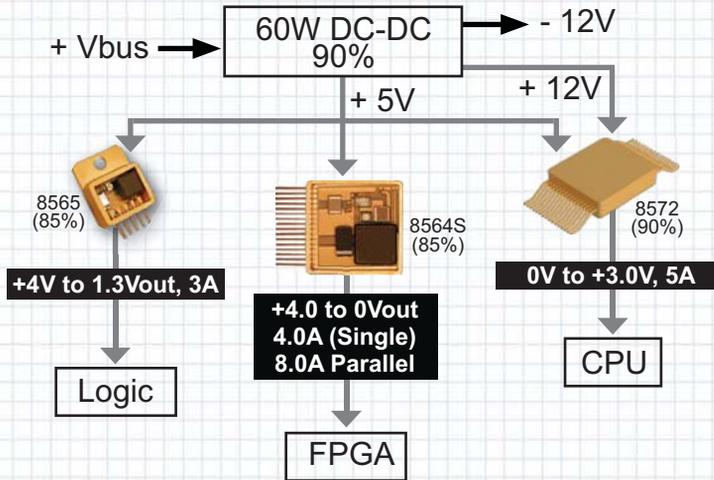
- MIL-STD- 883
- MIL-STD- 750
- MIL-PRF-38535
- MIL-PRF-38534
- MIL-PRF- 19500



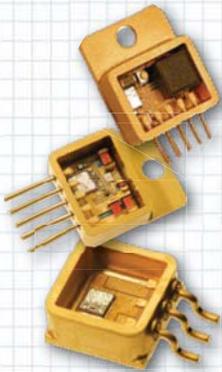
Point-of-Load Switching Regulators

- Output Currents of 1A, 3A, 4.5A, 15A
- Rad-Tolerant to 300Krad TID (MIL-STD-883, Method 1019.6)
- SEU to 55 MeV
- Class H & K Screening
- Complete Assembly — Only 1 Voltage Set Resistor Required
- Surface Mount Packaging

Typical Application



Linear Regulators

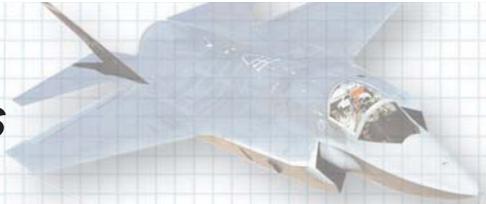


Part	Description	Critical Parameters	Packages
8601	Pos., Linear, 3A, Fixed & Adj	VLDO= 0.300V (3A), (5A), Rad-Hard to 300Krad+	5 Pin MO-078
8605R	Pos., Linear, 5A, Fixed w/Remote Sense	VLDO= 0.300V (3A), 0.400V (5A) Rad-Hard to 300Krad+	5- Pin MO-078, 8-Pin SMT
117	Pos. Linear, Adj., 1.25A, Vin= 40V	Rad-Hard to 300Krad	D2
127	Dual, 1A, Pos. & Neg. Linear regulator	Rad-Hard to 300 Krad	8-Pin, TO-254

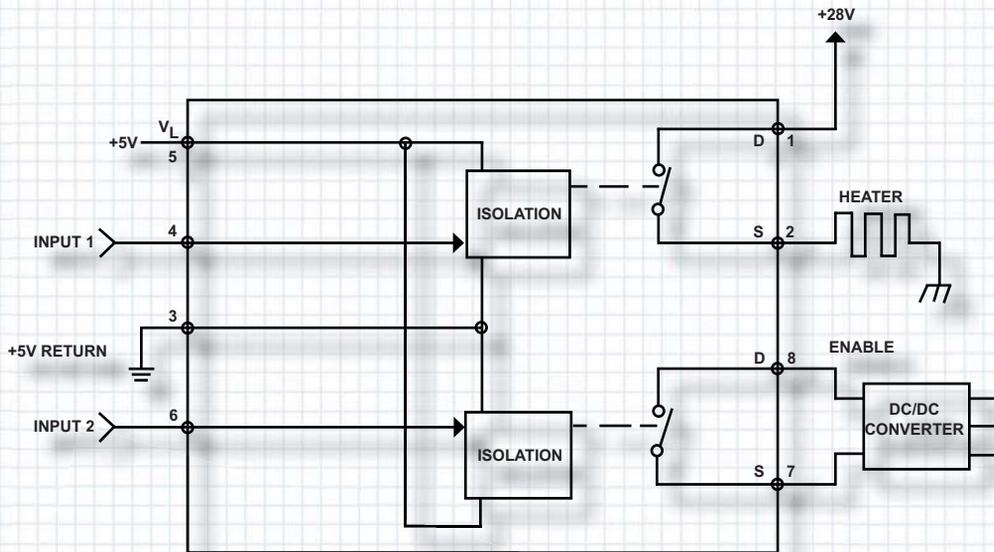
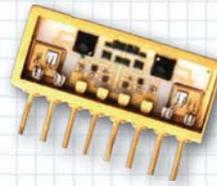
**TID &
SEE
Rated**

- Adjustable or Fixed Output Voltages: 1.265V to 5.0V
- Vin= +3.3V
- Vdropout < 300mV typ.
- 3A & 5A Load Versions
- Shutdown Control
- Internal Capacitors per MIL-PRF-123 or MIL-PRF-55365

Solid-State Relays

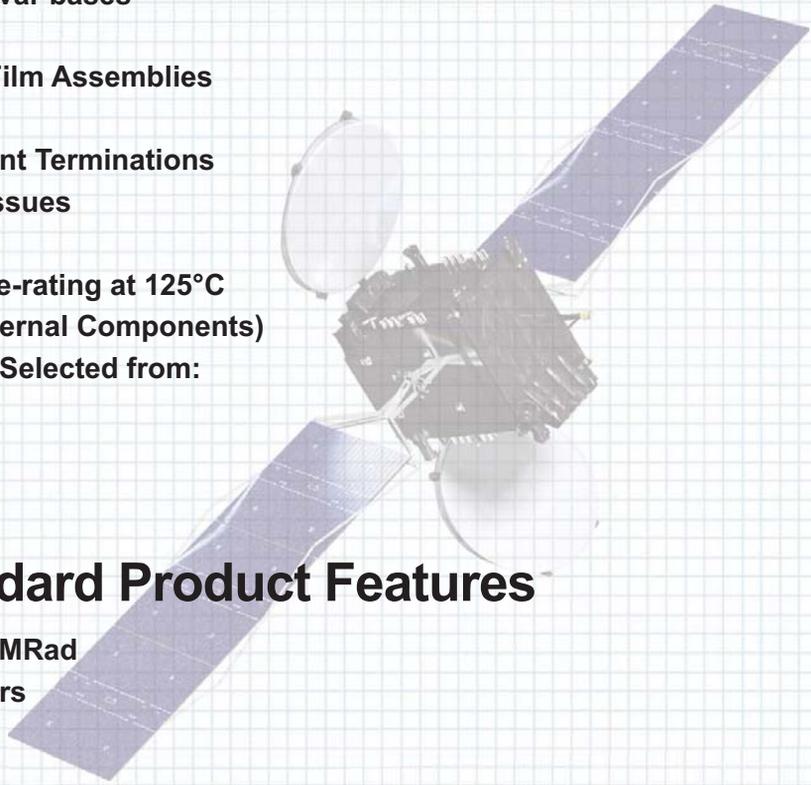


- 250V Operation
- Accepts Logic Level Inputs, (+3.0V- +5.5V)
- 1A & 10A Max Current
- Class H & K Screening Levels
- Surface Mount & Thru-Hole Packages
- Normally Open or Normally Closed Operation
- TID > 300Krad; SET= 85 MeV
- Buffered Inputs



Design & Construction Features

- Moly/CRS/AlSiC/CuW/Kovar bases
- Matched CTE Packaging
- DBC, Thick Film & Thin Film Assemblies
- Gold Flash Package
- Gold or Solder Component Terminations
Eliminates Tin Whisker Issues
- Low Thermal Resistance
- 60% Capacitor Voltage De-rating at 125°C
- 50% Current Margins (Internal Components)
- All Internal Components Selected from:
 - MIL-PRF-123
 - MIL-PRF- 55356
 - MIL-T- 27



Custom & Standard Product Features

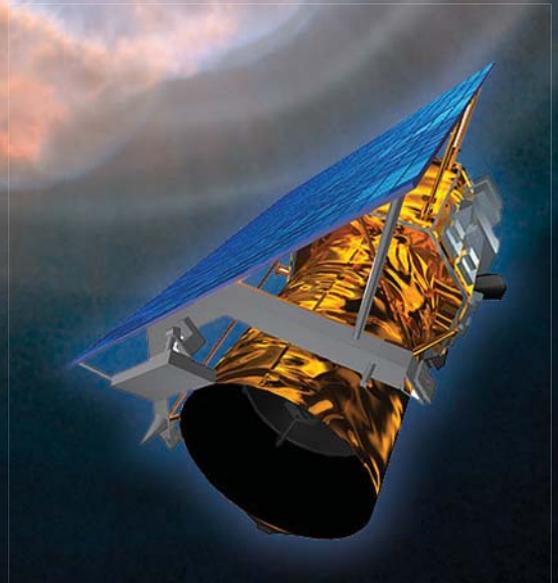
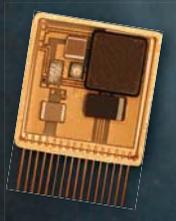
- Radiation Tolerance to 1 MRad
- High-Efficiency Regulators
- Output Currents to 20A+
- High-Density Packaging
- In-House Quality Conformance Inspection (QCI)
- Custom Lead-forming

HiRel Screening

TEST	C	H	K	MIL-STD-883
	Cots	Equivalent MIL-PRF-38534		
Element Evaluation	N/A	Class H	Class K	
Non-Destruct Wirebond	N/A	Sample	100%	2023
Pull Pre-Cap Visual	N/A	100%	100%	2017
Temperature Cycle	N/A	100%	100%	1010
Constant Acceleration	N/A	100%	100%	2001
PIND	N/A		100%	2020
Pre-Burn In Electrical	N/A	100%	100%	
Burn-In	N/A	100% (160 Hours)	100% (320 Hours)	1015
Final Electrical Tests	100% (25°C)	100%	100%	
Seal (Fine and Gross Leak)	100%	100%	100%	1014
X-Ray	N/A	N/A	Yes	2012
External Visual	Sample	100%	100%	2009

Processes & Capabilities

- Design, Development, Production
- DBC, Thick & Thin Film Technologies
- Multi-layer Substrates
- Mixed Signal Custom Circuits
- Chip & Wire
- Eutectic, Solder & Epoxy die attach:
 - .0007" - .003" Gold Wire-bonding
 - .001" - .020" Aluminum Wire-bonding
- Active Trim
- Large Diameter Wire/Power Applications
- Seam Seal/Resistance Weld
- Lead Forming
- Environmental Screening and Quality Conformance Inspection to MIL-PRF-38534





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