

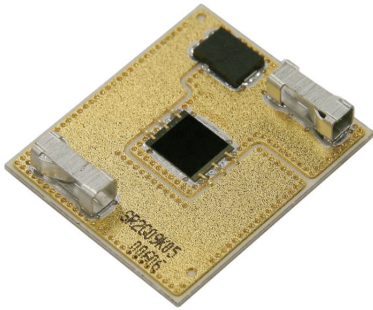
CTJ Receiver Assembly – 5.5 mm x 5.5 mm

Solar Cell Receiver for Terrestrial Concentrator Photovoltaics (CPV)
Cell Optimized for 500X Concentration



DATASHEET | OCTOBER 2011

SOLAR POWER



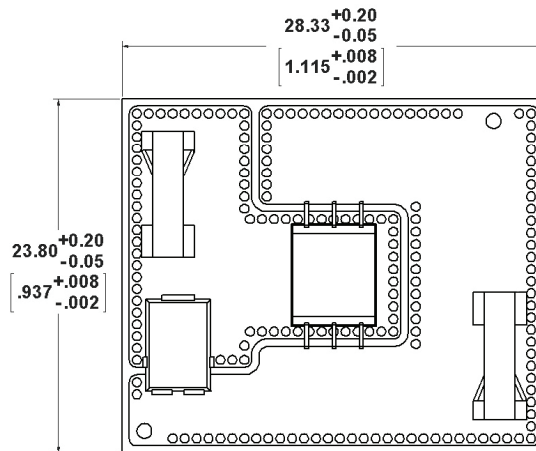
Features

- Supports EMCORE's multi-junction CPV solar cell
- Optional Cell Optimized for highest performance at 1000 suns.
- Includes bypass diode, box connectors for wire insertion
- High-quality Direct-Bond-Copper substrate
- Void-free solder die attach
- Low thermal resistance
- Low electrical resistance

Qualification Tests for Standard Receivers

Title	Standard
Thermal Aging	MIL-PRF-38534, Appendix C, Section C.3.7.5.3.2 Wire Bond Strength Testing
Powered Thermal Cycling	IEC 62108, Section 10.6, Option 2 for thermal cycling parameters
Damp Freeze	IEC 62108, Section 10.8
Stud Pull	MIL-STD-883, Method 2027, stud pull test
Light Biased Damp Heat	IEC 62108, Section 10.7 with light bias
Mechanical Shock	JESD22-B104C
Vibration	JESD22-B103B
Thermal Shock	MIL-STD-883 Method 1011
ESD Damage Threshold	JESD22-A114 (HBM)

The Concentrator Triple-Junction (CTJ) receiver assembly takes the world-class efficiency of EMCORE's multi-junction space solar cells and combines it with state-of-the-art packaging technology to create the most efficient CPV assembly today. Utilizing advanced, high-speed manufacturing and test equipment, EMCORE produces high-quality receivers to meet the rigorous demands of CPV applications.



Additional Information

- Solar cell receiver assembly includes EMCORE's 5.5 mm x 5.5 mm triple-junction solar cell, bypass diode and box connectors.
- Position control of all components and integrated fiducials facilitates integration into higher level assemblies.
- High-quality Direct-Bond-Copper substrate provides anode and cathode separation. Aluminum oxide ceramic interlayer provides electrical insulation between top and bottom metallization.
- Low electrical resistance and void-free solder die attach allow for high current operation.
- Bare cell format allows for secondary optical element attachment and encapsulation.
- Custom receiver designs are available.



Typical Efficiency	39%, 25°C, AM1.5, 50 W/cm ²
Cell Active Area	0.308 cm ²
Substrate	Direct-bond-copper, Al ₂ O ₃ substrate with Au/ Ni surface plating (copper thickness 0.3 mm Al ₂ O ₃ thickness 0.38 mm)
Bypass Diode	10A Schottky
Operating Temperature	-40°C to 100°C
Max Temperature	180°C

Part No. 617360