

ENHANCED PRODUCTS PROGRAM



ADI World-Class Military and Aerospace System and Process Solutions

Analog Devices' Enhanced Products (EP) Program offers a commercial-off-the-shelf (COTS) solution for high reliability applications without the additional cost, challenges of custom designed parts, and need for custom screening. Our total quality philosophy emphasizes prevention over detection, while providing our customers with technology and service solutions for their ever-evolving needs. To meet COTS requirements, our defense, avionics, and aerospace products have been certified to meet the Aerospace Qualified Electronic Component (AQEC) standard.

Our broad portfolio of devices spans across all product categories, such as

- ▶ Analog-to-digital converters
- ▶ Digital-to-analog converters
- ▶ Interface and isolation
- ▶ Switches and multiplexers
- ▶ Linear products
- ▶ RF and microwave
- ▶ Amplifiers
- ▶ MEMS

End Market Applications

- ▶ Avionics
- ▶ Missiles
- ▶ Electronic warfare
- ▶ Engine/motor control
- ▶ Military communications
- ▶ Radar

Benefits to ADI's EP Program

- ▶ Separate and abridged EP data sheet
- ▶ Associated V62 vendor item drawing (VID) registered with Defense Supply Center Columbus (DSCC)
- ▶ Eliminates the need for specification control drawings (SCDs)
- ▶ Eliminates the need for 3rd party upscreen processing
 - Reducing additional scrap yield loss
 - Reducing additional cycle time to the device
 - Limiting potential mechanical damage that can cause moisture issues
- ▶ Extended temperature range for survivability in extreme environments
 - From -55°C up to $+125^{\circ}\text{C}$
 - Fully characterized over the data sheet limits
- ▶ Manufactured on a controlled baseline to provide product flexibility, consistency, and reliability
 - One fab site
 - One assembly site
 - One test site
- ▶ All EP parts are assembled using a NiPdAu lead finish
 - Addresses any concerns regarding potential Sn whiskering
 - Addresses chip on lead (COL) leakage concerns
- ▶ EP devices are not offered with Cu wires
- ▶ The wide variety of plastic packages includes SOIC, Mini-SO, QFEN, etc.

Quality and Reliability

The following qualification data addresses the requirements of the Enhanced Products Program and supports the extended operating temperature range of its products.

Stress Test	Conditions	Reference Specification	Typical Sample Size
Electrical Characterization	Per ADI data sheet	Per ADI data sheet	
High Temperature Operating Life (HTOL)	Biased, $T_J \geq 125^{\circ}\text{C}$, 1000 hours, or equivalent	JESD22-A108	3 × 77
Early Life Failure Rate	Biased, $T_J \geq 125^{\circ}\text{C}$, 48 hours	JESD22-A108	3 × 667
High Temperature Storage	150°C, 1000 hours	JESD22-A103	1 × 45
Latch-Up	Per technology	JESD78	3 units per condition, 1 lot
Human Body Model ESD	Target ≥ 1000 V Report highest passing	JS-001	3 units per voltage, 1 lot
Charged Device Model ESD	Target ≥ 500 V Report highest passing	JS-002	3 units per voltage, 1 lot
Temperature Cycling*	-65°C to $+150^{\circ}\text{C}$, 500 cycles standard product 1000 cycles for enhanced product	JESD22-A104	3 × 77
Temperature Humidity Bias HAST* or Temperature Humidity Bias (THB)*	130°C, 85% RH, biased, 96 hours or 85°C, 85% RH, biased, 1000 hours	JESD22-A110 or JESD22-A101	3 × 77
Unbiased Temperature Humidity UHAST* or Unbiased Temperature Humidity (Autoclave)* or Unbiased Temperature and Humidity*	130°C, 85% RH, 96 hours or 121°C, 100% RH, 96 hours or 85°C, 85% RH, 1000 hours	JESD22-A118 or JESD22-A102 or JESD22-A101	3 × 77
Low Temperature Storage	-55°C , 1000 hours for enhanced product	JESD22-A119	3 × 77
Solder Heat Resistance*	MSL 1 or MSL 3	J-STD-20	3 × 11

*Moisture preconditioning to the appropriate moisture sensitivity level is required.

For additional information, please contact us at EP_Sales_Support@analog.com. A list of our recommended EP parts can be found at analog.com/ep.

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