

Space Qualified Parts List

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Commitment to the Space Market

Analog Devices is committed to serve the needs of the world space community through the manufacture of the highest quality data conversion and signal processing products.

Analog Devices' entry into the space level market occurred in August 1990 when it acquired Precision Monolithics Inc. This MIL-PRF-38535 certified Level V (Class S) facility, located in Santa Clara, California has been supplying products for military and space applications since 1972. Analog Devices now offers state-of-the-art, data conversion and linear products to the space marketplace which were previously only available as commercial or military Class B products.

Analog Devices space level operations located in Santa Clara, California coordinates all space level V (class S) activities, including business development, manufacturing and engineering. The addition of new products is derived from our customers' needs and the ability of these products to meet MIL-PRF-38535 QML level V requirements.

Visit our web site (<http://www.analog.com/industry/mil/space.html>) or call our factory contacts for the latest Class S updates as well as for radiation information on these and other products.

Analog Devices sales engineers and field applications engineers are available worldwide for direct customer support on these Class S products.

Analog Devices, Inc. Aerospace Product Line standard product is available in one or more of the following processes:

- **MIL-PRF-38535, QML LEVEL V**
- **MIL-PRF-38535, QML R (LEVEL V with Radiation Qualification)**
- **MIL-PRF-38535, Appendix A (JAN S)**
- **MIL-PRF-38535, Analog Devices, Inc.'s Aerospace Product Line Standard Product**

See [Standard Space Level Products Program](#) brochure for flow.

The table beginning on page 4 lists the standard product offered by Analog Device's Aerospace Product Line.

Product is also available in accordance with source control drawings. Please call factory for further information.

For further information see contact list on cover page.

Analog Devices Space Level Products

Manufacturing Locations

<u>Space Level Compliance</u>	<u>Wafer Fab</u>	<u>Assembly</u>	<u>Screening and Quality Conformance Inspection</u>
MIL-STD-883 Para 1.2.1 Compliant non-QML V Devices	Wilmington QML V Santa Clara QML V	QML V, ADPI Manila, Philippines	Santa Clara QML V or Manila, Philippines
MIL-STD-883 Para 1.2.2 non-Compliant, non QML V Devices	Greensboro NC(CLD) Limerick Ireland Class B Certified, SEM each Wafer Lot	QML V, ADPI Manila, Philippines	Santa Clara QML V or Manila, Philippines
ESA 9000 Compliant Products	Wilmington QML V Santa Clara QML V	ESA 9000, Level B Manila, Philippines	Santa Clara QML V or Manila, Philippines
Class S Special Flows	Wilmington QML V Santa Clara QML V Limerick Ireland Class B Certified, SEM each Wafer lot	QML V, ADPI Manila, Philippines	Santa Clara QML V or Manila, Philippines

The following table lists the standard product available from Analog Devices, Inc. Aerospace Product Line. Product is also available in accordance with source control drawings. Please call factory for further information.

Space Level Products

Product / Part Number	Description	Electrical Grade	Pkg ¹	Note
<u>A/D Converters</u>				
AD571	10-Bit Complete ADC	S	D-18	
AD571SD/QMLV	5962-8680203VVA			
AD574	12-Bit-ADC w/Microprocessor Interface	T, U	D-28, F-28	
AD574ATD/QMLV	5962-8512702VXA	T	D	
AD574ATF/QMLV	5962-8512702VZA	T	F	
AD574AUD/QMLV	5962-8512701VXA	U	D	
AD574AUF/QMLV	5962-8512701VZA	U	F	
AD670	8-Bit Low Cost Signal Conditioning ADC	S	D-20	
AD670-703D		S	D	
AD670-713D		S	D	
AD1671	12-Bit 1.25 MSPS ADC	S	D-28, F-28	
AD1671-703D		S	D	
AD1671-703F		S	F	
AD1671-713D		S	D	
AD1671-713F		S	F	
AD1672	12-Bit 3 MSPS ADC	S	D-28, F-28	
AD1672-703D		S	D	
AD1672-703F		S	F	
AD1672-713D		S	D	
AD1672-713F		S	F	
AD9042	12-Bit 41 MSPS ADC	S	D-28, F-28	
AD9042-703D		S	D	
AD9042-703F		S	F	
AD9042R703D		S	D	
AD9042R703F		S	F	
AD9058	8-Bit Dual 50 MSPS ADC	T	D-48	
AD9058-803D		T	D	
AD9058R803D		T	D	
<u>Comparators</u>				
AD8561	7nS Single Comparator	A	Q-8, L	
AD8561AL/QMLV	5962-0051501VHA	A	L	
AD8561AQ/QMLV	5962-0051501VPA	A	Q	
PM111	Precision Voltage Comparator	X	J, Z	
PM111SJ6	MIL-M-38510/10304 SGA	X	J	
PM111SZ7	MIL-M-38510/10304 SPA	X	Z	
PM139	Quad Low-Power Voltage Comparator	A, X	Y, M, RC	
PM139SY7	MIL-M-38510/11201 SCA	X	Y	
PM139SM7	MIL-M-38510/11201 SDA	X	M	
PM139AM/QMLV	5962-8773901VDA	A	M	
PM139ARC/QMLV	5962-8773901V2A	A	RC	
PM139AY/QMLV	5962-8773901VCA	A	Y	
PM139AY/QMLR	5962R8773901VCA	A	Y	
PM139AM/QMLR	5962R8773901VDA	A	M	
PM139ARC/QMLR	5962R8773901V2A	A	RC	
PM139XM/QMLR	5962R8773902VDA	X	M	
PM139XRC/QMLR	5962R8773902V2A	X	RC	
PM139XY/QMLR	5962R8773902VCA	X	Y	

¹ See package descriptions on last page.

Space Level Products

Product / Part Number	Description	Electrical Grade	Pkg ¹	Note
<u>D/A Converters</u>				
AD561	10-Bit, Current Output	S	D-16	
	AD561-703D	S	D	
	AD561-713D	S	D	
AD565A	12-Bit, Current Output, Complete High Speed DAC	S, T	D-24, N-24	
	AD565ASD/QMLV 5962-9689201VJA	S	D	
	AD565ASN/QMLV 5962-9689201VKA	S	N	
	AD565ATD/QMLV 5962-9689202VJA	T	D	
AD667	12-Bit Microprocessor Compatible DAC	S	D-28, F-28	
	AD667-703D	S	D	
	AD667-713D	S	D	
	AD667-703F	S	F	
	AD667-713F	S	F	
AD9731	10-Bit 170MSPS DAC	S	D-28	
	AD9731-703D	S	D	
	AD9731-713D	S	D	
DAC08	8-Bit High Speed Multiplying DAC	A, X	F, Q, RC	
	DAC08SQ7 MIL-M-38510/11301SEA	X	Q	
	DAC08SAQ7 MIL-M-38510/11302 SEA	A	Q	
	DAC08AF/QMLR 5962R8993202VFA	A	F	
	DAC08AQ/QMLR 5962R8993202VEA	A	Q	
	DAC08ARC/QMLR 5962R8993202V2A	A	RC	
	DAC08XF/QMLR 5962R8993201VFA	X	F	
	DAC08XQ/QMLR 5962R8993201VEA	X	Q	
	DAC08XRC/QMLR 5962R8993201V2A	X	RC	
DAC100	10-Bit Current Output DAC	BC	Q	
	DAC100-703Q	BC	Q	
	DAC100-713Q	BC	Q	
<u>Instrumentation Amplifiers</u>				
AD524	Instrumentation Amplifier	S	D-16	
	AD524SD/QMLV 5962-8853901VEA	S	D	
	AD524SD/QMLR 5962R8853901VEA*	S	D	
AMP01	Low-Noise Precision Instrumentation Amplifier	B	N, X	
	AMP01N/QMLV 5962-8863003VKA	B	N	
	AMP01X/QMLV 5962-8863003VVA	B	X	
AMP02	High Accuracy Instrumentation Amplifier	A	Z	
	AMP02-903Z	A	Z	
	AMP02-913Z	A	Z	
<u>Multipliers</u>				
AD534	Internally Trimmed Precision IC Multiplier	T	D-14	
	AD534TD/QMLV 5962-9053701VCA	T	D	
<u>Operational Amplifiers</u>				
AD648	Dual Precision, Low Power BiFET Op Amp	S, T	H-8, Q-8	
	AD648SH/QMLV 5962-9753501VGA	S	H	
	AD648SQ/QMLV 5962-9753501VPA	S	Q	
	AD648TH/QMLV 5962-9753502VGA	T	H	
	AD648TQ/QMLV 5962-9753502VPA	T	Q	
AD844	60 MHz, 2000V/ μ S Op Amp	S	E-20, Q-8	
	AD844SE/QMLV 5962-8964401V2A	S	E	
	AD844SQ/QMLV 5962-8964401VPA	S	Q	
	AD844SE/QMLR 5962R8964401 V2A	S	E	

Space Level Products

Product / Part Number	Description	Electrical Grade	Pkg ¹	Note
AD844SQ/QMLR	5962R8964401VPA	S	Q	
AD847	High Speed, Low Power Op Amp	S	Q-8	
AD847-703Q		S	Q	
AD847-713Q		S	Q	
AD8001	800 MHz, 50mW Current Feedback Amplifier	A	Q-8	
AD8001-903Q		A	Q	
AD8001-913Q		A	Q	
OP07	Ultra Low Offset Voltage Op Amp	A, X	J, L, RC, Z	
OP07SAJ6	MIL-M-38510/13501 SGA	A	J	
OP07SAZ7	MIL-M-38510/13501 SPA	A	Z	
OP07SJ6	MIL-M-38510/13502 SGA	X	J	
OP07SZ7	MIL-M-38510/13502 SPA	X	Z	
OP07AJ/QMLR	5962R9863901VGA	A	J	
OP07AL/QMLR	5962R9863901VHA	A	L	
OP07ARC/QMLR	5962R9863901V2A	A	RC	
OP07AZ/QMLR	5962R9863901VPA	A	Z	
OP11	Quad Matched 741-Type Op Amp	A, B	M, Y	
OP11AM/QMLV	5962-8980101VDVA	A	M	
OP11AY/QMLV	5962-8980101VCA	A	Y	
OP12	Precision Low Input Current Op Amp	A	J, Z	
OP12-903J		A	J	
OP12-903Z		A	Z	
OP12-913J		A	J	
OP12-913Z		A	Z	
OP15	Precision JFET-Input Op Amp	A	J, L, Z	
OP15AJ/QMLV	5962-8954203VGA	A	J	
OP15AL/QMLV	5962-8954203VHA	A	L	
OP15AZ/QMLV	5962-8954203VPA	A	Z	
OP15AJ/QMLR	5962R8954203VGA	A	J	
OP15AL/QMLR	5962R8954203VHA	A	L	
OP15AZ/QMLR	5962R8954203VPA	A	Z	
OP16	Precision JFET-Input Op Amp	A	J, Z	
OP-16AJ/QMLV	5962-8954304VGA	A	J	
OP-16AZ/QMLV	5962-8954304VPA	A	Z	
OP-16AJ/QMLR	5962R8954304VGA	A	J	
OP-16AZ/QMLR	5962R8954304VPA	A	Z	
OP22	Programmable Micro Power Op Amp	A	J, Z	
OP22-903J		A	J	
OP22-903Z		A	Z	
OP27	Low Noise Precision Op Amp	A	J, L, RC, Z	
OP27SAJ6	MIL-M-38510/13503 SGA	A	J	
OP27SAZ7	MIL-M-38510/13503 SPA	A	Z	
OP27AJ/QMLR	5962R9468002VGA	A	J	
OP27AL/QMLR	5962R9468002VHA	A	L	
OP27ARC/QMLR	5962R9468002V2A	A	RC	
OP27AZ/QMLR	5962R9468002VPA	A	Z	
OP37	Low Noise Precision High Speed Op Amp	A	J, L, RC, Z	
OP37AJ/QMLV	5962-8853701VGA	A	J	
OP37AL/QMLV	5962-8853701VHA	A	L	
OP37ARC/QMLV	5962-8853701V2A	A	RC	
OP37AZ/QMLV	5962-8853701VPA	A	Z	

Space Level Products

Product / Part Number	Description	Electrical Grade	Pkg ¹	Note
OP42	High Speed, Fast Settling Precision JFET-Input	A	J, RC, Z	
OP42AJ/QMLV	5962-8851301VGA	A	J	
OP42ARC/QMLV	5962-8851301V2A	A	RC	
OP42AZ/QMLV	5962-8851301VPA	A	Z	
OP43	Low IB, Fast JFET-Input Op Amp	A	J	
OP43AJ/QMLV	5962-9763701VGA	A	J	
OP77	Next Generation OP07	A	J, L, RC, Z	
OP77AJ/QMLV	5962-8773802VGA	A	J	
OP77AL/QMLV	5962-8773802VHA	A	L	
OP77ARC/QMLV	5962-8773802V2A	A	RC	
OP77AZ/QMLV	5962-8773802VPA	A	Z	
OP200	Dual Low-Offset, Low Power Op Amp	A	RC, Z	
OP200ARC/QMLV	5962-8859301V2A	A	RC	
OP200AZ/QMLV	5962-8859301VPA	A	Z	
OP207	Dual Ultra-Low VOS Matched Op Amp	A	Y	
OP207-903Y		A	Y	
OP207R903Y		A	Y	
OP215	Dual Precision JFET Input Op Amp	A	J, RC, Z	
OP215AJ/QMLV	5962-8853801VGA	A	J	
OP215ARC/QMLV	5962-8853801V2A	A	RC	
OP215AZ/QMLV	5962-8853801VPA	A	Z	
OP215AJ/QMLR	5962R8853801VGA	A	J	
OP215ARC/QMLR	5962R8853801V2A	A	RC	
OP215AZ/QMLR	5962R8853801VPA	A	Z	
OP227	Dual Low Noise Low Offset Inst. Op Amp	A	Y	
OP227-903Y		A	Y	
OP227R903Y		A	Y	
OP270	Dual Very Low Noise Precision Op Amp	A	RC, Z	
OP270AZ/QMLV	5962-8872101VPA	A	Z	
OP270ARC/QMLV	5962-8872101V2A	A	RC	
OP270AZ/QMLR	5962R8872101VPA	A	Z	
OP270ARC/QMLR	5962R8872101V2A	A	RC	
OP400	Quad Low-Offset, Low-Power Op Amp	A	N, TC, Y	
OP400AN/QMLV	5962-8777101VKA	A	N	
OP400ATC/QMLV	5962-8777101V3A	A	TC	
OP400AY/QMLV	5962-8777101VCA	A	Y	
OP467	Quad High-Speed Precision Op Amp	A	RC, Y	
OP467AY/QMLV	5962-9325801VCA	A	Y	
OP467ARC/QMLV	5962-9325801V2A	A	RC	
OP467AM/QMLR	5962R9325801VDA	A	M	
OP467AY/QMLR	5962R9325801VCA	A	Y	
OP470	Very Low-Noise Quad Op Amp	A	RC, Y	
OP470ARC/QMLV	5962-8856501V2A	A	RC	
OP470AY/QMLV	5962-8856501VCA	A	Y	
OP470ARC/QMLR	5962R8856501V2A	A	RC	
OP470AY/QMLR	5962R8856501VCA	A	Y	
OP471	High Speed Low Noise Quad Op Amp	A	N, RC, Y	
OP471AN/QMLV	5962-8856502VKA	A	N	
OP471ARC/QMLV	5962-8856502V2A	A	RC	
OP471AY/QMLV	5962-8856502VCA	A	Y	
OP471AN/QMLR	5962R8856502VKA	A	N	
OP471ARC/QMLR	5962R8856502V2A	A	RC	
OP471AY/QMLR	5962R8856502VCA	A	Y	

Space Level Products

Product / Part Number	Description	Electrical Grade	Pkg ¹	Note
OP484	Precision, Rail to Rail IP/OP Op Amp	A	Y, M	
OP484AY/QMLV	5962-0051701VCA	A	Y	
OP484AM/QMLV	5962-0051701VDA	A	M	
PM108	Low Input Current Op Amp	A	J, L, Z	
PM108SAJ6	MIL-M-38510/10104 SGA	A	J	
PM108SAZ7	MIL-M-38510/10104 SPA	A	Z	
PM108AJ/QMLR	5962R9863701VGA	A	J	
PM108AL/QMLR	5962R9863701VHA	A	L	
PM108AZ/QMLR	5962R9863701VPA	A	Z	
PM155	Monolithic JFET Input Op Amp	A, X	J, Z	
PM155SAJ6	MIL-M-38510/11404 SGA	A	J	
PM155SAZ7	MIL-M-38510/11404 SPA	A	Z	
PM155SJ6	MIL-M-38510/11401SGA		J	
PM155SZ7	MIL-M-38510/11401 SPA		Z	
PM155AJ/QMLR	5962R9863601VGA	A	J	
PM155AZ/QMLR	5962R9863601VPA	A	Z	
PM156	Monolithic JFET Input Op Amp	A, X	J, Z	
PM156SJ6	MIL-M-38510/11402 SGA		J	
PM156SZ7	MIL-M-38510/11402 SPA		Z	
PM156SAJ6	MIL-M-38510/11405 SGA	A	J	
PM156SAZ7	MIL-M-38510/11405 SPA	A	Z	
PM156AJ/QMLR	5962R9863602VGA	A	J	
PM156AZ/QMLR	5962R9863602VPA	A	Z	
PM741	General Purpose Op Amp	A	J	
PM741SAJ6	MIL-M-38510/10101 SGA	A	J	
Voltage References				
AD584	Pin Programmable Precision Voltage Reference	S, T	H-8	
AD584SH/QMLV	5962-3812801VGA	S	H	
AD584TH/QMLV	5962-3812802VGA	T	H	
AD584SH/QMLR	5962R3812801VGA	S	H	
AD584TH/QMLR	5962R3812802VGA	T	H	
AD589	Precision 1.2 Volt IC Reference	T	H-2	
AD589TH/QMLV	5962-8992901VXA	T	H	
REF01	+10V Precision Voltage Reference	A	J, Z	
REF01AJ/QMLV	5962-8958101VGA	A	J	
REF01AZ/QMLV	5962-8958101VPA	A	Z	
REF01AJ/QML R	5962R8958101VGA	A	J	
REF01AZ/QML R	5962R8958101VPA	A	Z	
REF02	+5V Precision Voltage Ref./Temp. Transducer	A	J, L, RC, Z	
REF02AJ/QMLV	5962-8551401VGA	A	J	
REF02AL/QMLV	5962-8551401VHA	A	L	
REF02ARC/QMLV	5962-8551401V2A	A	RC	
REF02AZ/QMLV	5962-8551401VPA	A	Z	
REF02AJ/QMLR	5962R8551401VGA	A	J	
REF02AL/QMLR	5962R8551401VHA	A	L	
REF02ARC/QMLR	5962R85514 01V2A	A	RC	
REF02AZ/QMLR	5962R8551401VPA	A	Z	
REF05	+5V Precision Voltage Reference	A	J, L	
REF05AL/QMLV	5962-0051601VHA	A	L	
REF05AJ/QMLV	5962-0051601VGA	A	J	
REF05AL/QMLR	5962R0051601VHA	A	L	
REF05AJ/QMLR	5962R0051601VGA	A	J	

Space Level Products

Product / Part Number	Description	Electrical Grade	Pkg ¹	Note
REF10	+10V Precision Voltage Reference	A	L, J	
REF10AL/QMLV	5962-8947901VHA	A	L	
REF10AJ/QMLV	5962-8947901VGA	A	J	
REF10AJ/QMLR	5962R8947901VGA	A	J	
REF10AL/QMLR	5962R8947901VHA	A	L	
REF43	+2.5V Low-Power Precision Voltage Reference	B	J, RC, Z	
REF43-803J		B	J	
REF43-803RC		B	RC	
REF43-803Z		B	Z	
REF43R803J		B	J	
REF43R803RC		B	RC	
REF43R803Z		B	Z	
Switches and Multiplexers				
ADG201HS	LCMOS Hi-speed QUAD SPST Switches	T	Q-16	
ADG201-803Q		T	Q	
MUX08	8-Channel/Dual 4-Channel JFET Analog Mux	A,	Q, RC	
MUX08-903Q		A	Q	
MUX08-903RC		A	RC	
MUX08-913Q		A	Q	
MUX08-913RC		A	RC	
MUX16	16-Channel/Dual 8-Channel JFET Analog Mux	A	T, TC	
MUX16-903T		A	T	
MUX16-903TC		A	TC	
MUX16-913T		A	T	
MUX16-913TC		A	TC	
SW201	Quad SPST JFET Analog Switch	B	Q	
SW201-803Q		B	Q	
SW201-813Q		B	Q	
Sample-and-Hold Amplifiers				
AD585	High Speed, Precision Sample-and-Hold Amp	S	Q-14	
AD585-703Q		S	Q	
AD585-713Q		S	Q	
SMP11	Low Droop Rate/Accurate Sample/Hold Amp	B	Y	
SMP11-803Y		B	Y	
SMP11-813Y		B	Y	
Other Functions				
AD2S80A	Variable Resolution Resolver-to-Digital Converter	S	D-40	
AD2S80-703D		S	D	
AD590	2 Terminal Temperature Transducer, 1uA/°K	K, L, M	H-2, F-2	
AD590KF/QMLV	5962-8757102VXA	K	F	
AD590KH/QMLV	5962-8757102VYA	K	H	
AD590LF/QMLV	5962-8757103VXA	L	F	
AD590LH/QMLV	5962-8757103VYA	L	H	
AD590MF/QMLV	5962-8757104VXA	M	F	
AD590MH/QMLV	5962-8757104VYA	M	H	
AD590LF/QMLR	5962R8757103VXA	L	F	
AD590LH/QMLR	5962R8757103VYA	L	H	
MAT02	Low Noise, Matched Dual NPN Transistor	A	H, L, RC	
MAT02-903H		A	H	
MAT02-903L		A	L	
MAT02-903RC		A	RC	
MAT02-913H		A	H	

Space Level Products

Product / Part Number	Description	Electrical Grade	Pkg ¹	Note
MAT02-913L		A	L	
MAT02-913RC		A	RC	
MAT03	Low Noise, Matched Dual PNP Transistor	A	H, L, RC	
MAT03-903H		A	H	
MAT03-903L		A	L	
MAT03-903RC		A	RC	
MAT03-913H		A	H	
MAT03-913L		A	L	
MAT03-913RC		A	RC	

Space Products Package Information

*** 1. Package Option Key**

D-xx -	Side Brazed Hermetic DIP
E -	Ceramic Leadless Chip Carrier
F -	Ceramic Flat Pack (2-Lead & 16-Lead)
F-28 -	28-Lead Flat Pack
H -	6 lead TO-99 Can (Santa Clara Based Product)
H-xx	Hermetic Metal Can (Other Analog Divisions)
J -	8-Lead TO-99 Can
L -	10-Lead Flat Pack
M -	14-Lead Flat Pack
N -	24-Lead Flat Pack
Q -	16-Lead Cerdip (Santa Clara Based Product)
Q-xx -	Cerdip (Other Analog Divisions)
R -	20-Lead Ceramic Dip
RC -	20-Lead Leadless Chip Carrier
TC -	28-Lead Leadless Chip Carrier
T -	28-Lead Ceramic Dip
X -	18-Lead Ceramic Dip
Y -	14 Lead Ceramic Dip
Z -	8-Lead Ceramic Dip

Call factory for availability of products/packages not in this parts list.