

### 1.0 SCOPE

This specification documents the detail requirements for space qualified product manufactured on Analog Devices, Inc.'s QML certified line per MIL-PRF-38535 Level V except as modified herein. The manufacturing flow described in the STANDARD SPACE LEVEL PRODUCTS PROGRAM brochure is to be considered a part of this specification. <http://www.analog.com/aerospace>. This data sheet specifically details the space grade version of this product. A more detailed operational description and a complete data sheet for commercial product grades can be found at [www.analog.com/AD585](http://www.analog.com/AD585).

### 2.0 Part Number. The complete part number(s) of this specification follow:

Part Number	Description
AD585-703M	High Speed, Precision Sample-and-Hold Amplifier
AD585-713M	Radiation Tested, High Speed, Precision Sample-and-Hold Amplifier

### 2.1 Case Outline.

Letter	Descriptive designator	Case Outline (Lead Finish per MIL-PRF-38535)
M	GDFP1-F14	14-Lead ceramic flat pack (CERPAK)

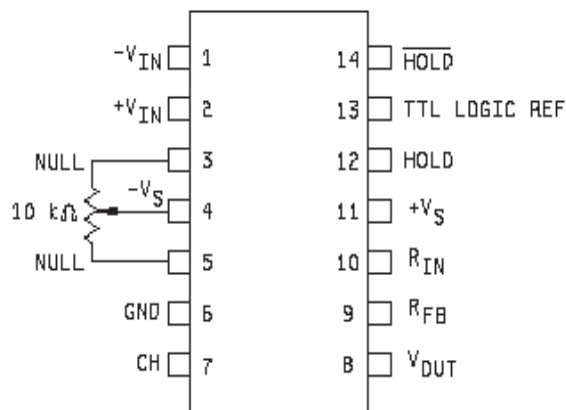


Figure 1 - Terminal connections.

**3.0 Absolute Maximum Ratings. <sup>1/</sup>**

Supply voltage.....	±18V
Logic inputs .....	±V <sub>S</sub>
Analog inputs.....	±V <sub>S</sub>
R <sub>IN</sub> , R <sub>FB</sub> pins .....	±V <sub>S</sub>
Output short circuit to ground.....	Indefinite
TTL logic reference short circuit to ground .....	Indefinite
Storage temperature range .....	-65°C to +150°C
Ambient operating temperature range (T <sub>A</sub> ) .....	-55°C to +125°C
Junction Temperature (T <sub>J</sub> ) .....	+150°C
Lead temperature (soldering, 10 seconds) .....	+300°C

<sup>1/</sup> Unless otherwise specified, all voltages are referenced to ground.

**3.1 Recommended operating conditions.**

Supply voltage range:

+V <sub>S</sub> .....	+5V to +18Vdc
-V <sub>S</sub> .....	-12V dc to -18V dc

**3.2 Thermal Characteristics:**

Thermal Resistance, cerpak (M) Package

Junction-to-Case (Θ<sub>JC</sub>) = 60°/W Max

Junction-to-Ambient (Θ<sub>JA</sub>) = 140°/W Max

4.0 **Electrical Table:**

Table I						
Parameter See notes at end of table	Symbol	Conditions <u>1/</u>	Sub-group	Limit Min	Limit Max	Units
Offset voltage	$V_{OS}$	$V_{OUT} = 0V$	1, 2, 3	-3	3	mV
Bias current	$I_B$	$V_{IN} = 0V$	1	-2	2	nA
			2	-50	50	
TTL reference output	$V_{LREF}$	50 $\mu A$ load	1	1.2	1.6	V
			2, 3	0.8	1.9	
Logic input high voltage	$V_{IH}$	Hold = $V_{LREF}$	1	2.0		
			2, 3	2.0		
Logic input low voltage <u>2/</u>	$V_{IL}$	Hold = $V_{LREF}$	1		0.8	
			2, 3		0.7	
Logic input current	$I_{IL}$	$V_S = \pm 18V$	1, 2, 3		50	$\mu A$
Supply current	$I_{SS}$	$R_L = \text{infinite}$	1, 2, 3		10	mA
Power supply rejection	PSRR	+ $V_S = +5V$ to +18V - $V_S = -12V$ to -18V $V_{IN} = V_{OUT} = 0V$	1	70		dB
Acquisition time	$T_{acq}$	10V step to 0.01%	7		3	$\mu S$
		20V step to 0.01% <u>3/</u>			5	
Droop rate <u>2/</u> <u>4/</u>	$V_{DRP}$	$V_{IN} = 0V$	4		1	mV/mS
Sample to hold offset <u>2/</u>	$SH_{OS}$	$V_{IN} = 0V$	4	-3	3	mV
Application resistor mismatch	$\Delta RM$		1, 2, 3		0.3	%
Common mode rejection	CMRR	$V_{CM} = \pm 10V$	1	80		dB
			2, 3	77		
Slew current <u>5/</u>	$I_{SL}$		4	850		$\mu A$
			5, 6	600		
Output resistance	$R_{OUT}$	$I_{OUT} = \pm 10mA$	1		0.05	$\Omega$
			2, 3		0.10	
Output current	$I_{OUT}$	$R_L = 100\Omega$	1	12		mA

## TABLE I NOTES:

- 1/  $V_S = \pm 15V$ ,  $C_H = \text{Internal}$ ,  $R_L = \text{Infinite}$ ,  $A = +1$ , Hold active, sample mode unless otherwise noted.  
2/ Tested in hold mode.  
3/ Guaranteed if not tested to the limits specified.  
4/ Doubles every 10°C.  
5/  $V_{OUT} = 20V_{p-p}$ . Slew rate = slew current/ $C_H$ .

**4.1 Electrical Test Requirements:**

<b>Table II</b>	
Test Requirements	Subgroups (in accordance with MIL-PRF-38535, Table III)
Interim Electrical Parameters	1
Final Electrical Parameters	1, 2, 3, 4, 5, 6 <u>1/</u> <u>2/</u>
Group A Test Requirements	1, 2, 3, 4, 5, 6, 7
Group C end-point electrical parameters	1 <u>2/</u>
Group D end-point electrical parameters	1
Group E end-point electrical parameters	1

1/ PDA applies to Subgroup 1 only. Deltas excluded from PDA

2/ See table III for delta limits.

**4.2 Table III. Burn-in test delta limits.**

<b>Table III</b>			
TEST TITLE	ENDPOINT LIMIT	DELTA LIMIT	UNITS
SHOS	±3	±3	mV

**5.0 Life Test/Burn-In Circuit:**

**5.1** HTRB is not applicable for this drawing.

**5.2** Burn-in is per MIL-STD-883 Method 1015 test condition D.

**5.3** Steady state life test is per MIL-STD-883 Method 1005.

Rev	Description of Change	Date
A	Initiate	6/5/2000
B	Update web address. Paragraph 5.2, change BI condition from B to D. Delete subgroups 5 & 6 from Table II (they are not on Table I) Add subgroup 7 to group A requirements on Table II.	2/14/2002
C	Update web address. Remove burn-in and radiation bias circuits	5/16/2003
D	Add AD585-703M and AD585-713M.	4/4/2005
E	Update header/footer & add to 1.0 scope description.	2/21/2008
F	Add Junction Temperature (T) <sub>j</sub> .....+150°C to 3.0 Absolute Maximum Ratings	3/31/2008
G	Correct Vos & IsI Subgroup number errors and update Table II.	8/9/2010
H	Remove obsolete part numbers and update ASD to ADI Standard	11/22/2011

