



160MHz Rail-to-Rail Amplifier with Disable

AD8041

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/AD8041

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

<u>Part Number</u>	<u>Description</u>
AD8041-703Q	160MHz Rail-to-Rail Amplifier with Disable
AD8041-713Q	Radiation Tested ¹ 160MHz Rail-to-Rail Amplifier with Disable
AD8041-703L	160MHz Rail-to-Rail Amplifier with Disable
AD8041-713L	Radiation Tested ¹ 160MHz Rail-to-Rail Amplifier with Disable

¹ No Lot Jeopardy for radiation test.

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Rev. E

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2.1 Case Outline

Letter	Descriptive designator	Case Outline (Lead Finish per MIL-PRF-38535)
Q	GDIP1-T8	8-Lead ceramic dual-in-line package (CERDIP)
L	GDFP1-F10	10-lead ceramic flat pack (CERPACK)

Terminal Number	Q	L
1	NC	NC
2	-INPUT	NC
3	+INPUT	-INPUT
4	-V _S	+INPUT
5	NC	-V _S
6	OUTPUT	NC
7	+V _S	OUTPUT
8	DISABLE*	+V _S
9	--	DISABLE*
10	--	NC
* ACTIVE LOW INPUT		

Figure 1 - Terminal connections.

3.0 Absolute Maximum Ratings ^{1/}

Supply Voltage (V _S)	+12.6V
Input Common Mode Range (V _{IN})	±V _S
Internal power dissipation (P _D)	1.3 W
Storage Temperature	-65°C to +125°C
Operating Ambient Temperature Range (T _A)	-55°C to +125°C
Lead temperature range (soldering, 60 seconds)	+300°C
Junction Temperature (T _J)	+175°C

Absolute Maximum Ratings Notes:

- ^{1/} Stresses above the absolute maximum rating may cause permanent damage to the device.
Extended operation at the maximum levels may degrade performance and affect reliability.

3.1 Thermal Characteristics:

Thermal Resistance, CERDIP (Q) Package

Junction-to-Case (Θ_{JC}) = 26°C/W Max

Junction-to-Ambient (Θ_{JA}) = 162 °C/W Max

4.0 Electrical Table:

Table I - Electrical Characteristics								
Parameter	Symbol	Conditions 1/		Sub- groups	Limit Min	Limit Max	Units	
Input Offset Voltage	V _{OS}			1, 2, 3		9.5	mV	
Input Bias Current	I _{IB}			1, 2, 3		3.4	μA	
Input Offset Current	I _{OS}			1, 2, 3		0.7		
Input Voltage Range	IVR			1, 2, 3	0	3.5	V	
Common Mode Rejection Ratio	CMRR	V _{CM} = IVR		1, 2, 3	70		dB	
Power Supply Rejection Ratio	PSRR	V _{IN} = 0V, V _S =±2.5V to ±3.5V		1, 2, 3	68			
Open Loop Gain	A _{OL}	R _L = 1KΩ		1, 2, 3	15		KV/V	
Output Swing Voltage	+V _{OUT}	V _S = ±2.5V	R _L = 1KΩ	1, 2, 3	1.75		V	
			R _L = 50Ω		1.45			
	-V _{OUT}		R _L = 1KΩ			-2.15		
			R _L = 50Ω			-1.5		
Quiescent Supply Current	I _S			1, 2, 3		6.1	mA	
		Disabled				1.7		

Table I Notes:

1/ $V_S = +5V$, $R_L = 2k\Omega$, unless otherwise specified.

4.1 Electrical Test Requirements:

Table II	
Test Requirements	Subgroups (in accordance with MIL-PRF-38535, Table III)
Interim Electrical Parameters	1
Final Electrical Parameters	1, 2, 3 <u>1/</u> <u>2/</u>
Group A Test Requirements	1, 2, 3
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. Delta's excluded from PDA.

2/ See Table III for delta parameters. See table I for conditions.

4.2 Table III. Life Test and Burn-In Delta limits.

Table III					
TEST TITLE	Sub-groups	BURN-IN ENDPOINT	LIFETEST ENDPOINT	DELTA LIMIT	UNITS
V _{OS}	1	±9.5	±12.5	±3	mV
±IB	1	±3.4	±4.6	±1.2	μA

5.0 Life Test/Burn-In Information

5.1 HTRB is not applicable for this drawing.

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

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

Rev	Description of Change	Date
A	Initiate	Nov. 27, 2002
B	Update web address. Delete Burn-In circuit.	June 20, 2003
C	Update product offering. Delete CERPACK and Clarify Test Conditions for PSRR	Sep. 25, 2007
D	Update header/footer and add to 1.0 Scope description.	March 12, 2008
E	Add Junction Temperature (T _J)+175°C to 3.0 Absolute Max. Ratings	April 2, 2008

