

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/SMP11.

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

Part Number	Description
SMP11-803Y	Low Droop Rate/Accurate Sample and Hold

2.1 Case Outline.

Letter	Descriptive designer	Case Outline (Lead Finish per MIL-PRF-38535)
Y	GDIP1-T14	14-Lead ceramic dual-in-line package (CERDIP)

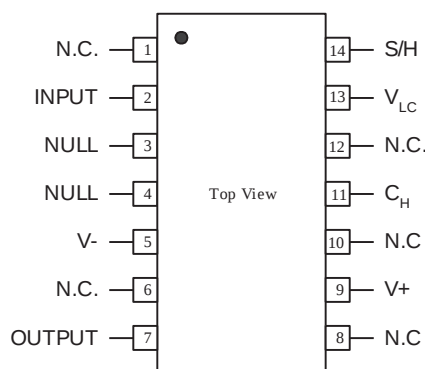


Figure 1 - Terminal connections.

3.0 Absolute Maximum Ratings. ($T_A = 25^\circ\text{C}$, unless otherwise noted)

Supply Voltage.....	$\pm 36\text{V}$
Power Dissipation	500mW
Input Voltage.....	Supply Voltage
Logic and Logic Reference Voltage	Supply Voltage
Output Short-Circuit Duration	Indefinite
Hold Capacitor Short-Circuit Duration	60 sec.
Operating Temperature Range.....	-55°C to $+125^\circ\text{C}$
Storage Temperature Range.....	-65°C to $+150^\circ\text{C}$
DICE Junction Temperature Range (T_J)	$+150^\circ\text{C}$
Lead Temperature (Soldering, 60 sec.).....	$+300^\circ\text{C}$

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Rev. G

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COMPARABLE PARTS

View a parametric search of comparable parts.

DOCUMENTATION

Data Sheet

- SMP11S: Low Droop Rate/Accurate Sample and Hold Aerospace Data Sheet

DESIGN RESOURCES

- smp11s Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

DISCUSSIONS

View all smp11s EngineerZone Discussions.

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3.1 Thermal Characteristics:

Thermal Resistance, CERDIP (Y) Package

Junction-to-Case (Θ_{JC}) = 29°C/W Max

Junction-to-Ambient (Θ_{JA}) = 100 °C/W Max

4.0 Electrical Table:

Table I						
Parameter See notes at end of table	Symbol	Conditions (Note 1)	Sub-group	Limit Min	Limit Max	Units
Zero Scale Error (Hold mode)	V _{ZS}	V _{S/H} = 3.5V (500μS after hold) V _{IN} = 0V	1		±3.0	mV
			2, 3		±5.5	
Input Bias Current	I _B	V _{IN} = 0V	1		±120	nA
			2, 3		±280	
Input voltage range or Output Voltage swing	V _{SW}	R _L = 2.5KΩ	1, 2, 3	±10.5		V
Power Supply Rejection Ratio	PSRR	V ₊ = ±9V to ±18V Sample mode	1	77		dB
			2, 3	72		
Differential logic threshold	V _{TH}		1	0.8	2.0	V
			2, 3	0.6	2.0	
Logic control input current	I _{LC}	V _{LC} = 0V	1		-3	μA
			2, 3		-5	
Supply Current	I _{SY}		1	2	7.0	mA
			2, 3	2	8.4	
Logic input current	I _{S/H}	V _{S/H} = 0.6V (Sample mode)	1, 2, 3		-15	μA
		V _{S/H} = 5V (Hold mode)	1, 2, 3	-1	1	
Droop Rate	ΔV _{CH} /Δt		4		500	μV/mS
			5		5000	
			6		2000	
Leakage (Droop) Current	I _{DR}		4		2.5	nA
			5		25	
			6		10	
Voltage Gain (sample mode)	A _V	V _{IN} = ±10V, R _L = 5KΩ or V _{IN} = ± 5V, R _L = 2.5KΩ	4	0.99953		V/V
			5, 6	0.99940		
Hold Capacitor Charging Current	ICH+	V _{IN} - V _{OUT} + 3V	4, 5, 6	15		mA
	ICH-	V _{IN} - V _{OUT} - 3V	4, 5, 6	-15		
Sample/Hold current ratio	I _{CH} /I _{DR}		1, 2, 3	2x10 ⁶		mA/mA
Slew Rate	SR	V _{IN} = ±10V, R _L = 2.5KΩ	9	2.5		V/μS
Aperture Time	Tap		9 2/		100	nS
Acquisition Time	Taq1	10V step to 0.1%	9		7	μS
	Taq2	10V step to 0.01%	9		10	
Hold mode settling time	T _{HM}	Settling to 1mV of final value	9		4.5	

TABLE I NOTES:

- V_S = ±15V, C_H = 5000pF, V_{LC} connected to ground, unless otherwise specified.
- Subgroup 9 is sample tested.

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, 4, 5, 6 1/ 2/
Group A Test Requirements	1, 2, 3, 4, 5, 6, 9
Group C end-point electrical parameters	1 2/
Group D end-point electrical parameters	1
Group E end-point electrical parameters	1

TABLE II NOTES:

1/ PDA applies to Subgroup 1 only. No other subgroups are included in PDA.

2/ See table III for delta parameters. Exclude Delta's from PDA.

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

Table III				
TEST TITLE	BURN-IN ENDPOINT	LIFETEST ENDPOINT	DELTA LIMIT	UNITS
V_{ZS}	± 3	± 5	± 2	mV
I_E	120	132	± 12	nA
I_{SY}	7	7.7	± 0.7	mA

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 B.

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

Rev	Description of Change	Date
A	Initiate	4/28/2008
B	Table III IB from 90nA to 120 nA. Delta IB from 6.5 to 12 nA. Add Delta ISY. Change subgroup 11 to 9. Delete Figs. 2 & 3. Update Table III.	8/1/2001
C	Update web address. Correct typo on Table I, V_{TH} min at temp is 0.6, not .06. Table II, add "exclude delta's from PDA" to note 2.	3/6/2002
D	Update web address.	6/20/2003
E	Update header/footer and add to 1.0 Scope description	2/15/2008
F	Remove range from DICE Junction Temperature (T_J)	4/4/2008
G	Remove obsolete part number and update ASD to ADI standard	12/1/2011