

## **Not Recommended for New Designs**

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This product was manufactured for Maxim by an outside wafer foundry using a process that is no longer available. It is not recommended for new designs. The data sheet remains available for existing users.

A Maxim replacement or an industry second-source may be available. Please see the QuickView data sheet for this part or contact technical support for assistance.

For further information, [contact Maxim's Applications Tech Support](#).

SCOPE: **PRECISION REFERENCE +5 VOLT ADJUSTABLE OUTPUT**

<u>Device Type</u>	<u>Generic Number</u>
01	REF02A(x)/883B
02	REF02(x)/883B

Case Outline(s). The case outlines shall be designated in Mil-Std-1835 and as follows:

<u>Outline Letter</u>	<u>Mil-Std-1835</u>	<u>Case Outline</u>	<u>Package Code</u>
Z	GDIP1-T8 or CDIP2-T8	8 LEAD CERDIP	J8
J	MACY1-X8	8 LEAD CAN	G9
RC	CQCC1-N20	20 PIN LCC	L20

Absolute Maximum Ratings

Supply Voltage  $V_{DD}$  to GND ..... 40V  
 Output Short Circuit Duration (to GND or  $V_{IN}$ ) ..... Indefinite

Lead Temperature (soldering, 10 seconds) ..... +300°C  
 Storage Temperature ..... -65°C to +150°C

Continuous Power Dissipation .....  $T_A=+70^\circ\text{C}$   
 8 lead CERDIP(derate 8.0mW/°C above +70°C) ..... 640mW  
 8 pin CAN (derate 6.67mW/°C above +70°C)..... 533mW  
 20 Pin LCC (derate 9.09mW/°C above +70°C)..... 727mW

Junction Temperature  $T_J$  ..... +150°C

Thermal Resistance, Junction to Case,  $\theta_{JC}$ :

Case Outline 8 lead CERDIP..... 55°C/W  
 Case Outline 8 lead CAN ..... 45°C/W  
 Case Outline 20 Pin LCC ..... 20°C/W

Thermal Resistance, Junction to Ambient,  $\theta_{JA}$ :

Case Outline 8 lead CERDIP..... 125°C/W  
 Case Outline 8 lead CAN ..... 150°C/W  
 Case Outline 20 Pin LCC ..... 110°C/W

Recommended Operating Conditions.

$V_{OUT}$  @ 25°C for device 01 ..... 5V ±15mV  
 $V_{OUT}$  @ 25°C for device 02 ..... 5V ±25mV  
 Ambient Operating Range ( $T_A$ ) ..... -55°C to +125°C

Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TABLE 1 ELECTRICAL TESTS

TEST	Symbol	CONDITIONS -55 °C ≤ T <sub>A</sub> ≤ +125°C V <sub>DD</sub> =+15V, V <sub>IN</sub> =+15V Unless otherwise specified	Group A Subgroup	Device type	Limits Min	Limits Max	Units
Quiescent Supply Current	I <sub>IN</sub>	No load	1 2,3	All		1.4 2.0	mA
Output Adjustment Range	ΔV <sub>TRIM</sub>	R <sub>p</sub> =10kΩ	1	All	-3.0	+3.0	%
Output Voltage	V <sub>O</sub>	I <sub>L</sub> =0mA	1 2,3	01	4.985 4.978	5.015 5.022	V
Output Voltage	V <sub>O</sub>	I <sub>L</sub> =0mA	1 2,3	02	4.975 4.953	5.025 5.047	V
Short Circuit Current	I <sub>SC</sub>	V <sub>O</sub> =0	1	All	+15	+60	mA
Sink Current	I <sub>S</sub>		1	All	-0.3		mA
Load Regulation NOTE 1	LD reg	I <sub>L</sub> =0 to 10mA	1	All		0.010	%/mA
		I <sub>L</sub> =0 to 8mA	2,3	01 02		0.012 0.015	
Line Regulation NOTE 1	LN reg	V <sub>IN</sub> =8V to 33V	1	01 02		0.010 0.012	%/V
			2,3	All		0.015	
Load Current	I <sub>L</sub>	NOTE 2	1	All	10		mA
Output Voltage Noise	e <sub>np-p</sub>	0.1Hz to 10Hz	4	All		100	μVp-p
Output Voltage Temperature Coefficient	TCV <sub>O</sub>	NOTE 3	7,8A,8B	01		±8.5	ppm/°C
				02		±25	

NOTE 1: Line and Load Regulation specifications include the effect of self-heating.

NOTE 2: Minimum of 10mA load current guaranteed by load regulation test.

NOTE 3: 
$$TCV_{O} = \frac{V_{MAX} - V_{MIN}}{5V} \times \frac{(-55^{\circ}C \text{ to } +125^{\circ}C) \times 10^6}{+180^{\circ}C}$$

PIN CONFIGURATIONS					
	8 Lead CERDIP	8 Lead CAN	20 Pin LCC		20 Pin LCC
1	NC	NC	NC	11	NC
2	V <sub>IN</sub>	V <sub>IN</sub>	NC	12	TRIM
3	TEMP	TEMP	NC	13	NC
4	GND	GND (case)	NC	14	NC
5	TRIM	TRIM	V <sub>IN</sub>	15	V <sub>OUT</sub>
6	V <sub>OUT</sub>	V <sub>OUT</sub>	NC	16	NC
7	NC	NC	TEMP	17	NC
8	NC	NC	NC	18	NC
9			NC	19	NC
10			GND	20	NC

<b>ORDERING INFORMATION:</b>		
<b>Device</b>	<b>Package</b>	<b>Maxim Device</b>
01	G99	REF02AJ/883B
01	J8	REF02AZ/883B
02	G99	REF02J/883B
02	J8	REF02Z/883B
02	L20	REF02RC/883B

## QUALITY ASSURANCE

Sampling and inspection procedures shall be in accordance with MIL-Prf-38535, Appendix A as specified in Mil-Std-883.

Screening shall be in accordance with Method 5004 of Mil-Std-883. Burn-in test Method 1015:

1. Test Condition, A, B, C, or D.
2. TA = +125°C minimum.
3. Interim and final electrical test requirements shall be specified in Table 2.

Quality conformance inspection shall be in accordance with Method 5005 of Mil-Std-883, including Groups A, B, C, and D inspection.

Group A inspection:

1. Tests as specified in Table 2.
2. Selected subgroups in Table 1, Method 5005 of Mil-Std-883 shall be omitted.

Group C and D inspections:

- a. End-point electrical parameters shall be specified in Table 1.
- b. Steady-state life test, Method 1005 of Mil-Std-883:
  1. Test condition A, B, C, D.
  2. TA = +125°C, minimum.
  3. Test duration, 1000 hours, except as permitted by Method 1005 of Mil-Std-883.

**TABLE 2. ELECTRICAL TEST REQUIREMENTS**

Mil-Std-883 Test Requirements	Subgroups per Method 5005, Table 1
Interim Electric Parameters Method 5004	1
Final Electrical Parameters Method 5005	1*, 2, 3, 4, 7, 8A, 8B
Group A Test Requirements Method 5005	1, 2, 3, 4, 7, 8A, 8B
Group C and D End-Point Electrical Parameters Method 5005	1, 2, 3

\* PDA applies to Subgroup 1 only.