52065
52098
REF101 REPLACEMENTS

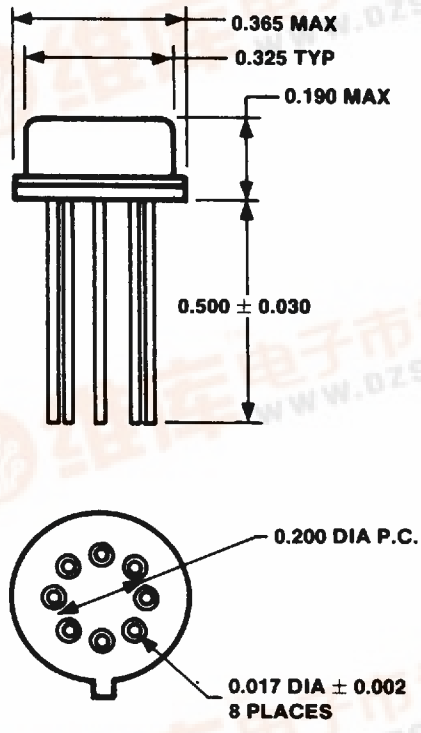
HIGH-TEMPERATURE PRECISION VOLTAGE REFERENCES

FEATURES

- 200°C Operating Temperature Capability (52065 Only)
- 10 V Output
- High Accuracy - ±0.005 V
- Very Low Drift
- Excellent Stability - 25 ppm/°C/1000 hrs
- Wide Supply Range - Up to 35 V
- Low Quiescent Current
- Matched Resistor Pair Included

GENERAL DESCRIPTION

The MII 52065 and 52098 are precision voltage references which provide a +10 V output over a wide range of operating temperatures. Superior stability, low drift rate, and low quiescent current are provided by a heaterless design. The output voltage can be adjusted with minimal effect upon either drift or stability. For convenience, a precision matched pair of 20K resistors are accessible to the user. The matched resistor pair may be used to implement a precision 5 V reference, or for a variety of other applications. Both references operate with a single supply voltage of 13.5V to 35V. They are ideal choices for demanding applications such as D/A and A/D converter references, calibration standards, transducer excitation, and test equipment.



TO-99 METAL CAN

MICROPAC INDUSTRIES, INC. ● 905 E. WALNUT STREET GARLAND, TEXAS 75040 ● (214) 272-3571 ● FAX (214) 494-2281

APPLICATIONS INFORMATION

OUTPUT CURRENT

Additional output current may be supplied by connecting a resistor to the power supply. This may cause some degradation in supply regulation.

5 V PRECISION REFERENCE

Figure 1 illustrates a circuit to provide a precision 5 VDC output utilizing the internal 20KΩ resistors. A buffer is shown connected to pin 8, since this voltage point has very little drive capability.

ADJUSTABLE OUTPUT VOLTAGE

Adjustable output voltage circuits are shown in Figures 2 and 3. Output voltage trim in Figure 2 will change the voltage drift by about 0.01 ppm/°C/mV of trimmed voltage. Any mismatch in TCR between the legs of the potentiometer will also affect TC by a ratio of 1/40. Figure 3 shows a circuit with greater resolution. To minimize the effect of TCR, R_s should be larger than the 150 KΩ internal resistor

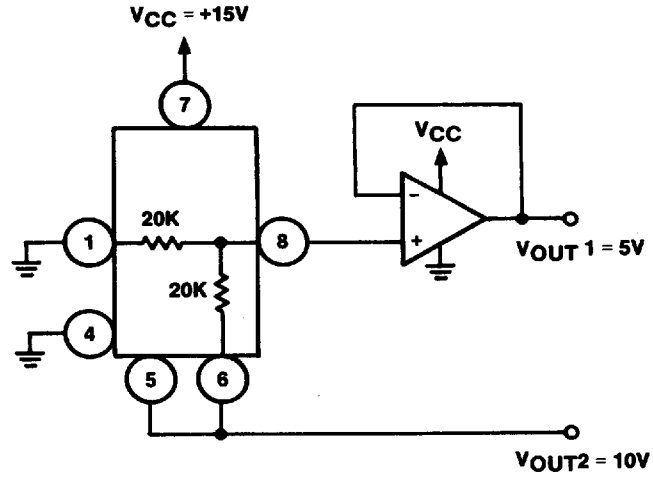


Figure 1

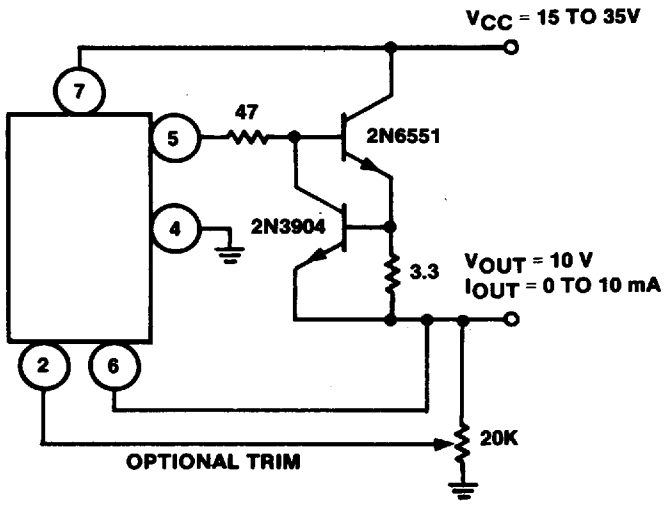


Figure 2

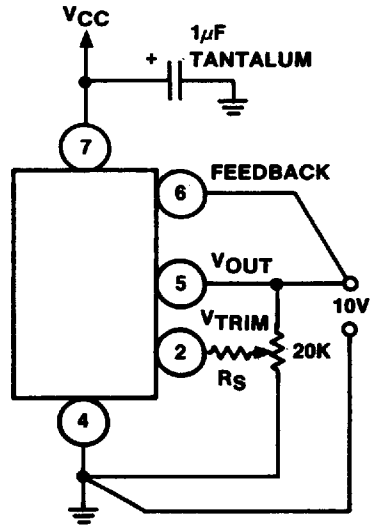


Figure 3

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52065
52098
REF101 REPLACEMENTS

ABSOLUTE MAXIMUM RATINGS

Isolation Voltage ..... 40 V
Power Dissipation at 25°C ..... 200 mW
Operating Temperature Range: 52098 ..... -55°C to +125°C Case
52065 ..... -55°C to +200°C Case
Storage Temperature Range: 52098 ..... -55°C to +125°C Case
52065 ..... -55°C to +200°C Case

RECOMMENDED OPERATING CONDITIONS

PARAMETER	MIN	NOM	MAX	UNITS
Supply Voltage VCC	13.5	15	35	Volts
Operating Case Temperature 52098 52065	-55 -55		125 200	°C °C

ELECTRICAL CHARACTERISTICS* Ta = 25° C V_{cc} = 15 VDC Unless Otherwise Noted

PARAMETER	CONDITIONS	52098			52065			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
Quiescent Supply Current			6			6		mA
Output Voltage	Ta = +25 °C	9.995	10.000	10.005	9.995	10.000	10.005	Volts
5V Output Using 20 KΩ Resistors	Ta = -25 °C	4.995	5.000	5.005	4.995	5.000	5.005	Volts
Trim Range [1,3]		-0.100		+0.250	-0.100		+0.250	Volts
Output Current	Source or Sink	10			10			mA
Output Impedance	0 to 1 MHz		0.01			0.01		ohm
VRS Temperature	Operating Temp. Range			3		5	10	ppm/°C
VRS Output Current[2]	I_L = 0 to 10 mA		0.00025			0.00025		%/mA
VRS Supply Regulation	V_{cc} = 13.5 to 35V		0.00025			0.00025		%/VDC
VRS Time	T_C =25°C		2.5					ppm/
	T_C = 200°C					100		100 hrs
Noise [3]	0.1 Hz to 10 Hz		6	25		6	25	V p-p
Uncommitted Resitors:								
Resistance			20			20		K ohm
Match			±0.01	±0.05		±0.01	±0.05	%
TCR			50			50		ppm/°C
TCR Tracking			5			5		ppm/°C

NOTES: 1 Trimming the offset voltage will affect the drift slightly
2 Source/sink current must be derated to 2 mA at maximum rated operating temperature. See Application Information for details
3 Guaranteed by design

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