

NEC

BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1060

2.5 V HIGH PRECISION REFERENCE VOLTAGE CIRCUIT

DESCRIPTION

The μ PC1060 are high accuracy and low drift voltage references of 2.5 V output voltage.

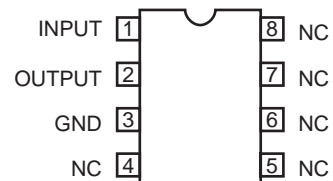
This IC can operate under wide range input voltage, and applied for 8 to 12 bits D/A converters.

★ FEATURES

- High Accuracy $V_o = 2.5 \text{ V} \pm 1 \%$
- Low Temperature Coefficient $\Delta V_o / \Delta T \leq 40 \text{ ppm}/^\circ\text{C}$
- Low Supply Current $I_{cc} \leq 1.5 \text{ mA}$
- Wide Supply Voltage Range $4.5 \text{ V} \leq V_{IN} \leq 40 \text{ V}$
- Low Load Regulation $REG_L \leq 10 \text{ mV}$

PIN CONFIGURATION

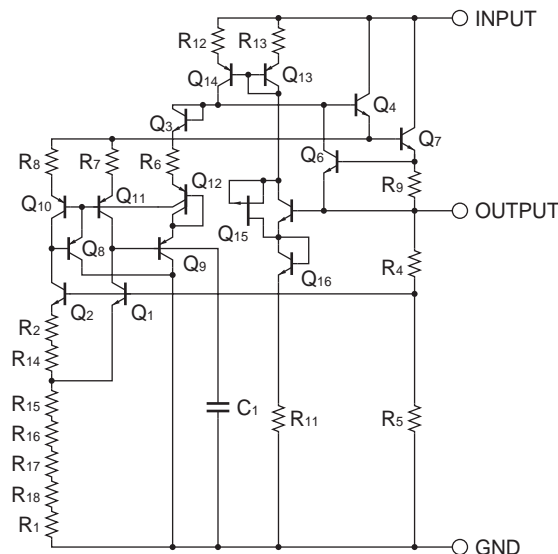
8-pin plastic DIP (7.62 mm (300))
 μ PC1060C



★ ORDERING INFORMATION

Part Number	Package
μ PC1060C	8-pin plastic DIP (7.62 mm (300))

EQUIVALENT CIRCUIT



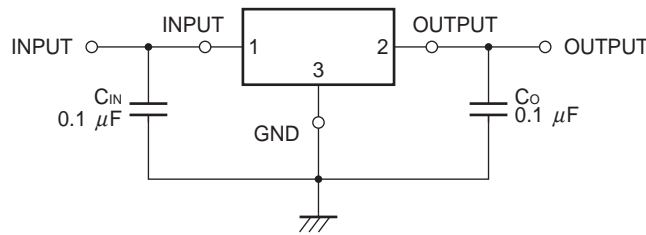
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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

ABSOLUTE MAXIMUM RATINGS (T_A = +25 °C, unless otherwise specified.)

Parameter	Symbol	Ratings	Unit
Input Voltage	V _{IN}	-0.3 to +40	V
Total Power Dissipation	P _T	350	mW
Operating Ambient Temperature	T _A	-20 to +70	°C
Storage Temperature	T _{stg}	-55 to +125	°C

Caution Product quality may suffer if the absolute maximum rating is exceeded even momentarily for any parameter. That is the absolute maximum ratings are rated values at which the product is on the verge of suffering physical damage, and therefore the product must be used under conditions that ensure that the absolute maximum ratings are not exceeded.

TYPICAL CONNECTION



RECOMMENDED OPERATING CONDITIONS

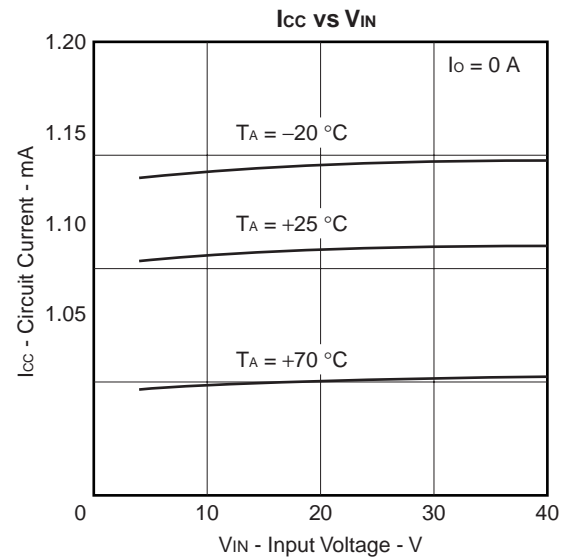
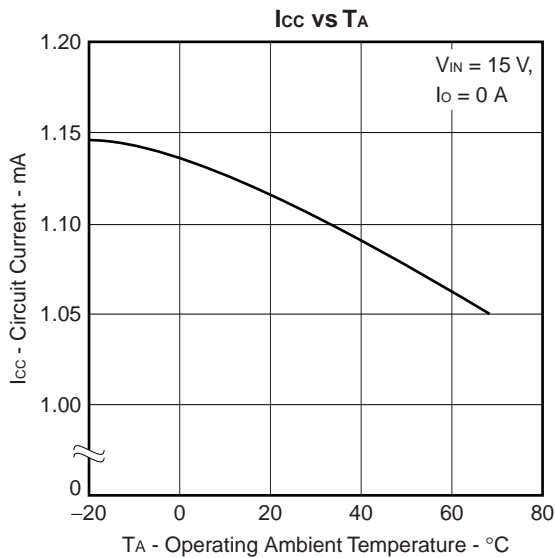
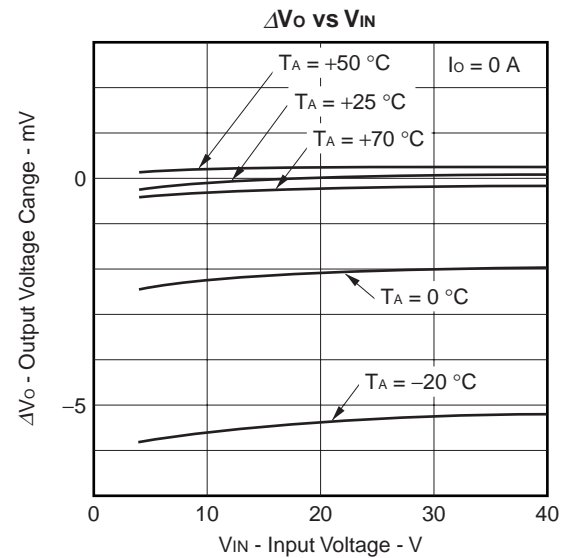
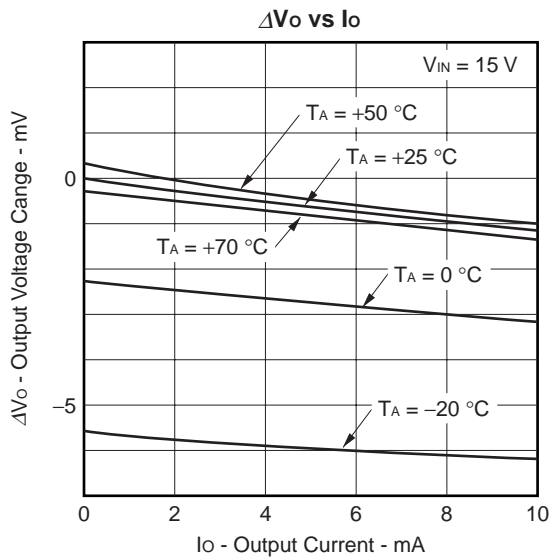
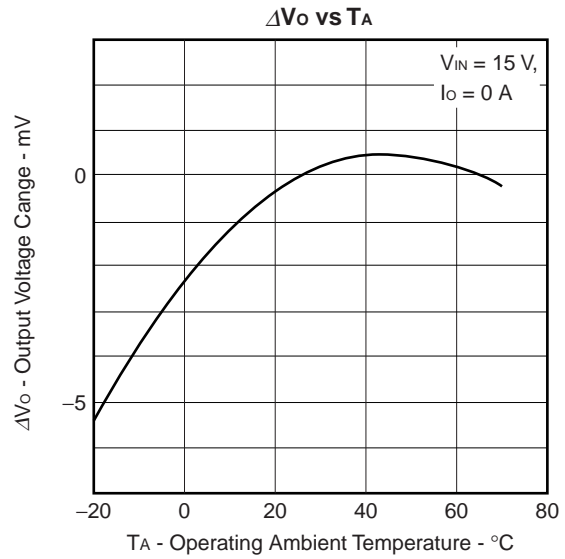
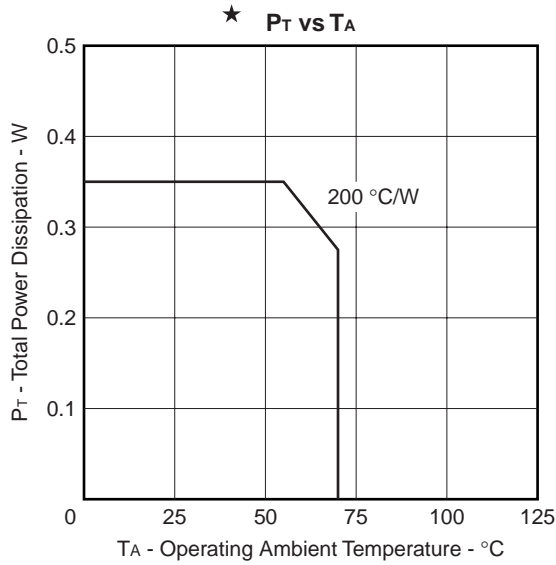
Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Input Voltage	V _{IN}	4.5		40	V
Output Current	I _o	0		10	mA
Internal Power Dissipation	P _D			270	mW
Operating Ambient Temperature	T _A	-20		+70	°C

Caution The recommended operating range may be exceeded without causing any problems provided that the absolute maximum ratings are not exceeded. However, if the device is operated in a way that exceeds the recommended operating conditions, the margin between the actual conditions of use and the absolute maximum ratings is small, and therefore thorough evaluation is necessary. The recommended operating conditions do not imply that the device can be used with all values at their maximum values.

ELECTRICAL CHARACTERISTICS (V_{IN} = 15 V, I_o = 0 A, T_A = +25 °C, unless otherwise specified.)

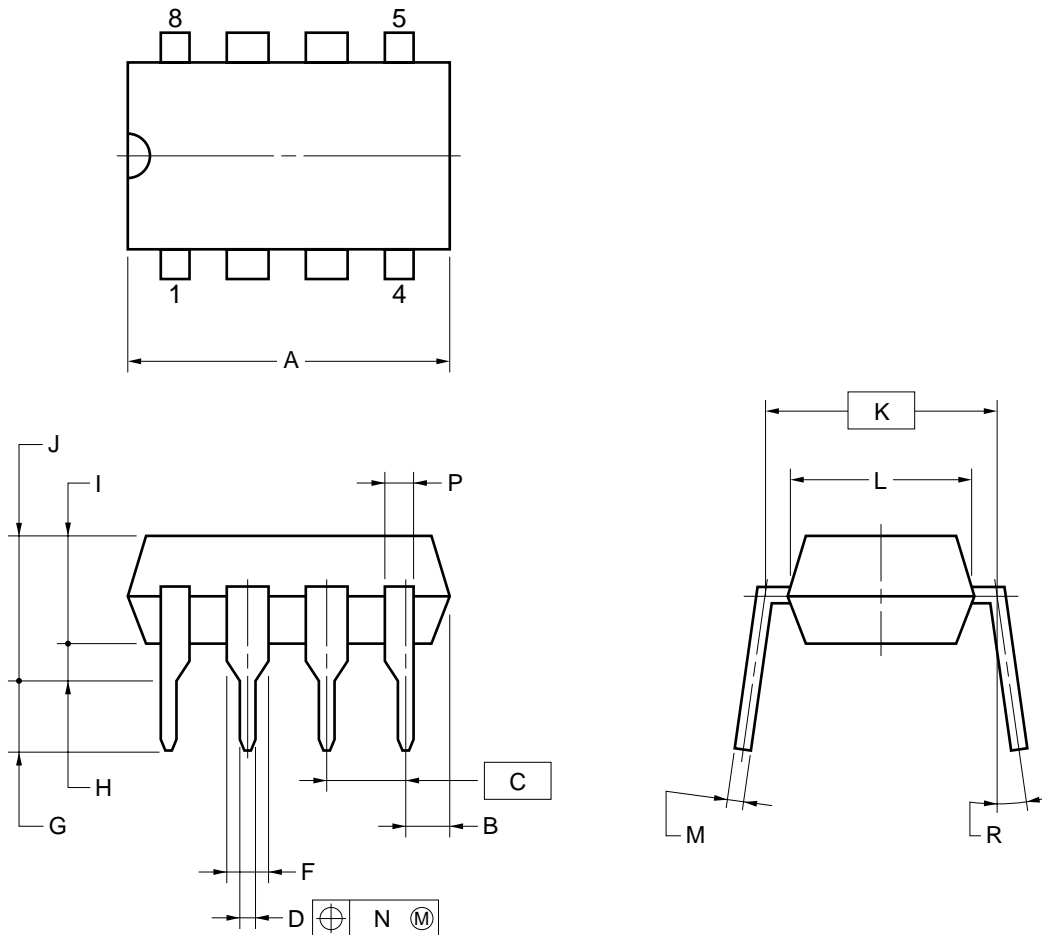
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Output Voltage	V _o		2.475	2.5	2.525	V
Output Voltage Change	ΔV _o	0 °C ≤ T _A ≤ 70 °C			7.0	mV
Temperature Coefficient of Output Voltage	ΔV _o /ΔT	0 °C ≤ T _A ≤ 70 °C			40	ppm/°C
Line Regulation	REG _{IN}	15 V ≤ V _{IN} ≤ 40 V			4.5	mV
		4.5 V ≤ V _{IN} ≤ 15 V			3.0	mV
Load Regulation	REG _L	0 A ≤ I _o ≤ 10 mA			10	mV
Ripple Rejection	R•R	5 V ≤ V _{IN} ≤ 40 V, f = 120 Hz		90		dB
Output Noise Voltage	V _n	4.5 V ≤ V _{IN} ≤ 40 V, 0 A ≤ I _o ≤ 10 mA, P _T ≤ 350 mW		80		μV _{p-p}
Short Circuit Current	I _{short}	V _o = 0 V		17		mA
Circuit Current	I _{cc}				1.5	mA

TYPICAL CHARACTERISTIC ($T_A = +25\text{ }^\circ\text{C}$, unless otherwise specified. Nominal)



PACKAGE DRAWING

8-PIN PLASTIC DIP (7.62mm(300))



NOTES

1. Each lead centerline is located within 0.25 mm of its true position (T.P.) at maximum material condition.
2. Item "K" to center of leads when formed parallel.

ITEM	MILLIMETERS
A	10.16 MAX.
B	1.27 MAX.
C	2.54 (T.P.)
D	0.50±0.10
F	1.4 MIN.
G	3.2±0.3
H	0.51 MIN.
I	4.31 MAX.
J	5.08 MAX.
K	7.62 (T.P.)
L	6.4
M	0.25 ^{+0.10} _{-0.05}
N	0.25
P	0.9 MIN.
R	0~15°

P8C-100-300B,C-2

★ **RECOMMENDED SOLDERING CONDITIONS**

When soldering this product, it is highly recommended to observe the conditions as shown below.

If other soldering processes are used, or if the soldering is performed under different conditions, please make sure to consult with our sales offices.

For more details, refer to our document “**Semiconductor Device Mounting Technology Manual**” (C10535E).

Type of Through-hole Device

μ PC1060C : 8-pin plastic DIP (7.62 mm (300))

Process	Conditions
Wave soldering (only to leads)	Solder temperature: 260°C or below, Flow time: 10 seconds or less.

Caution For through-hole device, the wave soldering process must be applied only to leads, and make sure that the package body does not get jet soldered.

REFERENCE DOCUMENTS

Semiconductor Device Mounting Technology Manual	C10535E
Semiconductor Selection Guide -Products and Packages-	X13769X

[MEMO]

[MEMO]

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 - NEC devices are classified into the following three quality grades:
"Standard", "Special", and "Specific". The Specific quality grade applies only to devices developed based on a customer designated "quality assurance program" for a specific application. The recommended applications of a device depend on its quality grade, as indicated below. Customers must check the quality grade of each device before using it in a particular application.
 - Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots
 - Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)
 - Specific: Aircraft, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.
- The quality grade of NEC devices is "Standard" unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact an NEC sales representative in advance.

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