

6427525 N E C ELECTRONICS INC

81C 10116 D
T-79-15

NEC
NEC Electronics Inc.

**μ PC4081
J-FET INPUT
OPERATIONAL AMPLIFIER**

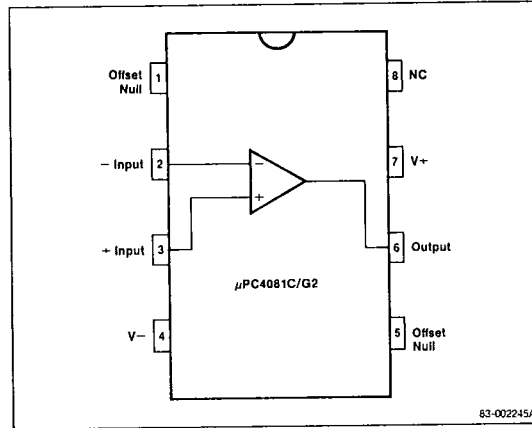
Description

The μ PC4081 is a single operational amplifier with a combination of matched ion implanted P-channel J-FET inputs with standard bipolar transistor technology. The very low-input bias current and high slew rate (ten times that of general purpose operational amplifiers) makes this device an excellent choice for integrators, active filters, and pulse amplifier applications.

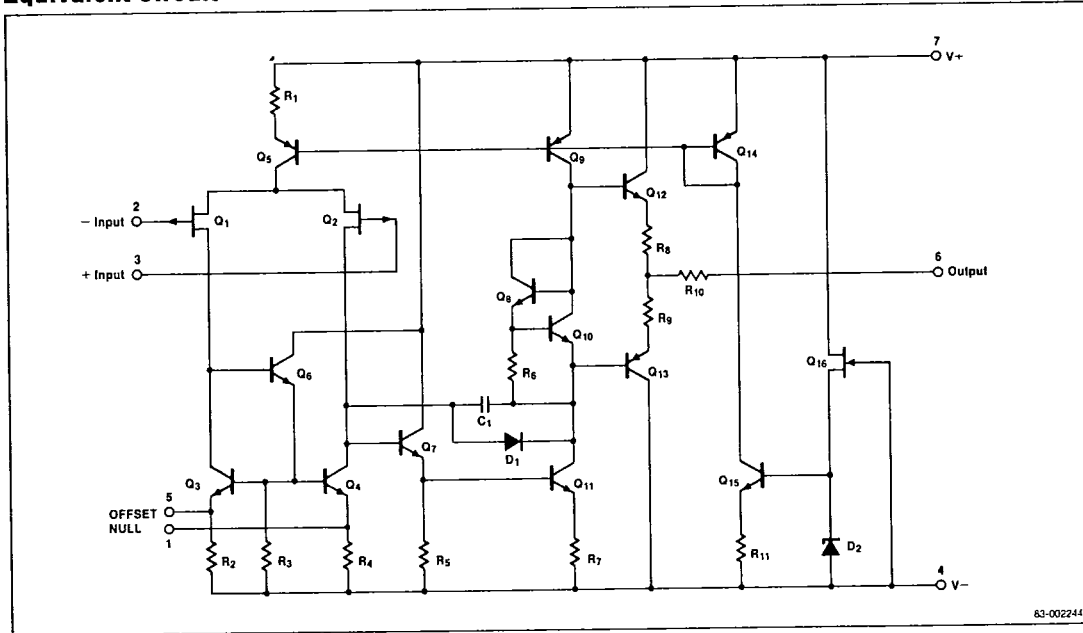
Features

- Wide common-mode and differential input voltage range
- Low input bias and offset currents
- Output short-circuit protection
- High input impedance: J-FET input stage
- Internal frequency compensation
- High slew rate: 11 V/ μ s typical
- Latch-free operation
- TL081 direct replacement

Pin Configuration



Equivalent Circuit



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Electrical Characteristics

$T_A = 25^\circ\text{C}, V_{\pm} = \pm 15\text{ V}$

Parameter	Symbol	Limits			Unit	Test Conditions
		Min.	Typ.	Max.		
Input Offset Voltage	V_{IO}	5.0	15.0		mV	$R_S \leq 50 \Omega$
Input Offset Current	I_{IO}	5	200		pA	
Input Bias Current	I_b	30	400		pA	
Large Signal Voltage Gain	A_{VOL}	88	106		dB	$R_L \geq 2\text{ k}\Omega, V_O = \pm 10\text{ V}$
Supply Current	I_{CC}	2.0	2.8		mA	
Common Mode Rejection Ratio	$CMRR$	70	76		dB	
Supply Voltage Rejection Ratio	$SVRR$	70	76		dB	
Output Voltage Swing	V_{OM}	± 12	± 13.5		V	$R_L \geq 10\text{ k}\Omega$
Output Voltage Swing	V_{OM}	± 10	± 12		V	$R_L \geq 2\text{ k}\Omega$
Common Mode Input Voltage Swing	V_{icm}	± 10			V	
Slew Rate	SR	11			V/ μs	$A_v = 1$
Input Equivalent Noise Voltage	e_n	25			nV/ $\sqrt{\text{Hz}}$	$f = 1\text{ kHz}, R_S = 100 \Omega$
Unity Gain Bandwidth	GBW	3			MHz	
Over Operating Temperature						
Input Offset Voltage	V_{IO}		20		mV	$R_S \leq 50 \Omega, T_A = T_{OPT}$
Input Offset Voltage Drift	$\Delta V_{IO}/\Delta T$	10			$\mu\text{V}/^\circ\text{C}$	$T_A = T_{OPT}$
Input Bias Current	I_b		10		nA	$T_A = T_{OPT}$
Input Offset Current	I_{IO}		5		nA	$T_A = T_{OPT}$

Ordering Information

Part Number	Package	Operating Temperature Range
$\mu\text{PC4081C}$	Plastic DIP	0°C to $+70^\circ\text{C}$
$\mu\text{PC4081G2}$	Plastic Miniflat	0°C to $+70^\circ\text{C}$

Absolute Maximum Ratings

$T_A = 25^\circ\text{C}$

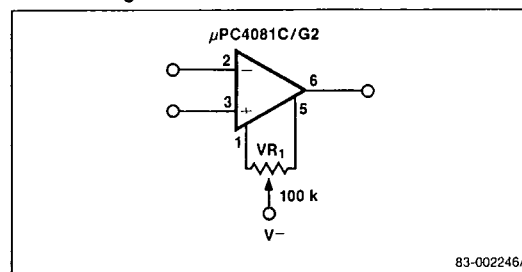
Voltage Between V^+ and V^-	36 V
Power Dissipation, C Package	350 mW
Power Dissipation (Note 1), G2 Package	440 mW
Differential Input Voltage	$\pm 30\text{ V}$
Input Voltage (Note 1)	$\pm 15\text{ V}$
Output Short Circuit Duration	Indefinite
Operating Temperature Range	0 to $+70^\circ\text{C}$
Storage Temperature Range	-55 to $+125^\circ\text{C}$

Notes: 1. For supply voltages less than $\pm 22\text{ V}$, the absolute maximum input voltage is equal to the supply voltage.

Comment: Stress above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Typical Applications

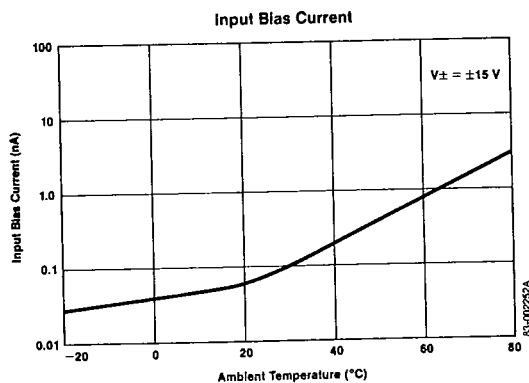
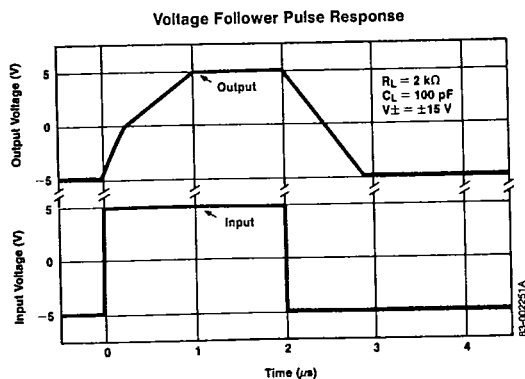
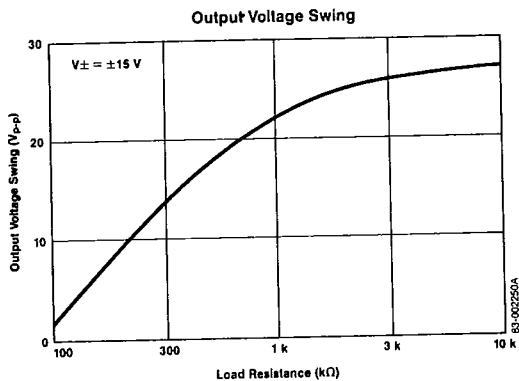
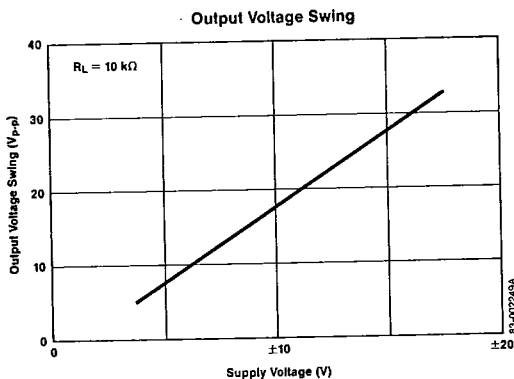
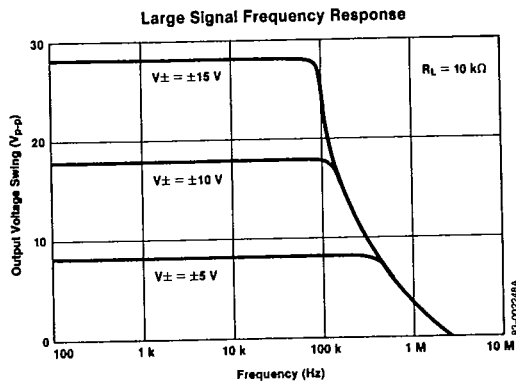
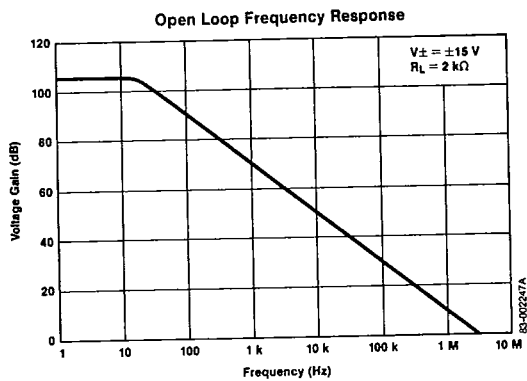
Offset Voltage Null Circuit





Operating Characteristics

$T_A = 25^\circ\text{C}$



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Operating Characteristics (Cont.)

$T_A = 25^\circ\text{C}$

