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NEC Electronics Inc.

μPC4557
DUAL HIGH-PERFORMANCE OPERATIONAL AMPLIFIER

Description

The μPC4557 is a dual operational amplifier which features higher output drive current than that of the μPC4558. This feature allows driving of headphone speakers directly. Other characteristics of this device are low noise and no crossover distortion, which make it the ideal choice for audio applications.

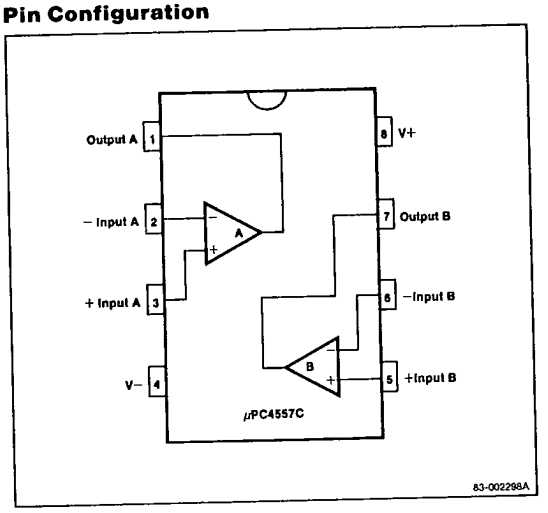
Features

- ☐ Internal frequency compensation
- ☐ Large common-mode and differential input voltage ranges
- ☐ No latch-up
- ☐ Low noise

Ordering Information

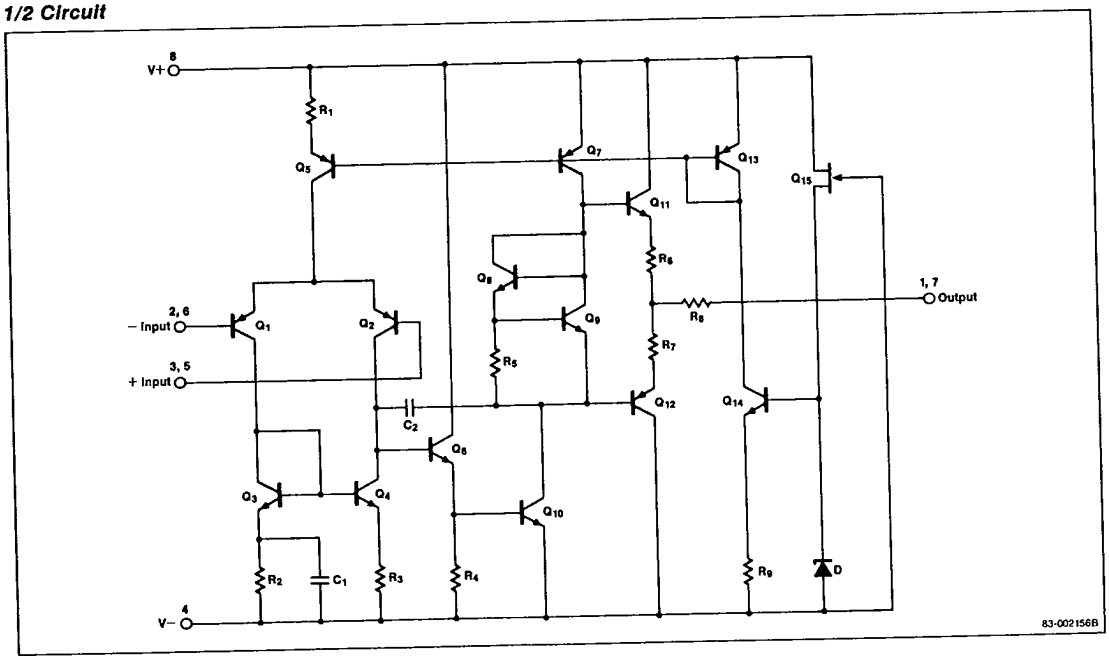
Part Number	Package	Operating Temperature Range
μPC4557C	Plastic DIP	0°C to +70°C

Pin Configuration



Equivalent Circuit

1/2 Circuit



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Absolute Maximum Ratings

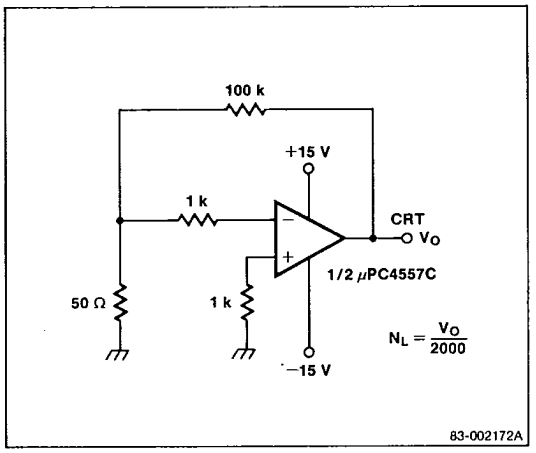
$T_A = 25°C$

Voltage Between V^+ and V^-	36 V
Power Dissipation (Note 1)	700 mW
Differential Input Voltage	±30 V
Input Voltage (Note 2)	±15 V
Output Short Circuit Duration	5 s
Operating Temperature Range	0 to +70°C
Storage Temperature Range	−55 to +125°C

Notes: 1. When the ambient temperature is more than 25°C, derate linearly at 7 mW/°C, (T_{Jmax}) = 125°).
2. For supply voltages less than ±15 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.

Noise Measurement Circuit

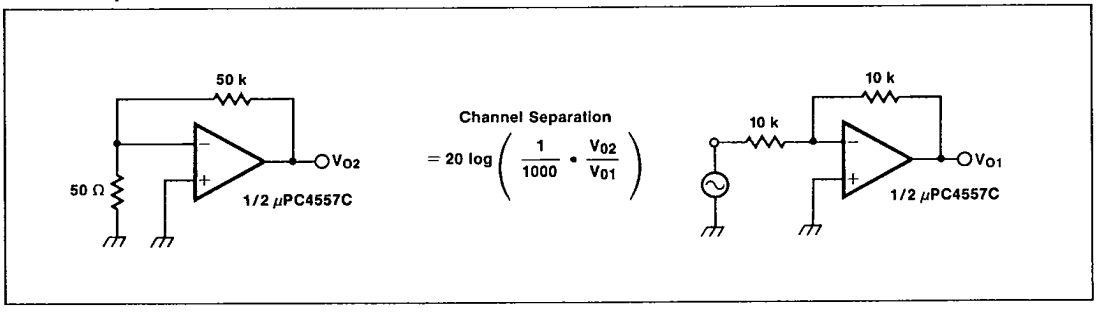


Electrical Characteristics

$T_A = 25°C$, $V± = ±15$ V

Parameter	Symbol	Limits Min.	Typ.	Max.	Unit	Test Conditions
Input Offset Voltage	V_{IO}		0.5	6.0	mV	$R_S \leq 10$ kΩ
Input Offset Current	I_{IO}		5	200	nA	
Input Bias Current	I_b		180	500	nA	
Large Signal Voltage Gain	A_{VOL}	86	100		dB	$R_L \geq 2$ kΩ, $V_O = ±10$ V
Power Dissipation	P_D		90	170	mW	Both channels
Common Mode Rejection Ratio	CMRR	70	90		dB	$R_S \leq 10$ kΩ
Supply Voltage Rejection Ratio	SVRR		30	150	μV/V	$R_S \leq 10$ kΩ
Output Voltage Swing	V_{om}	±12	±14		V	$R_L \geq 2$ kΩ
Output Voltage Swing	V_{om}	±10	±11.5		V	$I_O = ±25$ mA
Common Mode Input Voltage Range	V_{ICM}	±12	±14		V	
Slew Rate	SR		1.0		V/μs	$A_V = 1$
Input Noise Voltage	en		6		μV_{P-P}	$R_S = 1$ kΩ, f = 1 Hz to 1 kHz
Channel Separation	CS		105		dB	f = 1 kHz

Channel Separation Measurement Circuit



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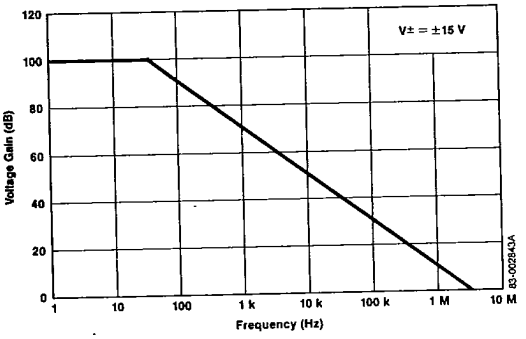
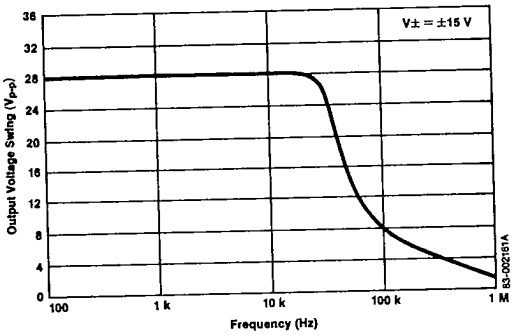
Operating Characteristics

$T_A = 25°C$

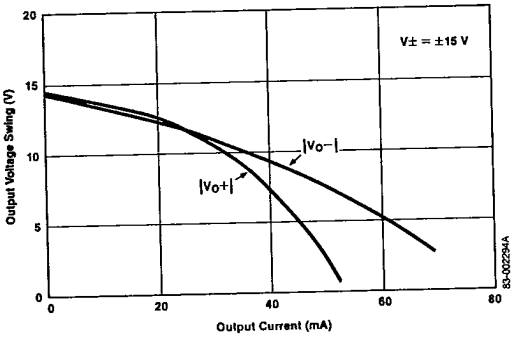
Open Loop Frequency Response



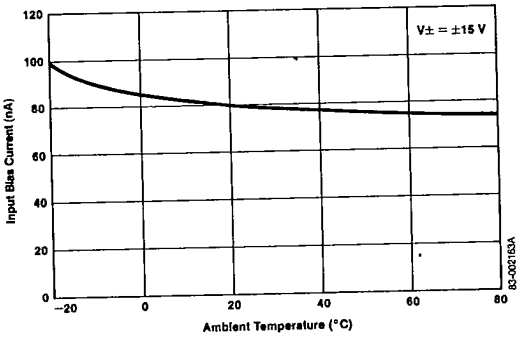
Large Signal Frequency Response



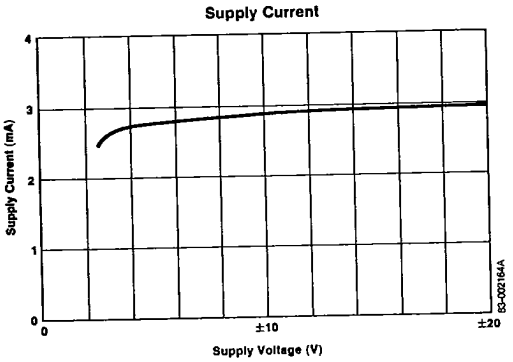
Output Voltage Swing



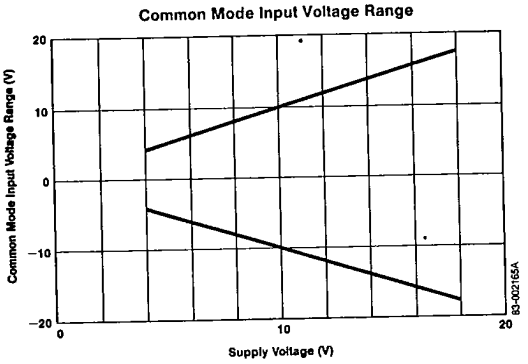
Input Bias Current



Supply Current



Common Mode Input Voltage Range



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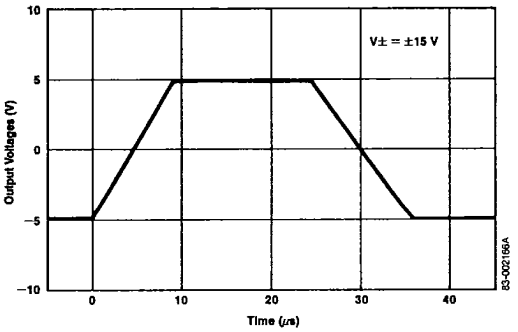
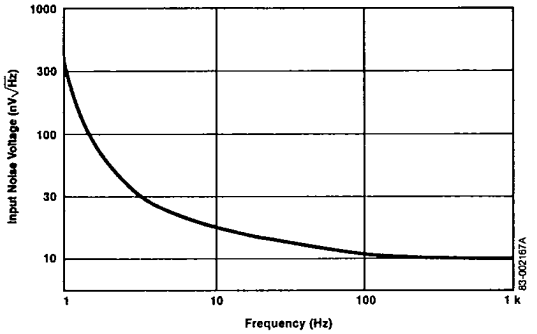
Operating Characteristics (Cont.)

$T_A = 25°C$

Voltage Follower Large Signal Pulse Response

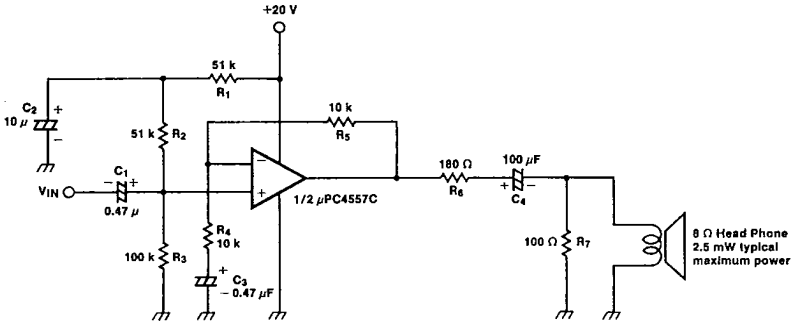


Input Noise Voltage Density



Application Circuit

Head Phone AMP



Note:
NEC cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.

Input		Output
dBm	V_{RMS}	mW
+6	1.55	2.0
0	0.775	0.5
−6	0.388	0.125

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