

Dual Operational Amplifier

Features

- Input common mode voltage range includes ground
- Internally frequency compensated for unity gain
- Large DC voltage gain : 100dB
- Wide Bandwidth for unity gain : 1 MHz
- Very low power consumption
- Wide supply voltage range :
[Single : 3V ~ 30V, Dual : $\pm 1.5 \sim \pm 15V$]



Typical Applications

- Transducer amplifier
- DC gain blocks
- Conventional operational amplifiers

Ordering Information

Part No	Package	Packing	Finish	Halogen	Packing Unit
AP358	SOP-8	Tape & Reel	Sn	Free	2,500ea

Marking Layout



1ST Line : Company logo

2nd Line : Device name : AP358S

-S : SOP-8 PKG code

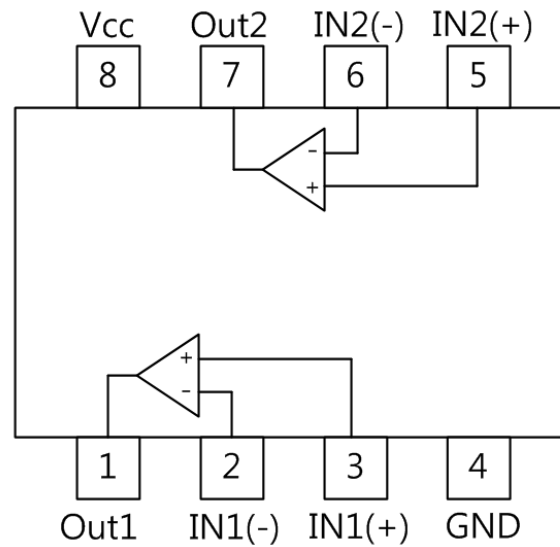
3rd Line : Date code

- WW : Work week calendar

- YY : Last one digit of calendar year

- Z : ASSEMBLY SITE

Internal Block Diagram



Pin Diagram

Pin No	Symbol	I/O	Description
1	Out1	O	OP-Amp1 Output
2	IN1(-)	I	OP-Amp1's Inverting Input
3	IN1(+)	I	OP-Amp1's Non-inverting Input
4	GND	GND	GND
5	IN2(+)	I	OP-Amp2's Non-inverting Input
6	IN2(-)	I	OP-Amp2's Inverting Input
7	Out2	O	OP-Amp2 Output
8	Vcc	PWR	Vcc for Dual Operational Amplifier

Maximum Ratings Characteristics (TA = 25°C unless otherwise specified)

Parameter	Symbol	Values	Units
Supply Voltage	V _{CC}	36 or ±18	V
Differential input voltage	V _{IND}	32	V
Input voltage	V _{IN}	-0.3 ~ +32	V
Power Dissipation	PD	600	mW
Operating temperature	T _{OPR}	-45 ~ +85	°C
Storage temperature	T _{STG}	-55 ~ +150	°C

Electrical Characteristics (TA = 25°C unless otherwise specified)

Characteristics	Symbol	Test Condition	Min.	Typ.	Max.	Units
Input offset voltage	V _{IOS}	5V ≤ V _{CC} ≤ 30V (Ta = 25°C)	-	±2	±7	mV
		R _g = 0Ω, 0V ≤ V _{IC} ≤ V _{CC} - 1.5V	-	-	±9	
Input offset voltage drift	ΔV _{IOS} /ΔT	R _g = 0Ω	-	7	-	μV/°C
Input offset current	I _{IOS}	- (Ta = 25°C)	-	±5	±50	nA
		-	-	-	±150	
Input offset current drift	ΔI _{IOS} /ΔT	-	-	10	-	pA/°C
Input bias current	I _{IB}	- (Ta = 25°C)	-	45	250	nA
		-	-	40	500	
Input common mode voltage range	V _{ICR}	V _{CC} = 30V (Ta = 25°C)	0	-	V _{CC} - 1.5	V
		-	0	-	V _{CC} - 2	
Supply current	I _{CC}	V _{CC} = 30V, R _L = ∞	-	1	2	mA
		V _{CC} = 5V, R _L = ∞	-	0.7	1.2	
Large signal voltage gain	G _V	V _{CC} = 15V (Ta = 25°C)	25	100	-	V/mV
		R _L ≥ 2kΩ	15	-	-	
Output voltage swing	V _{OH}	V _{CC} = 30V, R _L = 2kΩ	26	-	-	V
		R _L = 10kΩ	27	28	-	
	V _{OL}	V _{CC} = 5V, R _L ≤ 10kΩ	-	3	20	mV
Common mode rejection ratio	CMRR	(Ta = 25°C)	65	90	-	dB
Power supply rejection ratio	PSRR	(Ta = 25°C)	65	100	-	
Output source current	I _{O+}	V = 15V (Ta = 25°C)	20	40	-	mA
		V _{IN+} = 1V, V _{IN-} = 0V	10	20	-	
Output sink current	I _{O-}	V _{CC} = 15V (Ta = 25°C)	10	20	-	mA
		V _{IN+} = 0V, V _{IN-} = 1V	5	8	-	
		V _{OUT} = 200mV (Ta = 25°C) V _{IN+} = 0V, V _{IN-} = 1V	12	50	-	μA
Output short circuit to ground	I _{SC}	Ta = 25°C	-	40	60	mA

Characteristics Curves

($T_A = 25^\circ\text{C}$ unless otherwise specified)

Fig. 1 $I_{CC}-V_{CC}$

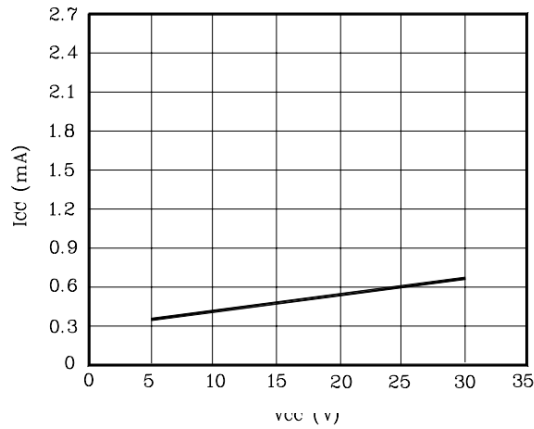


Fig. 2 $I_{IB}-V_{CC}$

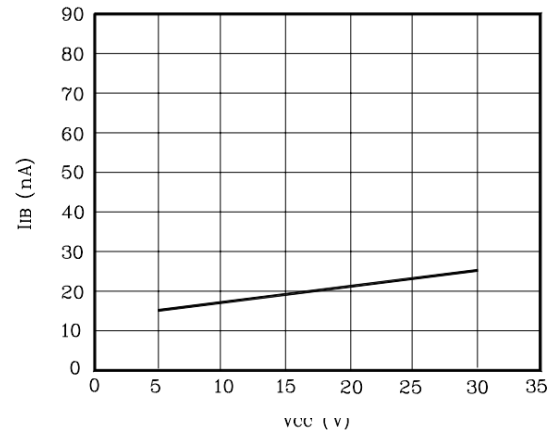


Fig. 3 $V_{IOS}-T_a$

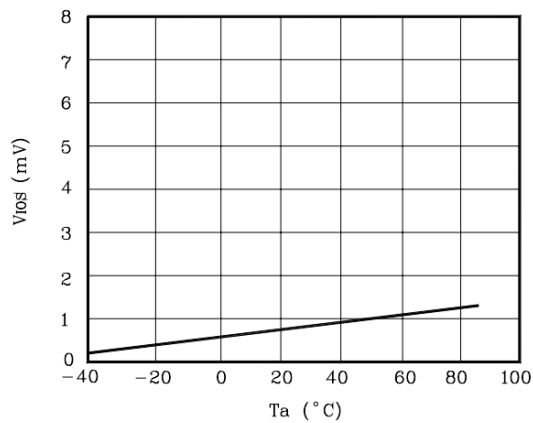


Fig. 4 $I_{O+}-T_a$

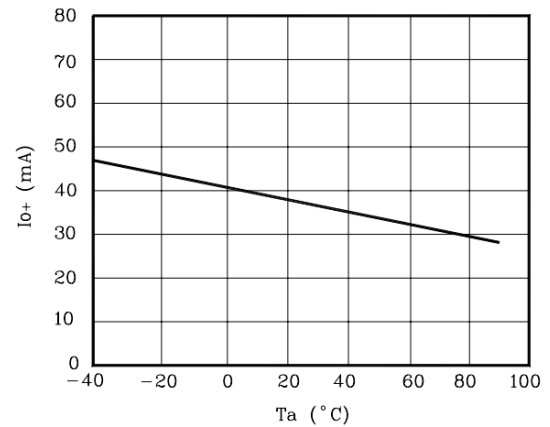


Fig. 5 CMRR-f

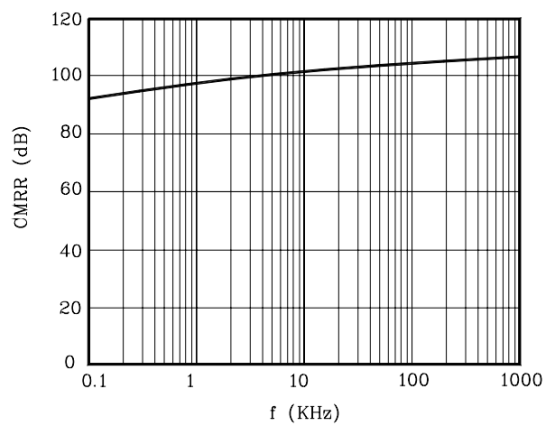
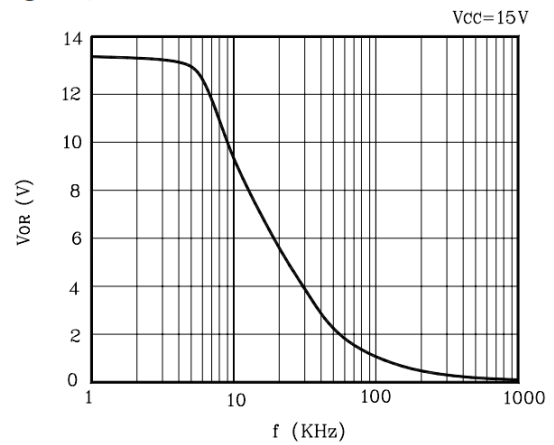


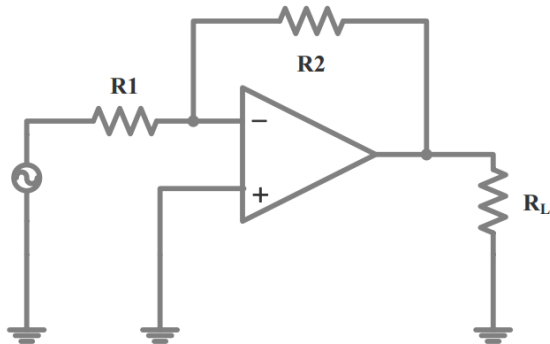
Fig. 6 $V_{OR}-f$



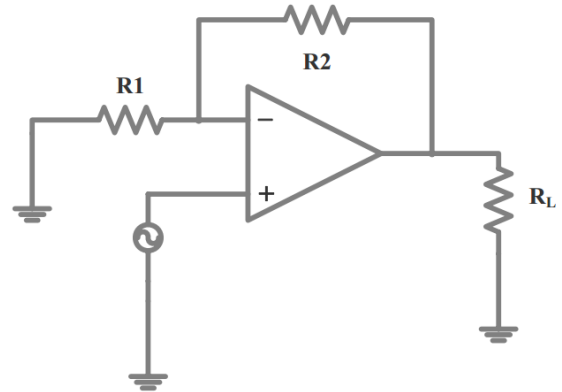


Typical Applications

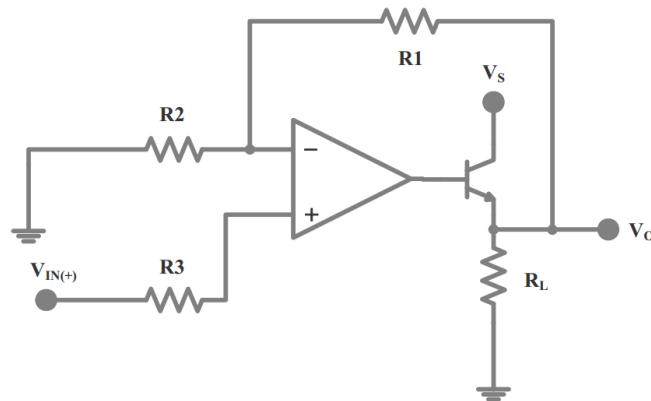
Inverting Amplifier



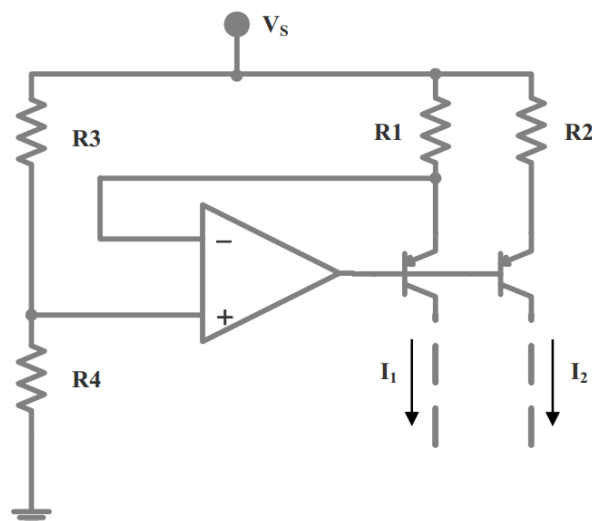
Non-inverting Amplifier



Power Amplifier

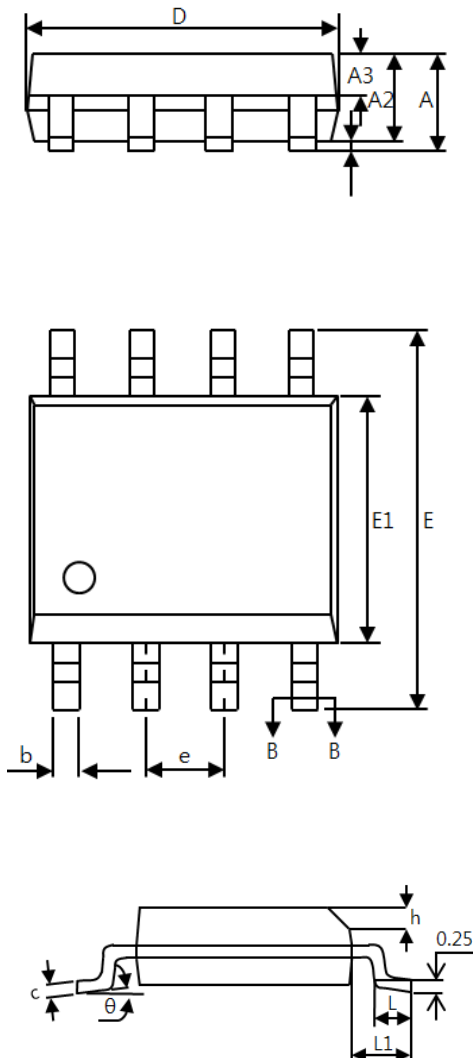


Fixed Current Sources

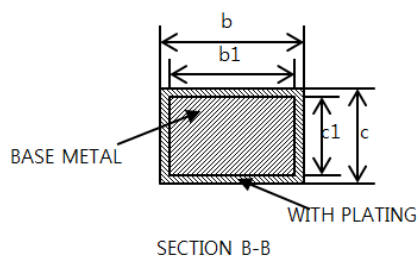


Package Dimensions

SOP-8



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.75
A1	0.10	—	0.225
A2	1.30	1.40	1.50
A3	0.60	0.65	0.70
b	0.39	—	0.48
b1	0.38	0.41	0.43
c	0.21	—	0.26
c1	0.19	0.20	0.21
D	4.70	4.90	5.10
E	5.80	6.00	6.20
E1	3.70	3.90	4.10
e	1.27BSC		
h	0.25	—	0.50
L	0.50	—	0.80
L1	1.05BSC		
θ	0	—	8°
L/F	80*80	90*90	95*130



Revision History

No	Date	Contents
0	2017-04-03	Initial Brief Datasheet Release

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