

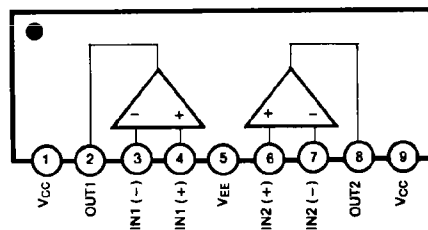
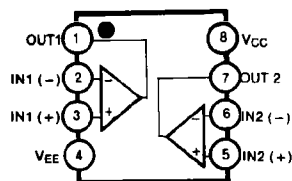
DUAL OPERATIONAL AMPLIFIER

The KA4558 series is a monolithic integrated circuit designed for dual operational amplifier.

FEATURES

- No frequency compensation required.
- No latch-up.
- Large common mode and differential voltage range.
- Parameter tracking over temperature range.
- Gain and phase match between amplifiers.
- Internally frequency compensated.
- Low noise input transistors.

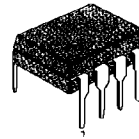
BLOCK DIAGRAM



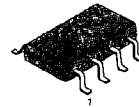
ORDERING INFORMATION

Device	Package	Operating Temperature
KA4558 KA4558A	8 DIP	0 ~ + 70°C
KA4558S KA4558AS	9 SIP	
KA4558D KA4558AD	8 SOP	
KA4558I KA4558A	8 DIP	-40 ~ + 85°C
KA4558IS KA4558AIS	9 SIP	
KA4558ID KA4558AID	8 SOP	

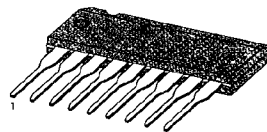
8 DIP



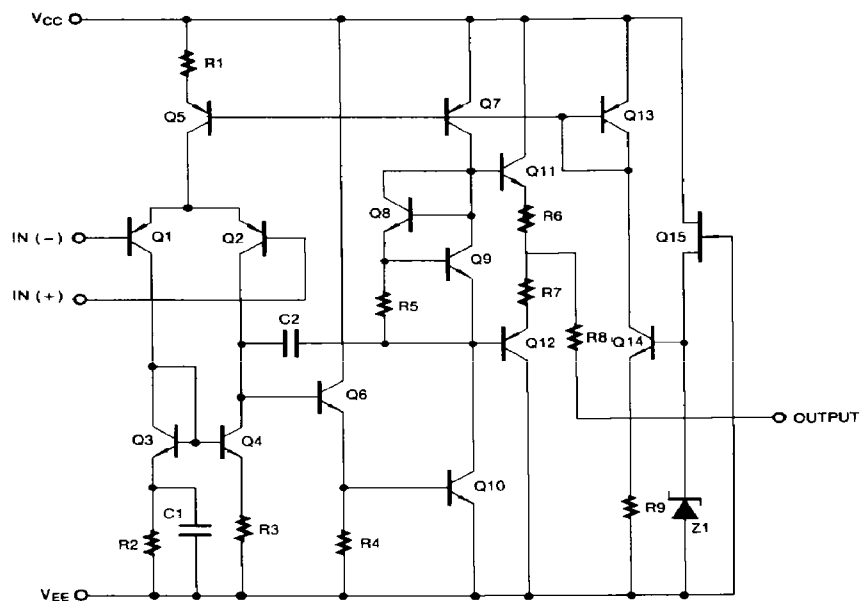
8 SOP



9 SIP



SCHEMATIC DIAGRAM (One Section Only)



ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Supply Voltage KA4558A/AI		± 22	V
KA4558/I	V_{CC}	± 18	V
Differential Input Voltage	$V_{I(DIFF)}$	± 30	V
Input Voltage	V_I	± 15	V
Power Dissipation	P_D	400	mW
Operating Temperature Range KA4558I/AI	T_{OPR}	$-40 \sim +85$	$^{\circ}\text{C}$
KA4558/KA4558A		$0 \sim +70$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-65 \sim +150$	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS

(V_{CC} = 15V, V_{EE} = -15V, T_A = 25°C unless otherwise specified)

Characteristic	Symbol	Test Conditions	KA4558A/AI			KA4558/I			Unit
			Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage	V _{IO}	R _{Si} ≤ 10KΩ NOTE 1		1	5		2	6	mV
				1	6			7.5	
Input Offset Current	I _{IO}			5	200		5	200	nA
				3	200			300	
				20	500			300	
Input Bias Current	I _{BIAS}			30	500		30	500	nA
				20	500			800	
				100	1500			800	
Large Signal Voltage Gain	G _V	V _{O(P-P)} = ±10V, R _L ≥ 2KΩ NOTE 1	50	200		20	200		V/mV
Common Mode Input Voltage Range	V _{I(R)}		±12	±13		±12	±13		V
		NOTE 1	±12	±13					
Common Mode Rejection Ratio	CMRR	R _{Si} ≤ 10KΩ NOTE 1	70	90		70	90		dB
			70	90					
Supply Voltage Rejection Ratio	PSRR	R _{Si} ≤ 10KΩ NOTE 1	76	90		76	90		dB
			76	90		76	90		
Output Voltage Swing	V _{O(P-P)}	R _L ≥ 10KΩ R _L ≥ 2KΩ NOTE 1	±12	±14		±12	±14		V
			±10	±13		±10	±13		
Supply Current (Both Amplifiers)	I _{CC}			3.5	5.0		3.5	5.8	mA
					4.5			5.0	
					6.0			6.7	
Power Consumption (Both Amplifiers)	P _C			70	150		70	170	mW
					135			150	
					180			200	
Slew Rate	SR	V _I = 10V, R _L ≥ 2KΩ C _{ij} ≤ 100pF	1.2			1.2			V/μs
Rise Time	t _{RES}	V _I = 20mV, R _L ≥ 2KΩ C _{ij} ≤ 100pF		0.3			0.3		μs
Overshoot	OS	V _I = 20mV, R _L ≥ 2KΩ C _{ij} ≤ 100pF		15			15		%

NOTE 1

KA4558A : T_{A(MIN)} ≤ T_A ≤ T_{A(MAX)} = 0 ≤ T_A ≤ +70°CKA4558A/I : T_{A(MAX)} ≤ T_A ≤ T_{A(MAX)} = -40 ≤ T_A ≤ +85°C

TYPICAL PERFORMANCE CHARACTERISTICS

Fig. 1 BURST NOISE vs SOURCE RESISTANCE

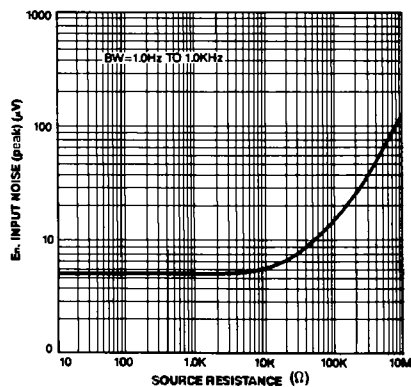


Fig. 2 RMS NOISE vs SOURCE RESISTANCE

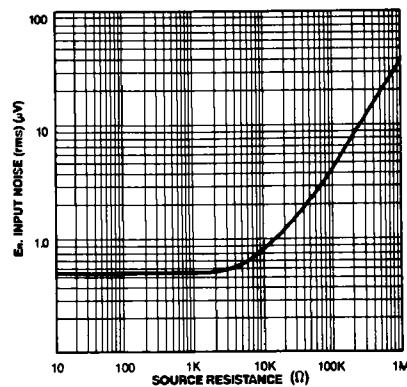


Fig. 3 OUTPUT NOISE vs SOURCE RESISTANCE

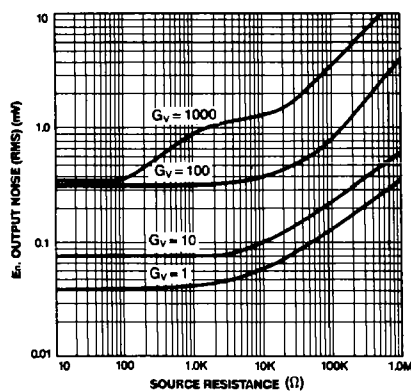


Fig. 4 SPECTRAL NOISE DENSITY

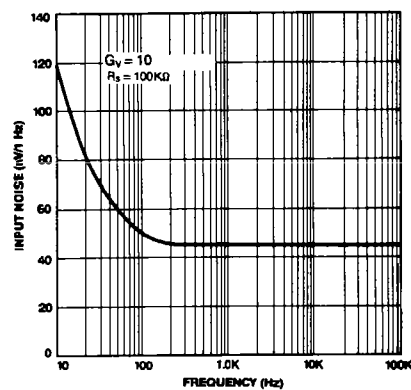


Fig. 5 OPEN LOOP FREQUENCY RESPONSE

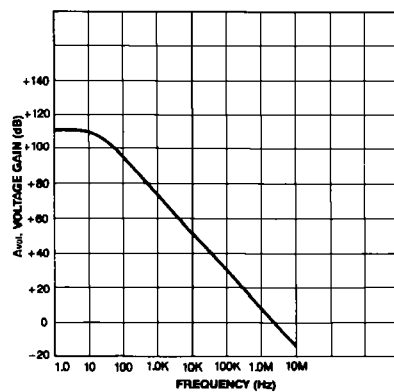


Fig. 6 PHASE MARGIN vs FREQUENCY

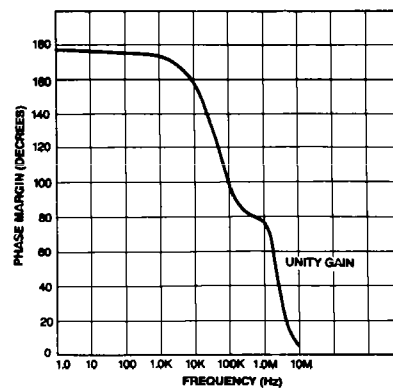
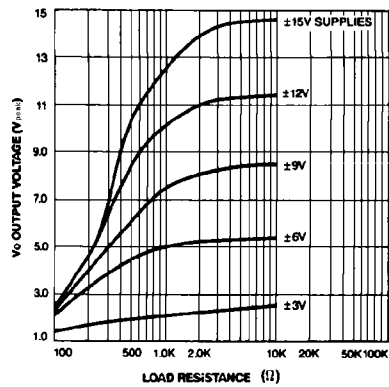
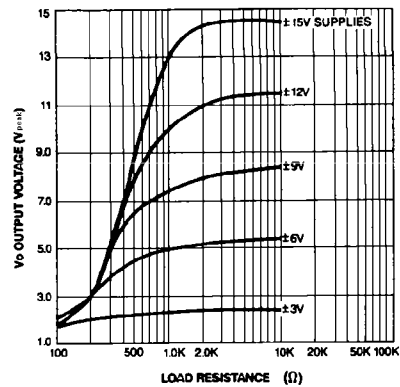
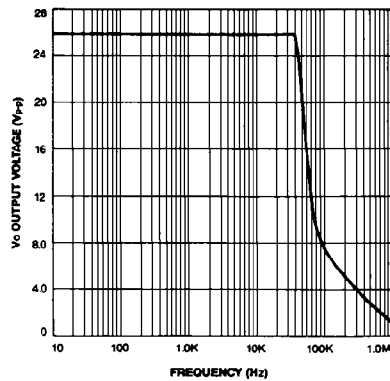


Fig. 7 POSITIVE OUTPUT VOLTAGE SWING
vs LOAD RESISTANCEFig. 8 NEGATIVE OUTPUT VOLTAGE SWING
vs LOAD RESISTANCEFig. 9 POWER BANDWIDTH
(LARGE SIGNAL SWING VERSUS FREQUENCY)

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FACT™	QST™	
FACT Quiet Series™	Quiet Series™	
FAST®	SuperSOT™-3	
FASTr™	SuperSOT™-6	
GTO™	SuperSOT™-8	
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