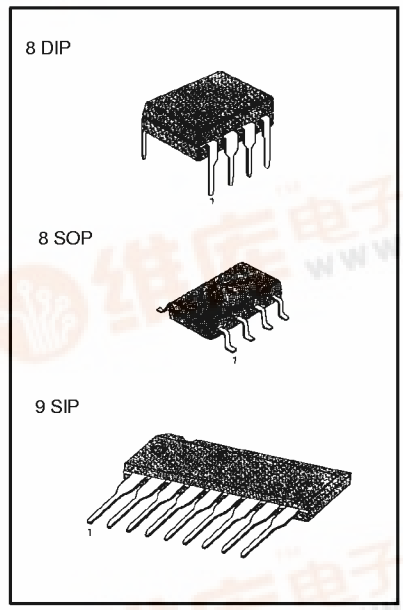
DUAL OPERATIONAL AMPLIFIER

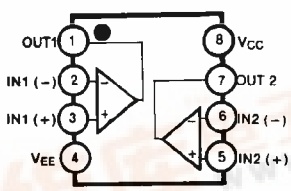
The KA4558 series is a monolithic integrated circuit designed for dual operational amplifier.

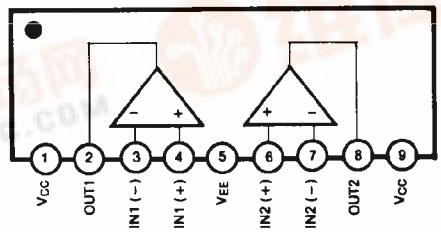


FEATURES

- 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



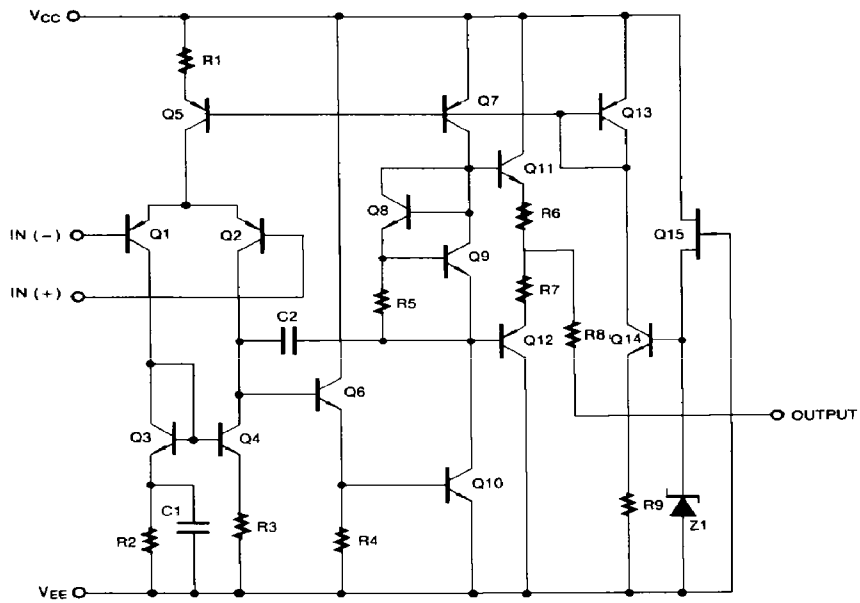


ORDERING IN FORMATION

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	

FAIRCHILD SEMICONDUCTOR™

SCHEMATIC DIAGRAM (One Section Only)



ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Supply Voltage KA4558A/AI	V_{CC}	±22	V
KA4558/I		±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 ~ + 85	°C
KA4558/KA4558A		0~ + 70	°C
Storage Temperature Range	T_{STG}	-65 ~ + 150	°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}	$R_{S\leq i}$ ´ 10KΩ		1	5		2	6	mV
		NOTE 1		1	6			7.5	
Input Offset Current	I_{IO}			5	200		5	200	nA
		$T_A = T_{A(MAX)}$		3	200			300	
		$T_A = T_{A(MIX)}$		20	500			300	
Input Bias Current	I_{BIAS}			30	500		30	500	nA
		$T_A = T_{A(MAX)}$		20	500			800	
		$T_A = T_{A(MAX)}$		100	1500			800	
Large Signal Voltage Gain	G_V	$V_{O(P-P)}$= ±10V,R_{Li} ´ 2K¥	50	200		20	200		V/mV
		NOTE 1	25						
Common Mode Input Voltage Range	$V_{I(R)}$		±12	±13		±12	±13		V
		NOTE 1	±12	±13					
Common Mode Rejection Ratio	**CMRR**	$R_{S\leq}$10KΩ¥	70	90		70	90		dB
		NOTE 1	70	90					
Supply Voltage Rejection Ratio	**PSRR**	$R_{S\leq}$10KΩ	76	90		76	90		dB
		NOTE 1	76	90		76	90		
Output Voltage Swing	$V_{O(P-P)}$	R_L≥10KΩ NOTE 1	±12	±14		±12	±14		V
		R_L≥2KΩ	±10	±13		±10	±13		
Supply Current (Both Amplifiers)	I_{CC}			3.5	5.0		3.5	5.8	mA
		$T_A = T_{A(MAX)}$			4.5			5.0	
		$T_A = T_{A(MAX)}$			6.0			6.7	
Power Consumption (Both Amplifiers)	P_C			70	150		70	170	MV
		$T_A = T_{A(MAX)}$			135			150	
		$T_a = T_{min}$			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 : $T_{A(MIN)} \leq T_A \leq T_{A(MAX)}$ = 0≤T_A≤ + 70°C
KA4558AI/I : $T_{A(MAX)} \leq T_A \leq T_{A(MAX)}$ = - 40≤T_A≤ + 85°C

TYPICAL PERFORMANCE CHARACTERISTICS

Fig. 1 BURST NOISE vs SOURCE RESISTANCE

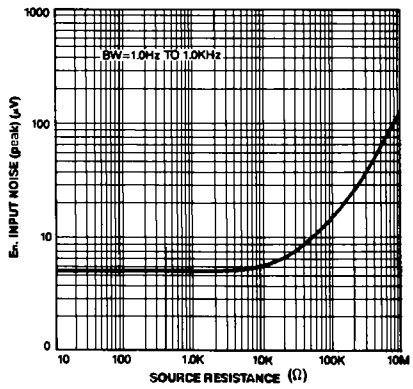


Fig. 2 RMS NOISE vs SOURCE RESISTANCE

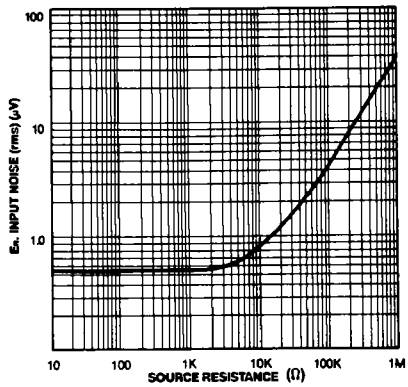


Fig. 3 OUTPUT NOISE vs SOURCE RESISTANCE

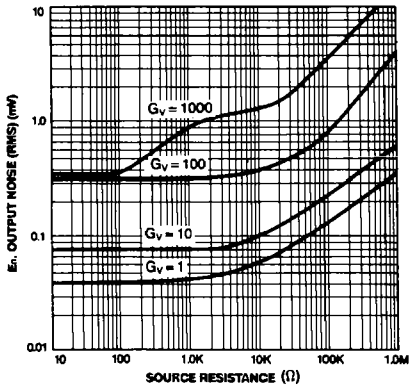


Fig. 4 SPECTRAL NOISE DENSITY

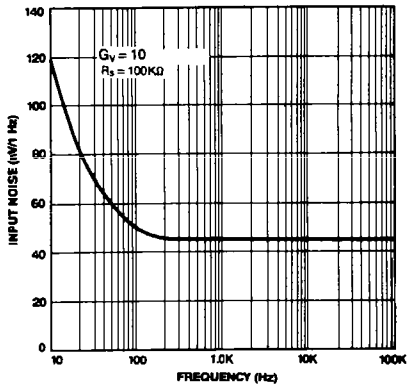


Fig. 5 OPEN LOOP FREQUENCY RESPONSE

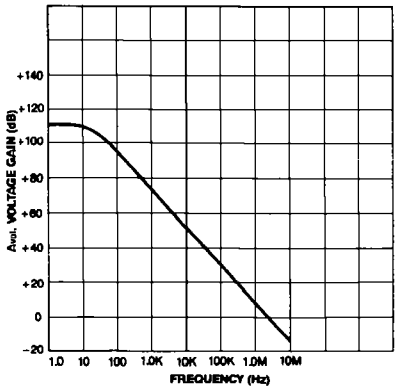


Fig. 6 PHASE MARGIN vs FREQUENCY

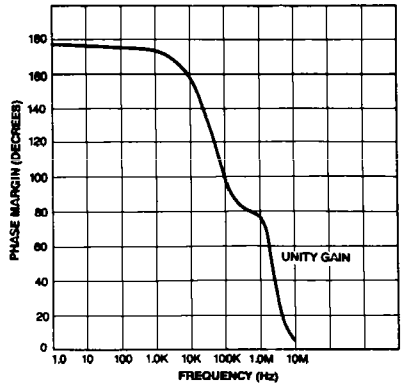


Fig. 7 POSITIVE OUTPUT VOLTAGE SWING vs LOAD RESISTANCE

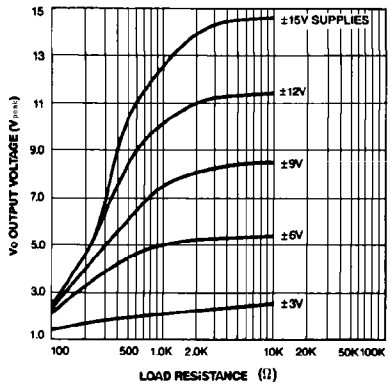


Fig. 8 NEGATIVE OUTPUT VOLTAGE SWING vs LOAD RESISTANCE

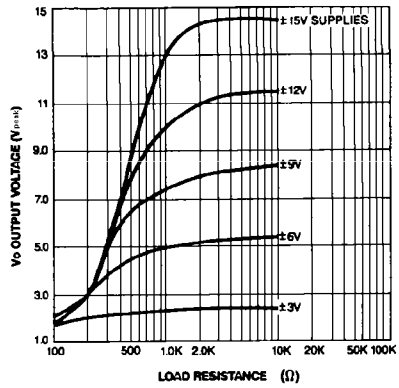
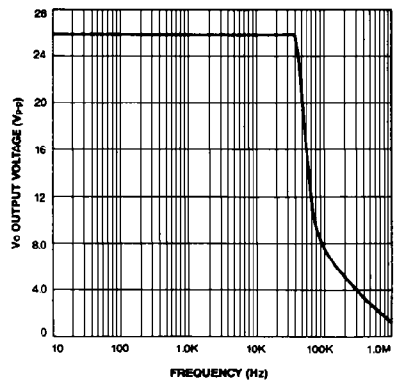


Fig. 9 POWER BANDWIDTH (LARGE SIGNAL SWING VERSUS FREQUENCY)



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