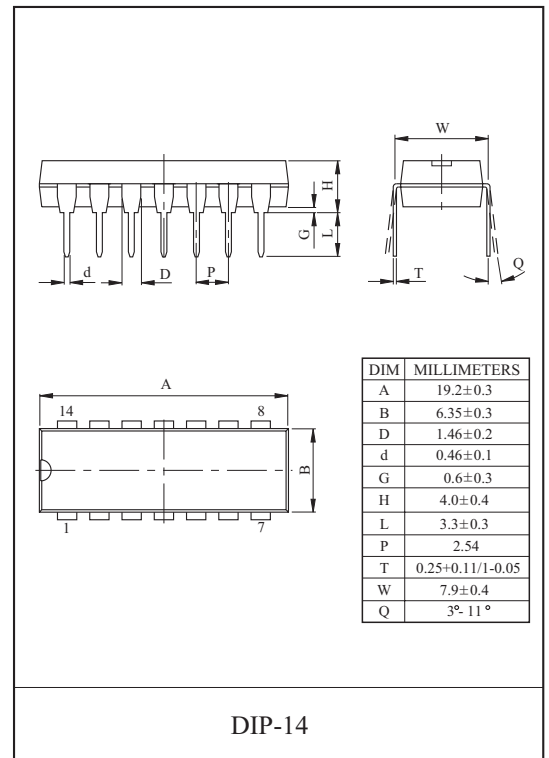
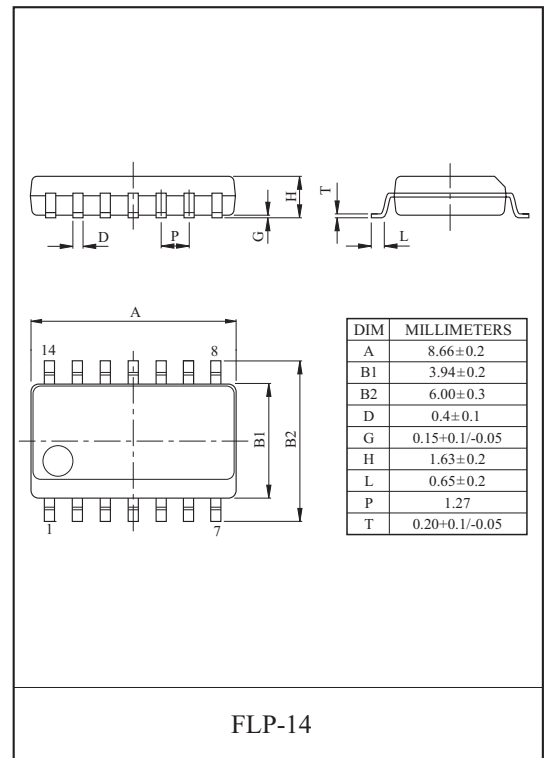
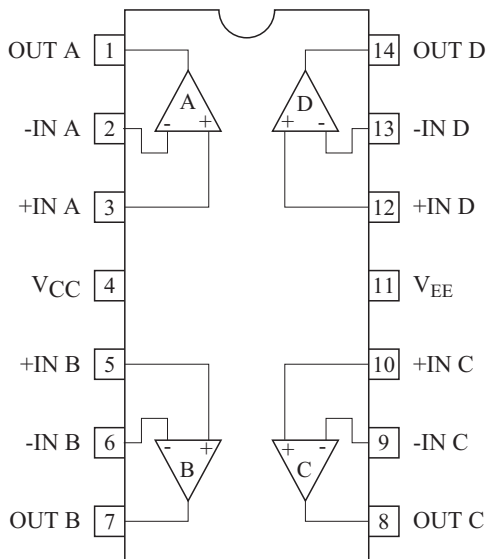


### QUAD OPERATIONAL AMPLIFIER

- In the Linear Mode the Input Common Mode Voltage Range Includes Ground.
- Four Internally Compensated OP Amps are in Single Package.
- Low Power Dissipation and Power Drain Suitable for Battery Operation.
- Differential Input Voltage Range Equal to the Power Supply Voltage.
- Wide Power Supply Voltage Range and Signal Power Supply : Single Supply  $3V_{DC}$  to  $36V_{DC}$   
Dual Supplies  $\pm 1.5V_{DC}$  to  $\pm 18V_{DC}$ .
- Large Output Voltage Swing :  $0V_{DC}$  to  $V_{CC}-1.5V_{DC}$
- Low Input Biasing Current :  $I_I=45nA(Typ.)$ .



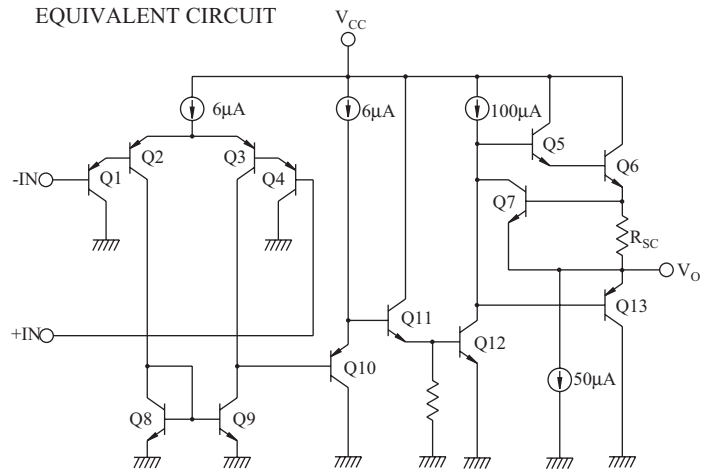
### PIN CONNECTION (TOP VIEW)



# KIA324P/F

## MAXIMUM RATINGS (Ta=25 )

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		$V_{CC}$	36, +18	V
		$V_{EE}$	0, -18	
Differential Input Voltage		$DV_{IN}$	$\pm 36$	V
Input Voltage		$V_{IN}$	-0.3 36	V
Power Dissipation	KIA324P	$P_D$	625	mW
	KIA324F		280	
Operating Temperature		$T_{opr}$	-40 85	
Storage Temperature		$T_{stg}$	-55 125	

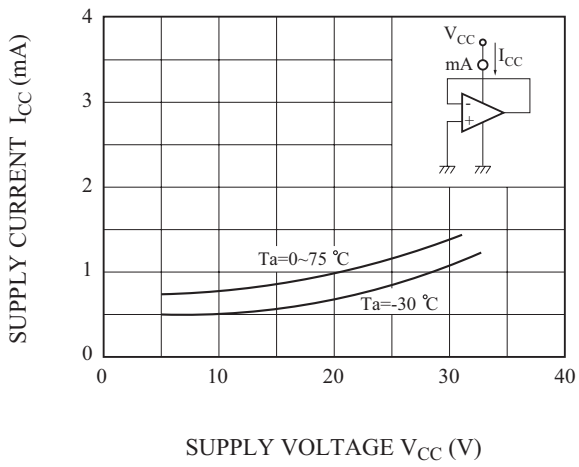


## ELECTRICAL CHARACTERISTICS ( $V_{CC}=5V$ , $V_{EE}=GND$ , $T_a=25$ )

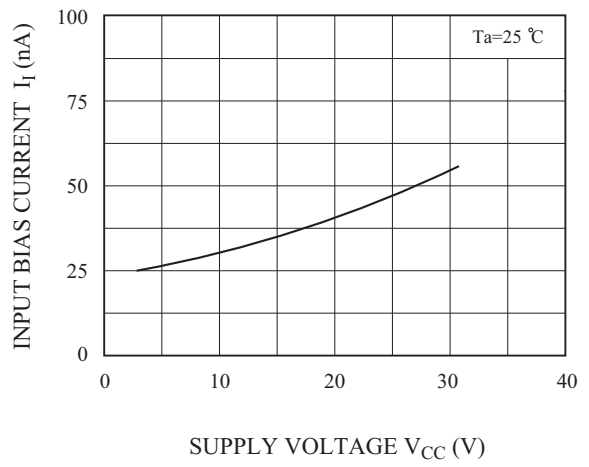
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	$V_{IO}$	$R_g = 10k$	-	2	7	mV
Input Offset Current	$I_{IO}$	-	-	5	30	nA
Input Bias Current	$I_I$	-	-	45	150	nA
Common Mode Input Voltage	$CMV_{IN}$	$V_{CC}=30V$ , $V_{EE}=GND$	0	-	$V_{CC}-1.5$	V
Supply Current	$I_{CC}$ , $I_{EE}$	$R_L = \text{ } , \text{ All OP Amps}$	-	0.7	1.2	mA
Voltage Gain	$G_V$	$R_L = 2k$	86	100	-	dB
Maximum Output Voltage Swing	$V_{OP-P}$	$R_L = 2k$	0	$V_{CC}-1.5$	-	V
Common Mode Input Signal Rejection Ratio	CMRR	-	60	85	-	dB
Supply Voltage Rejection Ratio	SVRR	$R_g = 10k$	60	100	-	dB
Source Current	$I_{source}$	$-IN=0V_{DC}$ , $+IN=1V_{DC}$	20	40	-	mA
Sink Current	$I_{sink}$	$-IN=1V_{DC}$ , $+IN=0V_{DC}$	10	20	-	mA

# KIA324P/F

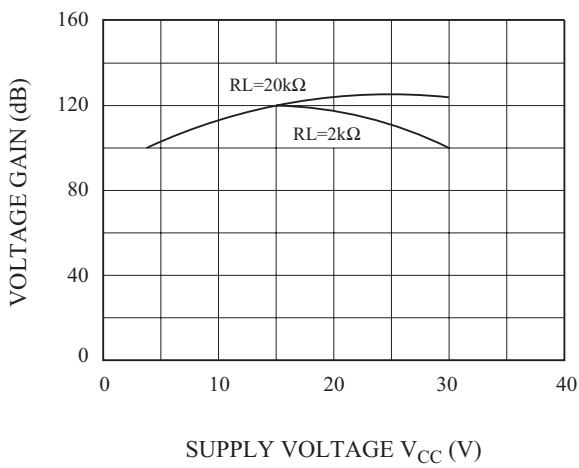
$V_{CC} - I_{CC}$



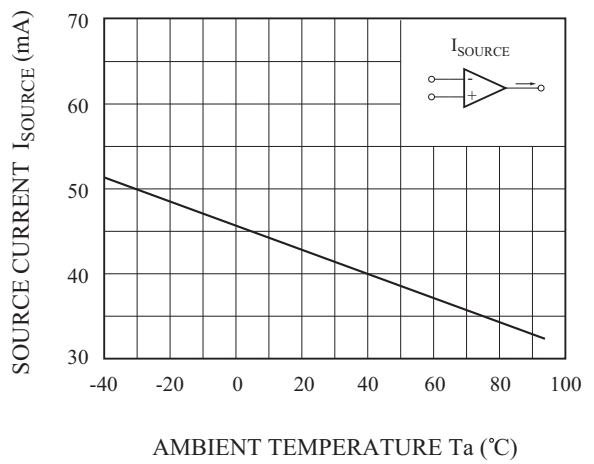
$V_{CC} - I_I$



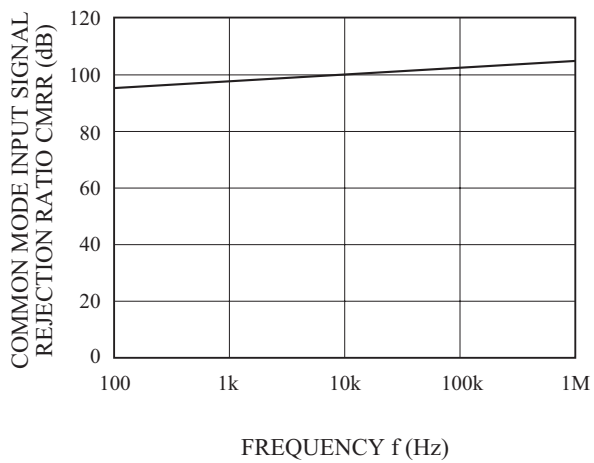
$V_{CC} - G_V$



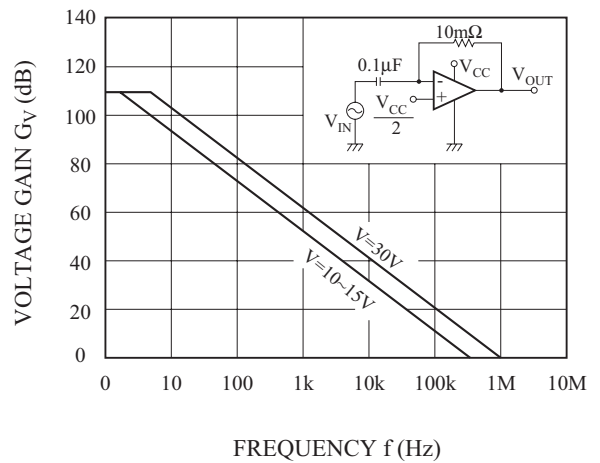
$I_{SOURCE} - T_a$



CMRR - f

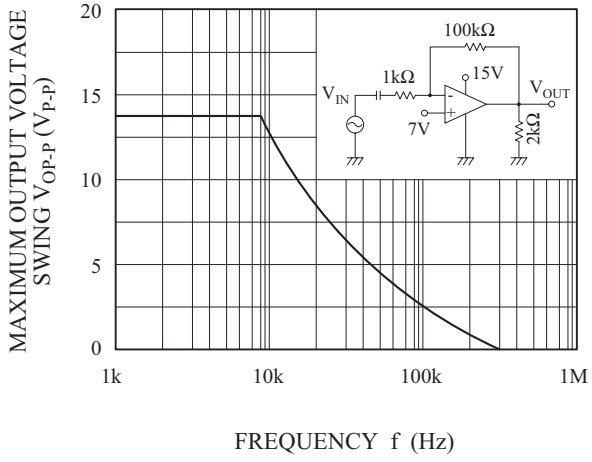


$G_V - f$

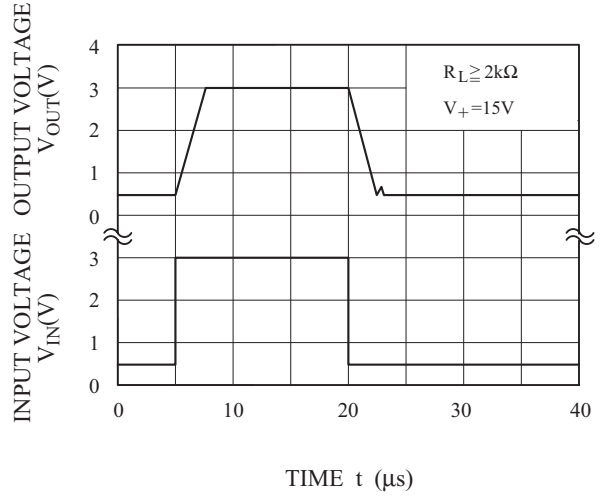


# KIA324P/F

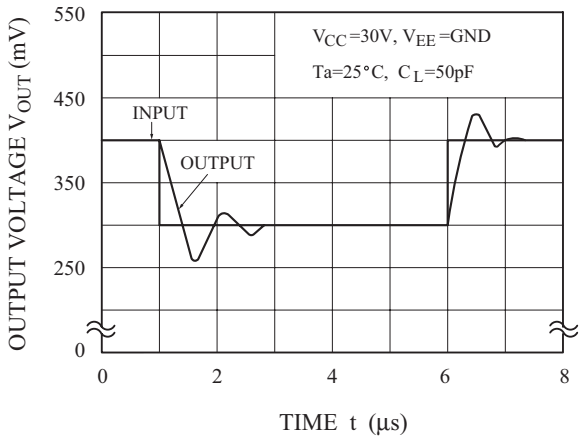
$V_{OP-P} - f$



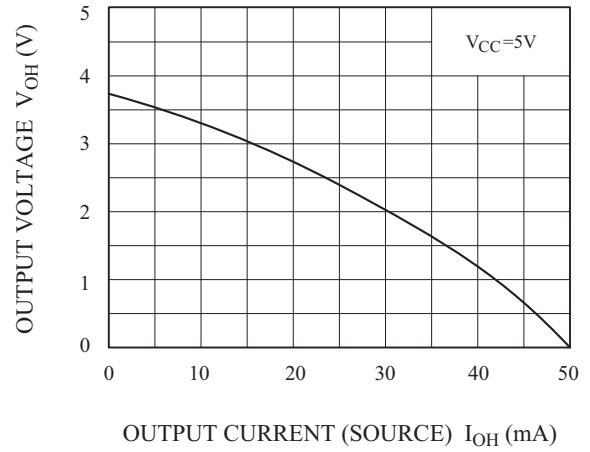
$V_{IN}, V_{OUT} - t$



$V_{OUT} - t$



$V_{OH} - I_{OH}$



$V_{OL} - I_{OL}$

