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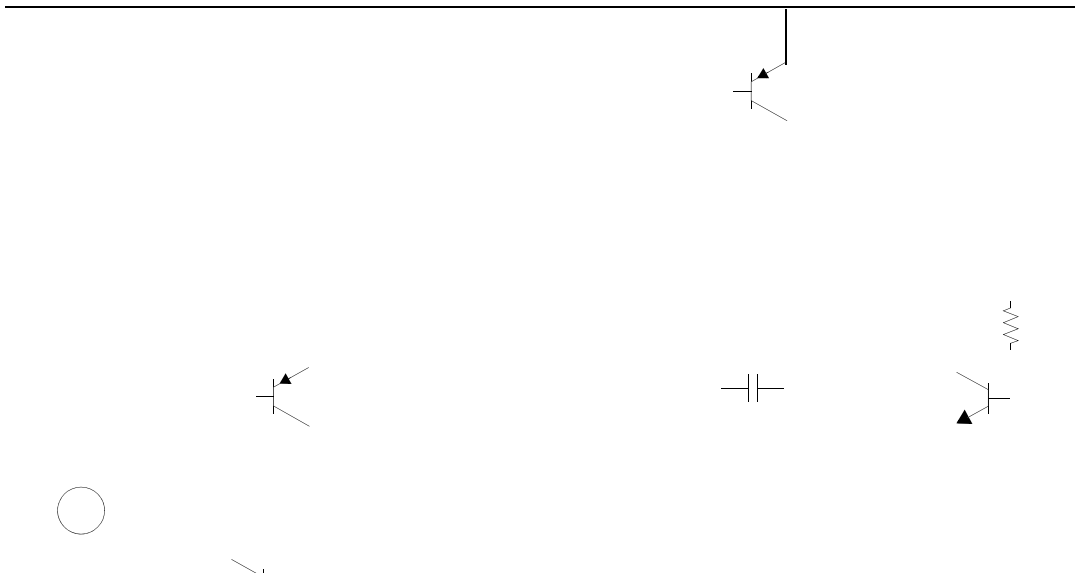
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SEMICONDUCTOR

Rev. 1.0.4

Schematic Diagram

(One section only)



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Electrical Characteristics

($V_{CC} = 5.0V$, $V_{EE} = GND$, $T_A = 25^\circ C$, unless otherwise specified)

Parameter	Symbol	Conditions	KA258			KA358			KA2904			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Input Offset Voltage	V_{IO}	$V_{CM} = 0V$ to $V_{CC} - 1.5V$ $V_{O(P)} = 1.4V$, $R_S = 0\Omega$	-	2.9	5.0	-	2.9	7.0	-	2.9	7.0	mV
Input Offset Current	I_{IO}	-	-	3	30	-	5	50	-	5	50	nA
Input Bias Current	I_{BIAS}	-	-	45	150	-	45	250	-	45	250	nA
Input Voltage Range	$V_{I(R)}$	$V_{CC} = 30V$ (KA2904, $V_{CC} = 26V$)	0	-	$V_{CC} - 1.5$	0	-	$V_{CC} - 1.5$	0	-	$V_{CC} - 1.5$	V
Supply Current	I_{CC}	$R_L = \infty$, $V_{CC} = 30V$ (KA2904, $V_{CC} = 26V$)	-	0.8	2.0	-	0.8	2.0	-	0.8	2.0	mA
		$R_L = \infty$, $V_{CC} = 5V$	-	0.5	1.2	-	0.5	1.2	-	0.5	1.2	mA
Large Signal Voltage Gain	G_V	$V_{CC} = 15V$, $R_L = 2k\Omega$ $V_{O(P)} = 1V$ to $11V$	50	100	-	25	100	-	25	100	-	V/mV
Output Voltage Swing	$V_{O(H)}$	$V_{CC} = 30V$ $R_L = 2k\Omega$ ($V_{CC} = 26V$ for KA2904)										

Note:

1. This parameter, although guaranteed, is not 100% tested in production.

Electrical Characteristics (Continued)(V_{CC} = 5.0V, V_{EE} = GND, unless otherwise specified)The following specifications apply over the range of -25°C ≤ T_A ≤ +85°C for the KA258; and the 0°C ≤ T_A ≤ +70°C for the KA358; and the -40°C ≤ T_A ≤ +85°C for the KA2904

Parameter	Symbol	Conditions	KA258			KA358			KA2904			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Input Offset Voltage	V _{IO}	V _{CM} = 0V to V _{CC} -1.5V V _{O(P)} = 1.4V, R _S = 0Ω	-	-	7.0	-	-	9.0	-	-	10.0	mV
Input Offset Voltage Drift	ΔV _{IO} /ΔT	R _S = 0Ω	-	7.0	-	-	7.0	-	-	7.0	-	μV/°C
Input Offset Current	I _{IO}	-	-	-	100	-	-	150	-	45	200	nA
Input Offset Current Drift	ΔI _{IO} /ΔT	-	-	10	-	-	10	-	-	10	-	pA/°C
Input Bias Current	I _{BIAS}	-	-	40	300	-	40	500	-	40	500	nA
Input Voltage Range	V _{I(R)}	V _{CC} = 30V (KA2904, V _{CC} = 26V)	0	-	V _{CC} -2.0	0	-	V _{CC} -2.0	0	-	V _{CC} -2.0	V
Large Signal Voltage Gain	G _V	V _{CC} = 15V, R _L = 2.0kΩ V _{O(P)} = 1V to 11V										

Electrical Characteristics (Continued)

(V_{CC} = 5.0V, V

Electrical Characteristics (Continued)(V_{CC} = 5.0V, V_{EE} = GND, unless otherwise specified)The following specification apply over the range of -25°C ≤ T_A ≤ +85°C for the KA258A; and the 0°C ≤ T_A ≤ +70°C for the KA358A

Parameter	Symbol	Conditions	KA258A			KA358A			Unit	
			Min.	Typ.	Max.	Min.	Typ.	Max.		
Input Offset Voltage	V _{IO}	V _{CM} = 0V to V _{CC} -1.5V V _{O(P)} = 1.4V, R _S = 0Ω	-	-	4.0	-	-	5.0	mV	
Input Offset Voltage Drift	ΔV _{IO} /ΔT	-	-	7.0	15	-	7.0	20	μV/°C	
Input Offset Current	I _{IO}	-	-	-	30	-	-	75	nA	
Input Offset Current Drift	ΔI _{IO} /ΔT	-	-	10	200	-	10	300	pA/°C	
Input Bias Current	I _{BIAS}	-	-	40	100	-	40	200	nA	
Input Common-Mode Voltage Range	V _{I(R)}	V _{CC} = 30V	0	-	V _{CC} -2.0	0	-	V _{CC} -2.0	V	
Output Voltage Swing	V _{O(H)}	V _{CC} = 30V	R _L = 2kΩ	26	-	-	26	-	-	V
			R _L = 10kΩ	27	28	-	27	28	-	V
	V _{O(L)}	V _{CC} = 5V, R _L =10kΩ	-	5	20	-	5	20	mV	
Large Signal Voltage Gain	G _V	V _{CC} = 15V, R _L =2.0kΩ V _{O(P)} = 1V to 11V	25	-	-	15	-	-	V/mV	
Output Current	I _{SOURCE}	V _{I(+)} = 1V, V _{I(-)} = 0V V _{CC} = 15V, V _{O(P)} = 2V	10	30	-	10	30	-	mA	
	I _{SINK}	V _{I(+)} = 1V, V _{I(-)} = 0V V _{CC} = 15V, V _{O(P)} = 2V	5	9	-	5	9	-	mA	
Differential Input Voltage	V _{I(DIFF)}	-	-	-	V _{CC}	-	-	V _{CC}	V	

Typical Performance Characteristics

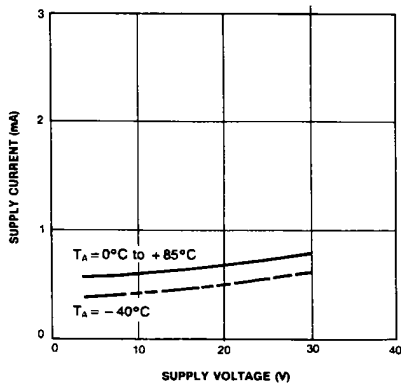


Figure 1. Supply Current vs Supply Voltage

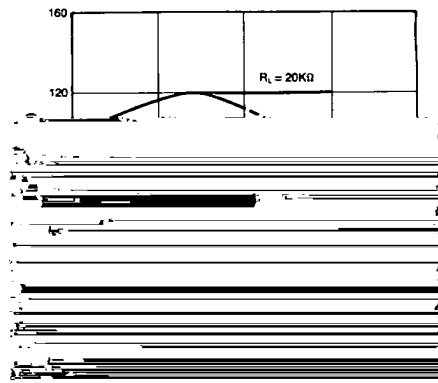


Figure 2. Voltage Gain vs Supply Voltage

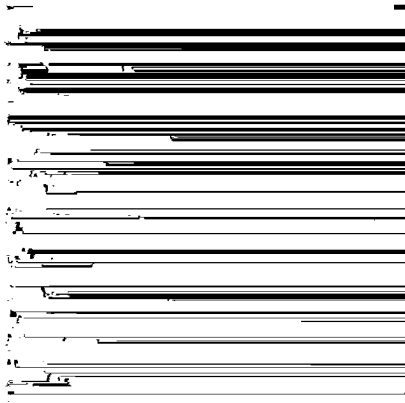


Figure 3. Open Loop Frequency Response

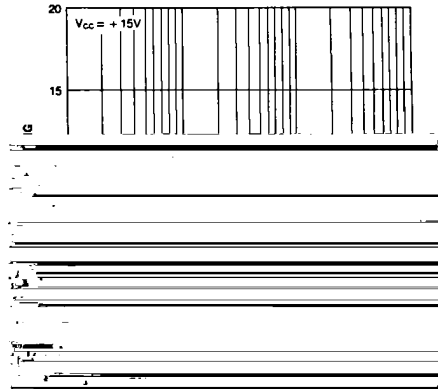


Figure 4. Large Signal Output Swing vs Frequency

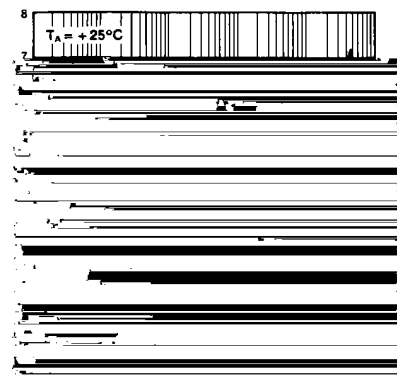


Figure 5. Output Characteristics vs Current Sourcing

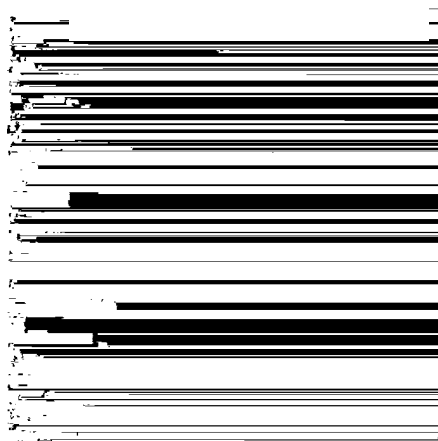


Figure 6. Output Characteristics vs Current Sinking

Typical Performance Characteristics (Continued)

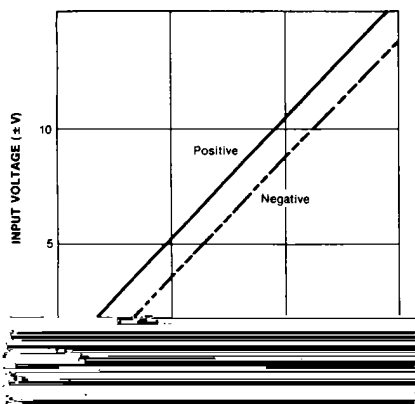


Figure 7. Input Voltage Range vs Supply Voltage

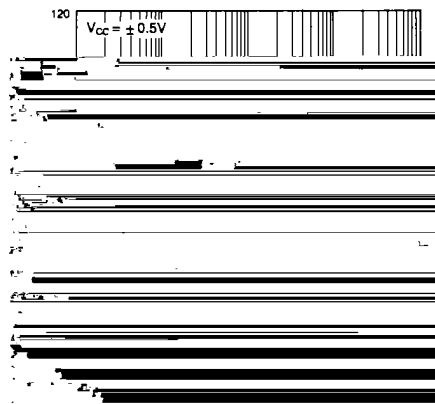


Figure 8. Common-Mode Rejection Ratio

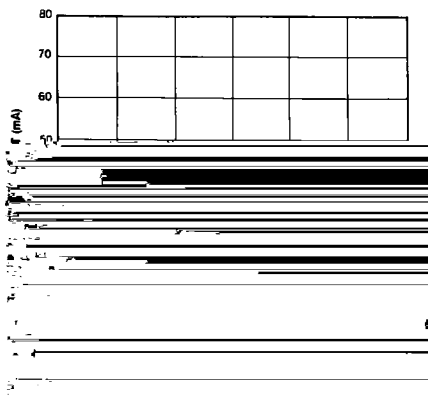


Figure 9. Output Current vs Temperature (Current Limiting)

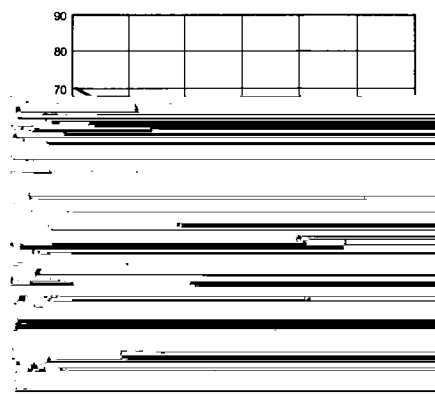


Figure 10. Input Current vs Temperature

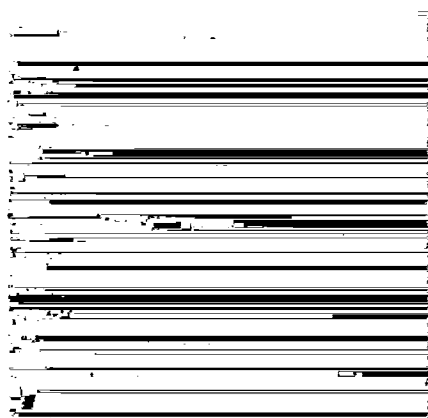


Figure 11. Voltage Follower Pulse Response

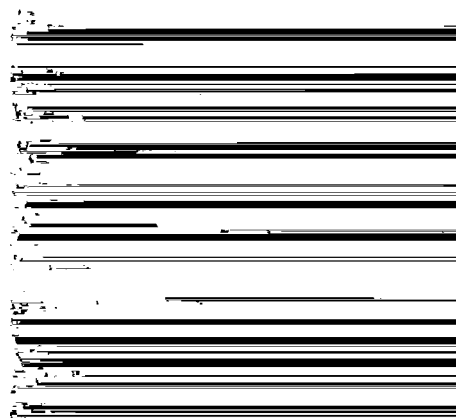
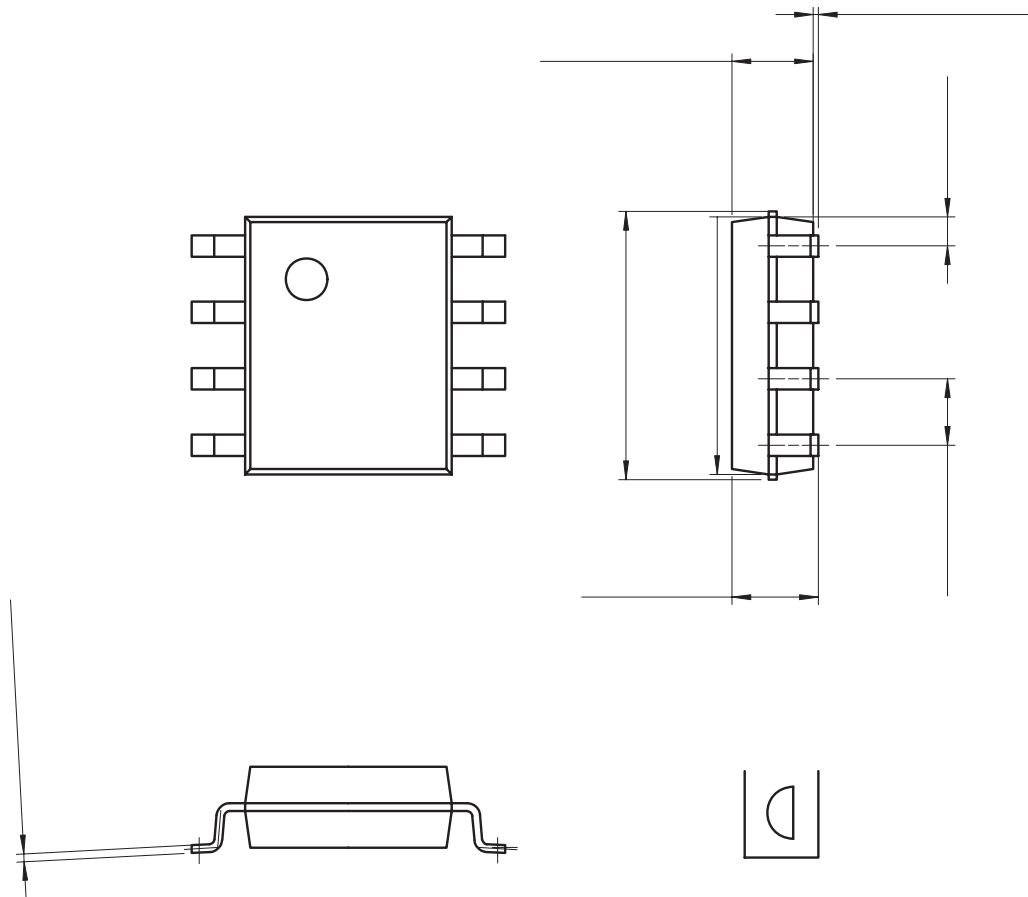


Figure 12. Voltage Follower Pulse Response (Small Signal)

Mechanical Dimensions (Continued)

Package

Dimensions in millimeters



Ordering Information

Product Number	Package	Operating Temperature
KA358	8-DIP	0 ~ +70°C
KA358A		
KA358D	8-SOIC	
KA358AD		
KA258D	8-SOIC	-25 ~ +85°C
KA258AD		
KA2904	8-DIP	-40 ~ +85°C
KA2904D	8-SOIC	


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