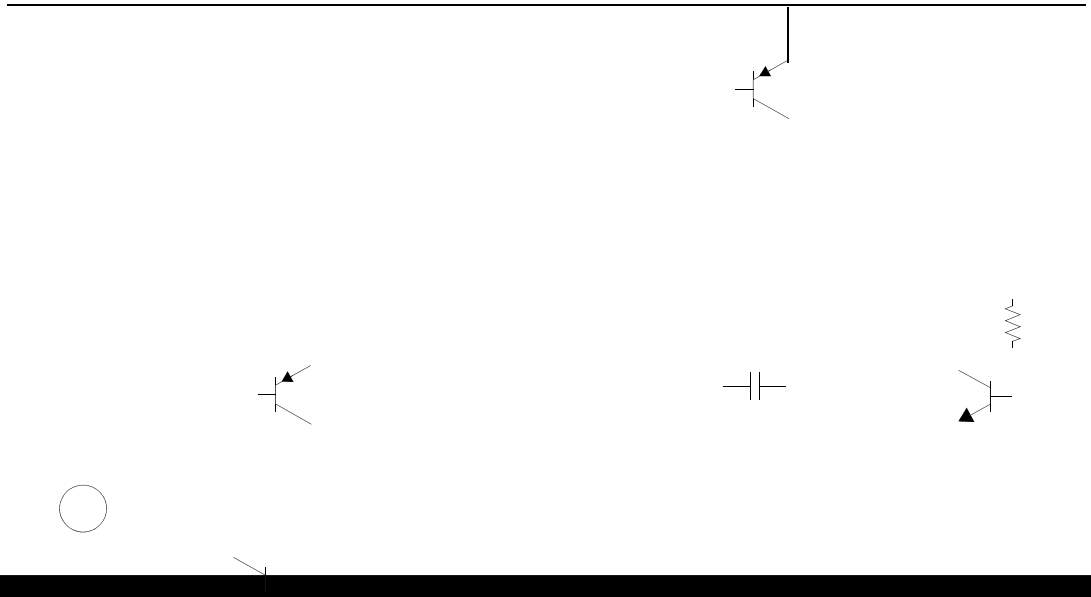
Is Now Part of

To learn more about ON Semiconductor, please visit our website at www.onsemi.com

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

Schematic Diagram

(One section only)



Ab

Par
Sup
Diffe
Input
Outpu VCC≤
Operat
Maximu
Storage

Electrical Characteristics

(V_{CC} = 5.0V, V_{EE} = GND, T_A = 25°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 = 0Ω	-	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 = ∞, V_{CC} = 30V (KA2904, V_{CC} = 26V)	-	0.8	2.0	-	0.8	2.0	-	0.8	2.0	mA
		R_L = ∞, 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 = 2kΩ $V_{O(P)}$ = 1V to 11V	50	100	-	25	100	-	25	100	-	V/mV
Output Voltage Swing	$V_{O(H)}$	V_{CC} = 30V R_L = 2kΩ (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 specification 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	$\Delta V_{IO}/\Delta T$	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	$\Delta I_{IO}/\Delta T$	-	-	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	$\Delta V_{IO}/\Delta T$	-		-	7.0	15	-	7.0	20	µV/°C
Input Offset Current	I_{IO}	-		-	-	30	-	-	75	nA
Input Offset Current Drift	$\Delta I_{IO}/\Delta T$	-		-	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

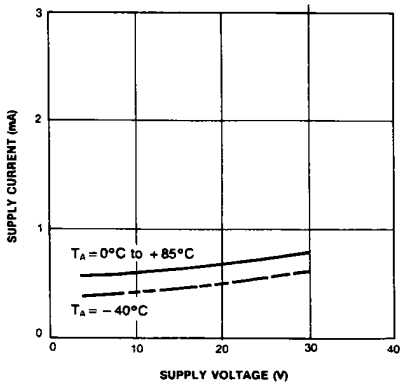


Figure 1. Supply Current vs Supply Voltage

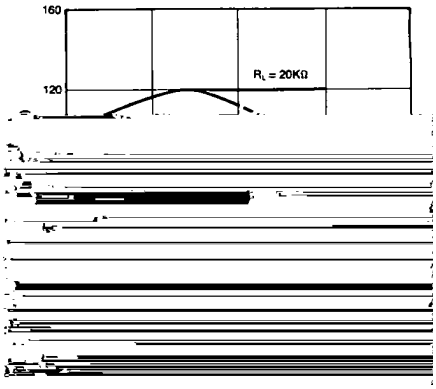


Figure 2. Voltage Gain vs Supply Voltage

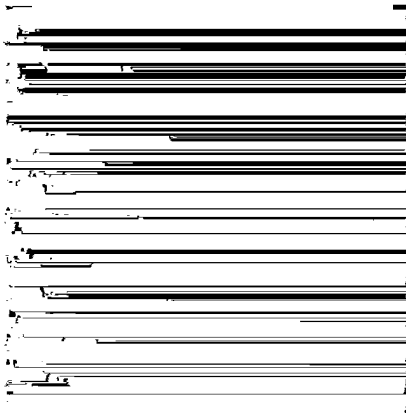


Figure 3. Open Loop Frequency Response

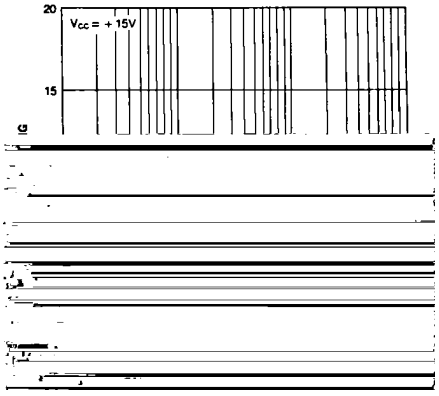


Figure 4. Large Signal Output Swing vs Frequency

Figure 5. Output Characteristics vs Current Sourcing

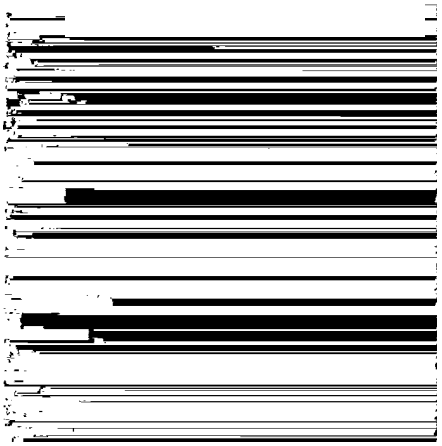


Figure 6. Output Characteristics vs Current Sinking

Typical Performance Characteristics (Continued)

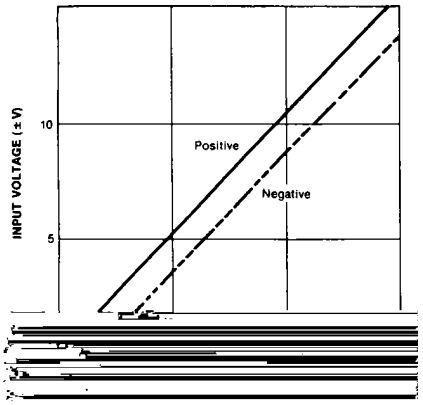


Figure 7. Input Voltage Range vs Supply Voltage

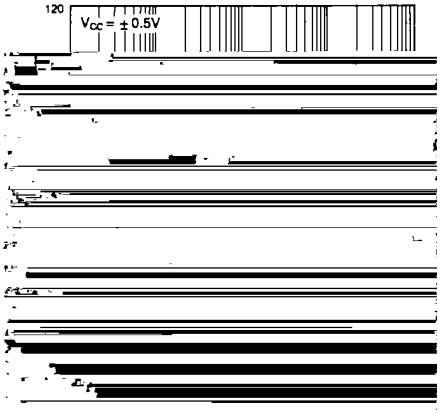


Figure 8. Common-Mode Rejection Ratio

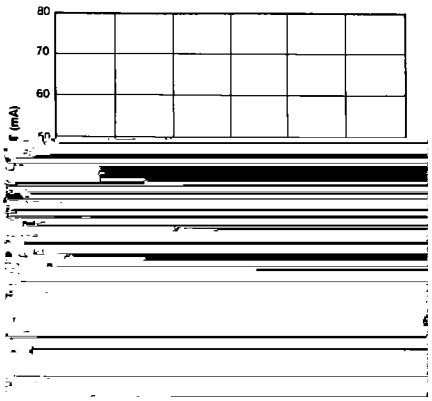


Figure 9. Output Current vs Temperature (Current Limiting)

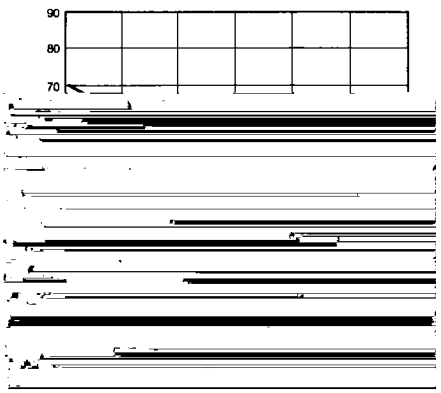


Figure 10. Input Current vs Temperature

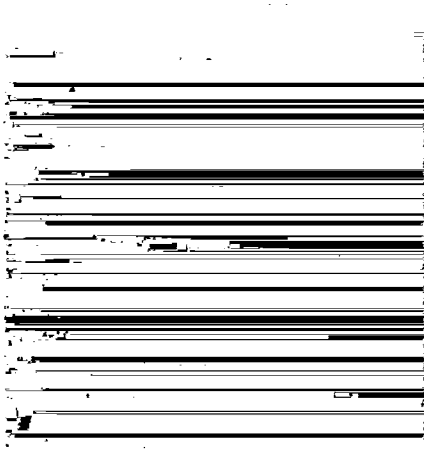


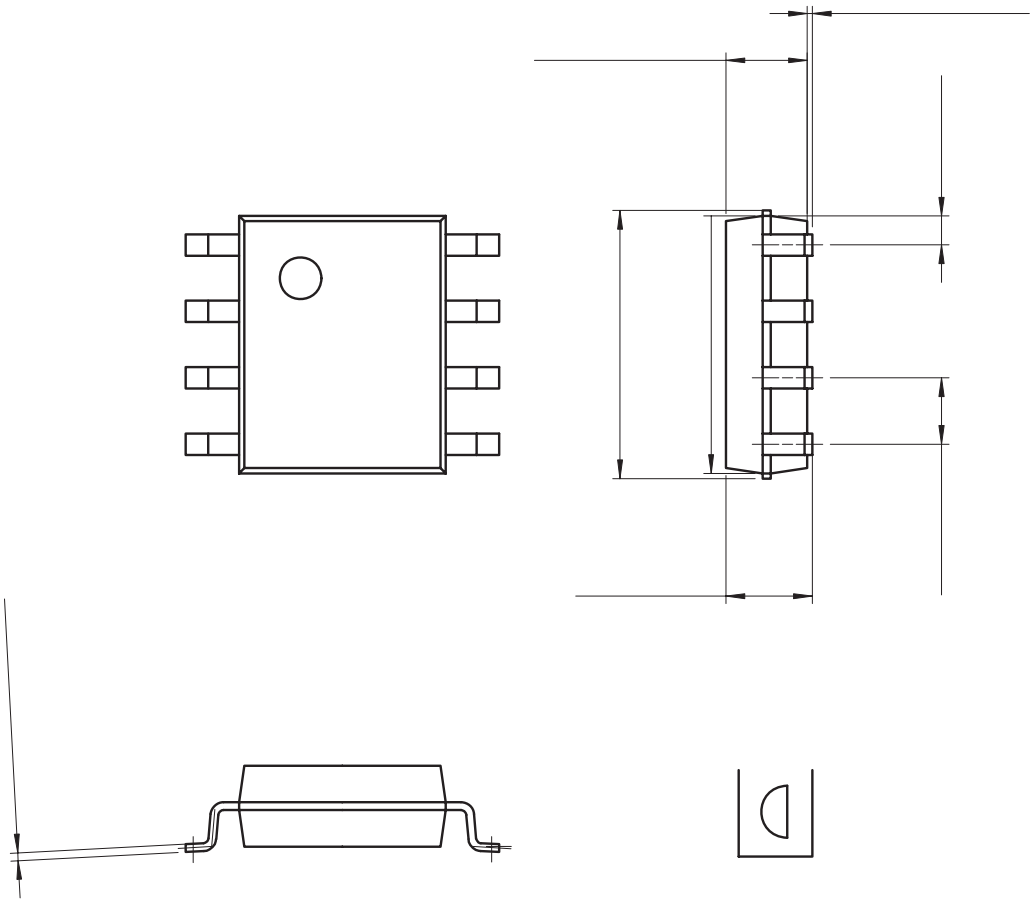
Figure 11. Voltage Follower Pulse Response

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	

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81−3−5817−1050

ON Semiconductor Website: **www.onsemi.com**

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative