Rochester Electronics

Datasheet

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceed the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
    - Class Q Military
    - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
    - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

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KA741

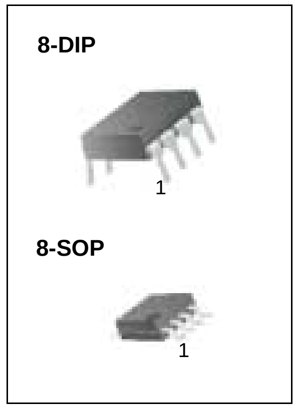
Single Operational Amplifier

Features

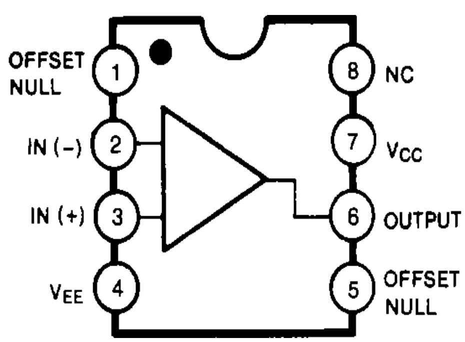
- Short circuit protection
- Excellent temperature stability
- Internal frequency compensation
- High Input voltage range
- Null of offset

Description

The KA741 series are general purpose operational amplifiers. It is intended for a wide range of analog applications. The high gain and wide range of operating voltage provide superior performance in intergrator, summing amplifier, and general feedback applications.

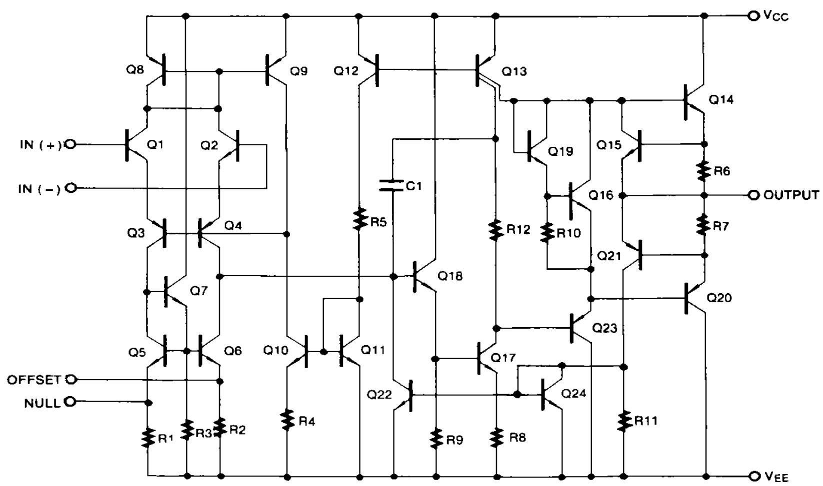


Internal Block Diagram



Rev. 1.0.1

Schematic Diagram



Absolute Maximum Ratings (T_A = 25°C)

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	±18	V
Differential Input Voltage	$V_{I(DIFF)}$	30	V
Input Voltage	V_I	±15	V
Output Short Circuit Duration	-	Indefinite	
Power Dissipation	P_D	500	mW
Operating Temperature Range KA741 KA741I	T_{OPR}	0 ~ + 70 -40 ~ +85	°C
Storage Temperature Range	T_{STG}	-65 ~ + 150	°C

Electrical Characteristics

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

Parameter		Symbol	Conditions		KA741/KA741I Min.	Typ.	Max.	Unit
Input Offset Voltage		V_{IO}	R_S≤10KΩ		-	2.0	6.0	mV
			R_S≤50Ω		-	-	-	
Input Offset Voltage Adjustment Range		$V_{IO(R)}$	V_{CC} = ±20V		-	±15	-	mV
Input Offset Current		I_{IO}	-		-	20	200	nA
Input Bias Current		I_{BIAS}	-		-	80	500	nA
Input Resistance (Note1)		R_I	V_{CC} =±20V		0.3	2.0	-	MΩ
Input Voltage Range		$V_{I(R)}$	-		±12	±13	-	V
Large Signal Voltage Gain		G_V	R_L≥2KΩ	V_{CC} =±20V, $V_{O(P-P)}$ =±15V	-	-	-	V/mV
				V_{CC} =±15V, $V_{O(P-P)}$ =±10V	20	200	-	
Output Short Circuit Current		I_{SC}	-		-	25	-	mA
Output Voltage Swing		$V_{O(P-P)}$	V_{CC} = ±20V	R_L≥10KΩ	-	-	-	V
				R_L≥2KΩ	-	-	-	
			V_{CC} = ±15V	R_L≥10KΩ	±12	±14	-	
				R_L≥2KΩ	±10	±13	-	
Common Mode Rejection Ratio		CMRR	R_S≤10KΩ, V_{CM} = ±12V		70	90	-	dB
			R_S≤50Ω, V_{CM} = ±12V		-	-	-	
Power Supply Rejection Ratio		PSRR	V_{CC} = ±15V to V_{CC} = ±15V R_S≤50Ω		-	-	-	dB
			V_{CC} = ±15V to V_{CC} = ±15V R_S≤10KΩ		77	96	-	
Transient Response	Rise Time	T_R	Unity Gain		-	0.3	-	µs
	Overshoot	OS			-	10	-	%
Bandwidth		BW	-		-	-	-	MHz
Slew Rate		SR	Unity Gain		-	0.5	-	V/µs
Supply Current		I_{CC}	R_L= ∞Ω		-	1.5	2.8	mA
Power Consumption		P_C	V_{CC} = ±20V		-	-	-	mW
			V_{CC} = ±15V		-	50	85	

Note:
1. Guaranteed by design.

Electrical Characteristics

(V_{CC} = ±15V, unless otherwise specified)
The following specification apply over the range of 0°C ≤ T_A ≤ +70 °C for the KA741; and the -40°C ≤ T_A ≤ +85 °C for the KA741I

Parameter	Symbol	Conditions		KA741/KA741I			Unit
				Min.	Typ.	Max.	
Input Offset Voltage	V_{IO}	$R_S \le 50\Omega$		-	-	-	mV
		$R_S \le 10K\Omega$		-	-	7.5	
Input Offset Voltage Drift	$\Delta V_{IO}/\Delta T$	-		-	-		µV/ °C
Input Offset Current	I_{IO}	-		-	-	300	nA
Input Offset Current Drift	$\Delta I_{IO}/\Delta T$	-		-	-		nA/ °C
Input Bias Current	I_{BIAS}	-		-	-	0.8	µA
Input Resistance (Note1)	R_I	V_{CC} = ±20V		-	-	-	MΩ
Input Voltage Range	$V_{I(R)}$	-		±12	±13	-	V
Output Voltage Swing	$V_{O(P-P)}$	V_{CC} =±20V	$R_S \ge 10K\Omega$	-	-	-	V
			$R_S \ge 2K\Omega$	-	-	-	
		V_{CC} =±15V	$R_S \ge 10K\Omega$	±12	±14	-	
			$R_S \ge 2K\Omega$	±10	±13	-	
Output Short Circuit Current	I_{SC}	-		10	-	40	mA
Common Mode Rejection Ratio	CMRR	$R_S \le 10K\Omega$, V_{CM} = ±12V		70	90	-	dB
		$R_S \le 50\Omega$, V_{CM} = ±12V		-	-	-	
Power Supply Rejection Ratio	PSRR	V_{CC} = ±20V to ±5V	$R_S \le 50\Omega$	-	-	-	dB
			$R_S \le 10K\Omega$	77	96	-	
Large Signal Voltage Gain	G_V	$R_S \ge 2K\Omega$	V_{CC} = ±20V, $V_{O(P-P)}$ = ±15V	-	-	-	V/mV
			V_{CC} = ±15V, $V_{O(P.P)}$ = ±10V	15	-	-	
			V_{CC} = ±15V, $V_{O(P-P)}$ = ±2V	-	-	-	

Note :
1. Guaranteed by design.

Typical Performance Characteristics

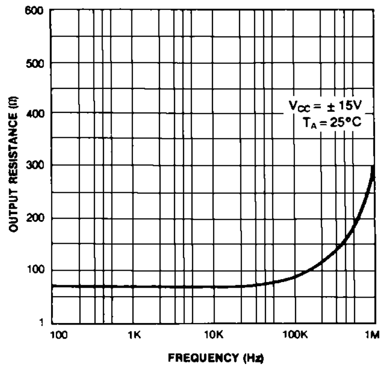


Figure 1. Output Resistance vs Frequency

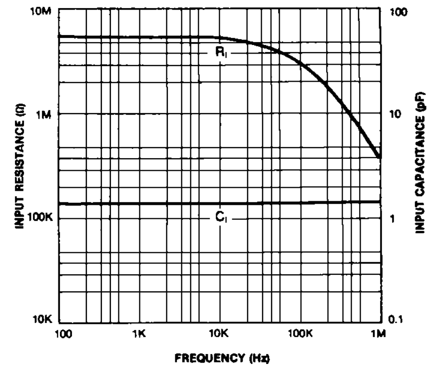


Figure 2. Input Resistance and Input Capacitance vs Frequency

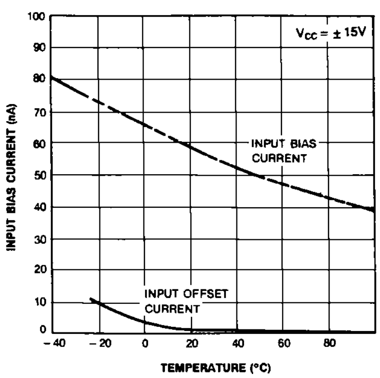


Figure 3. Input Bias Current vs Ambient Temperature

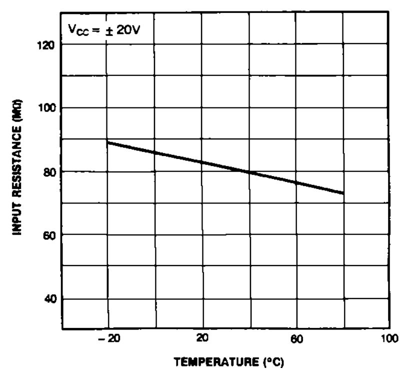


Figure 4. Power Consumption vs Ambient Temperature

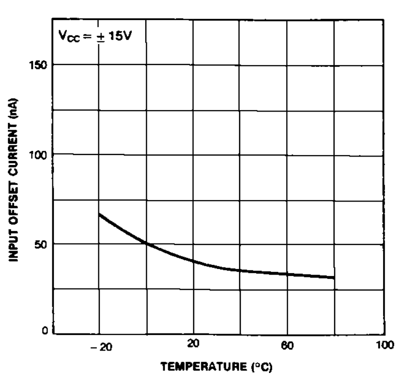


Figure 5. Input Offset Current vs Ambient Temperature

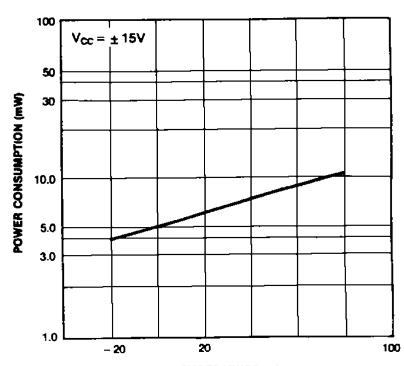


Figure 6. Input Resistance vs Ambient Temperature

Typical Performance Characteristics (continued)

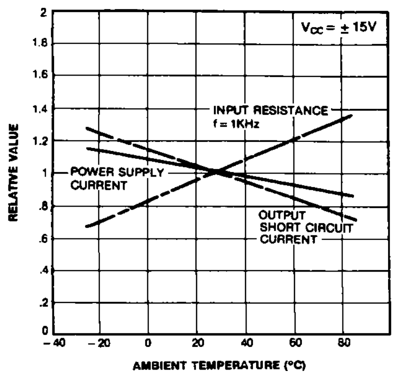


Figure 7. Normalized DC Parameters vs Ambient Temperature

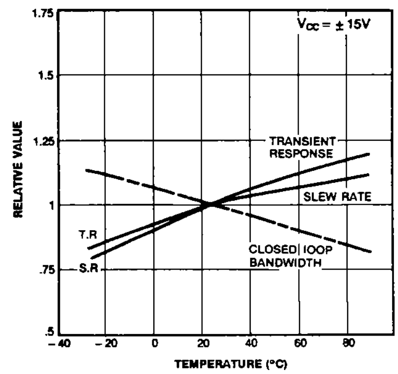


Figure 8. Frequency Characteristics vs Ambient Temperature

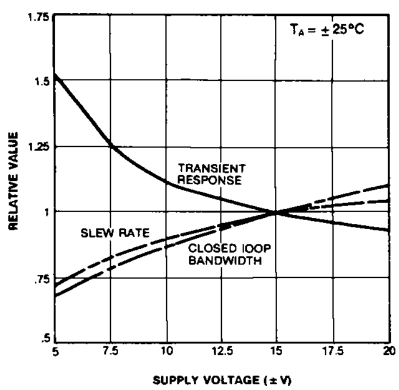


Figure 9. Frequency Characteristics vs Supply Voltage

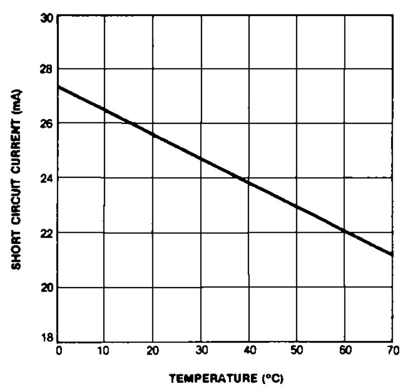


Figure 10. Output Short Circuit Current vs Ambient Temperature

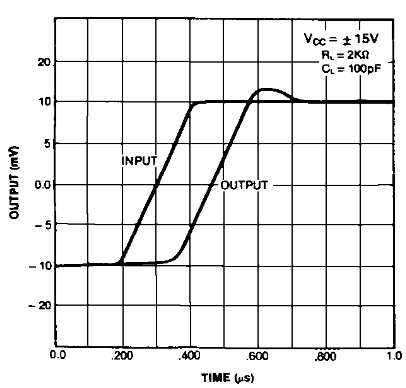


Figure 11. Transient Response

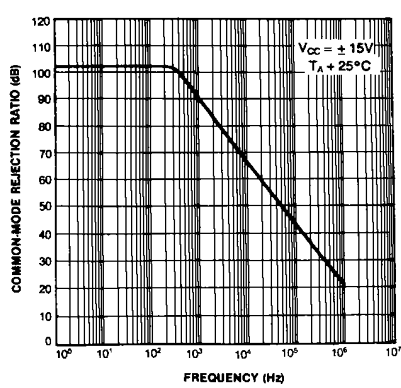


Figure 12. Common-Mode Rejection Ratio vs Frequency

Typical Performance Characteristics (continued)

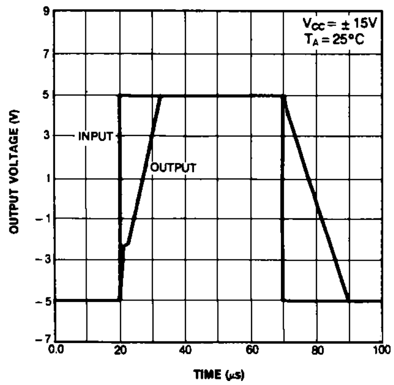


Figure 13. Voltage Follower Large Signal Pulse Response

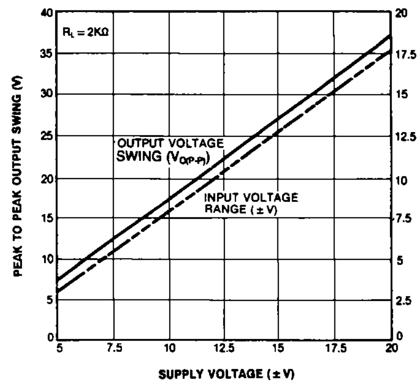
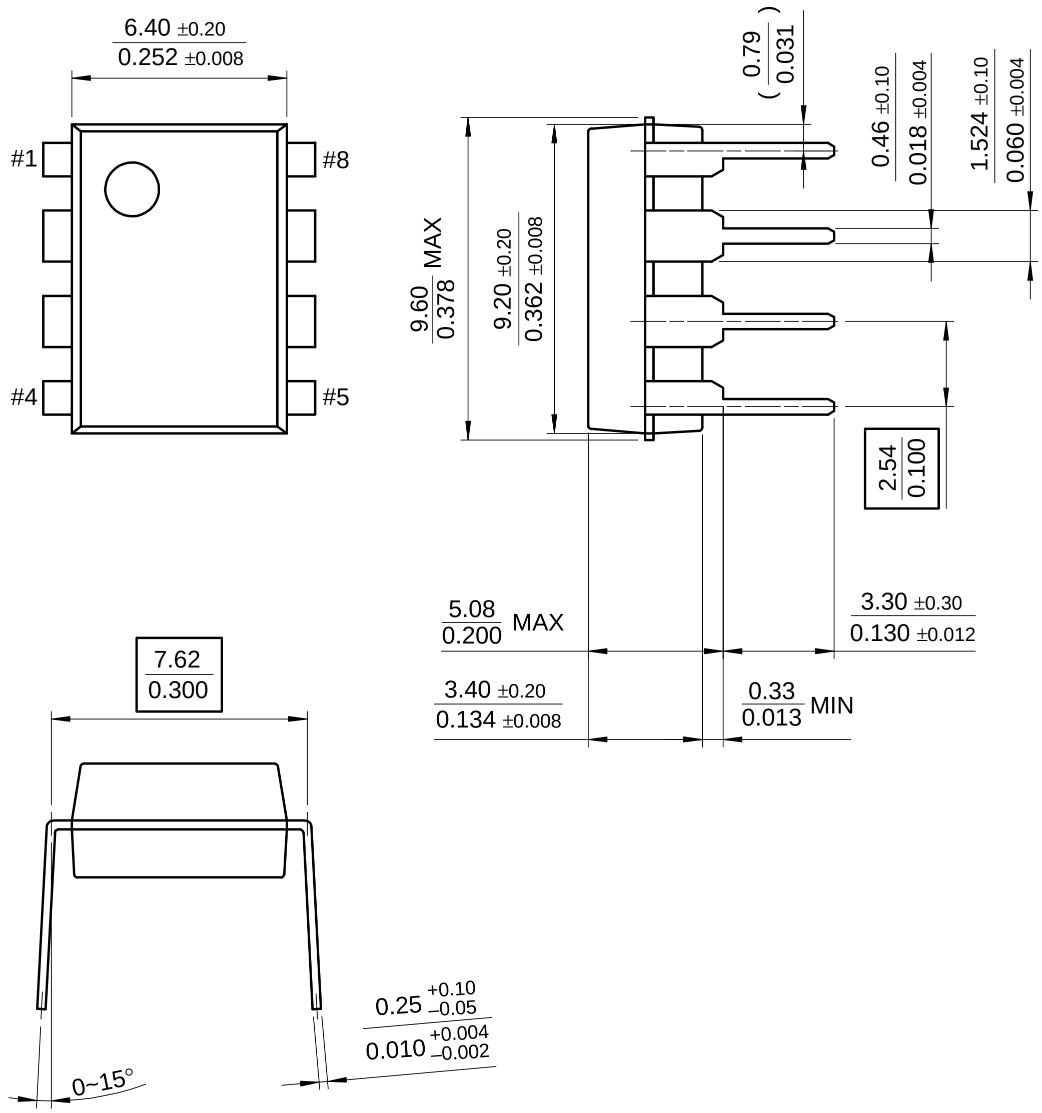


Figure 14. Output Swing and Input Range vs Supply Voltage

Mechanical Dimensions

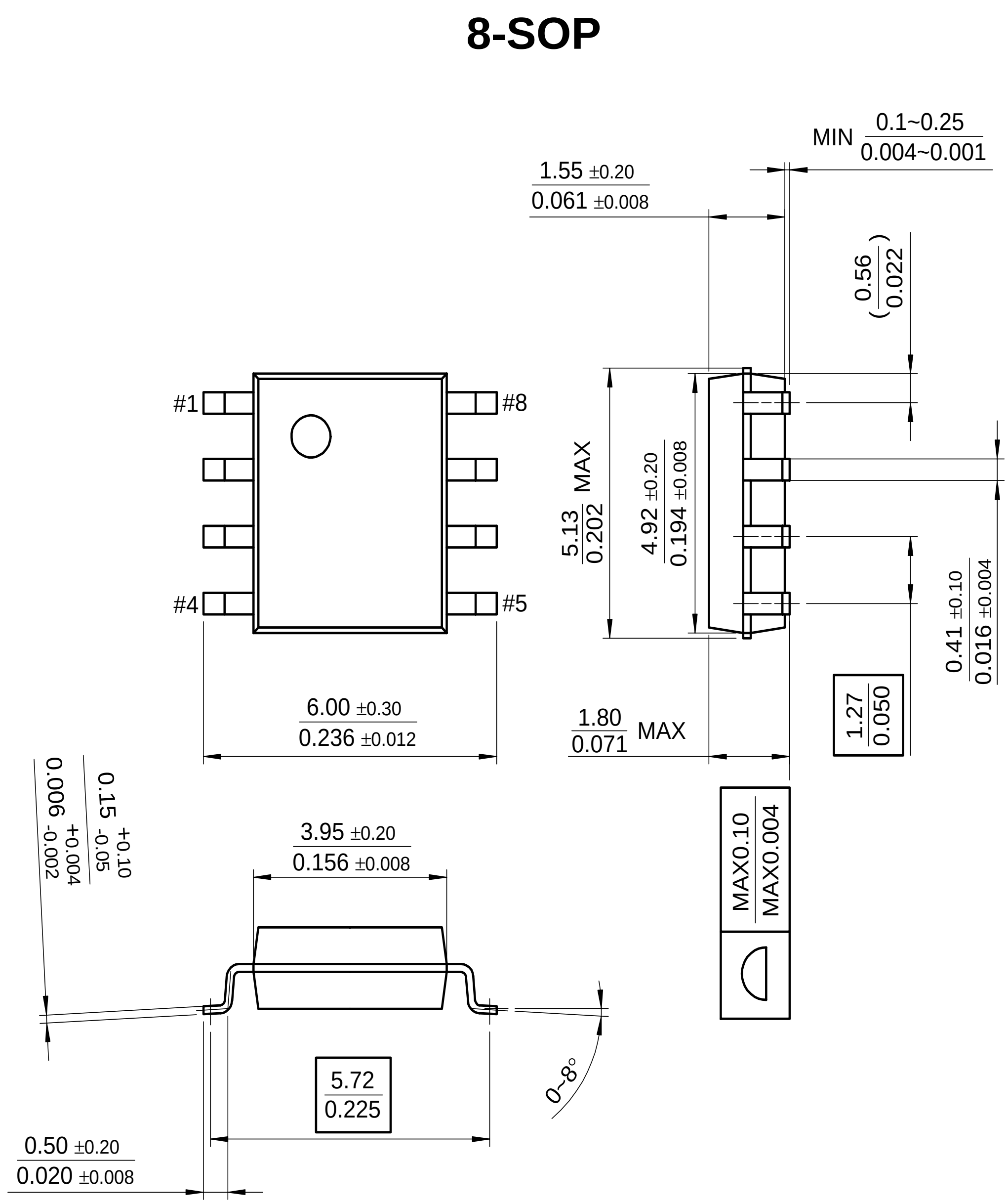
Package

8-DIP



Mechanical Dimensions (Continued)

Package



Ordering Information

Product Number	Package	Operating Temperature
KA741	8-DIP	0 ~ + 70°C
KA741D	8-SOP	
KA741I	8-DIP	-40 ~ + 85°C

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KA741
Single Operational Amplifier

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General description

The KA741 series are general purpose operational amplifiers. It is intended for a wide range of analog applications. The high gain and wide range of operating voltage provide superior performance in intergrator, summing amplifier, and general feedback applications.

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Features

- Short circuit protection
- Excellent temperature stability
- Internal frequency compensation
- High Input voltage range
- Null of offset

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Product status/pricing/packaging

Product	Product status	Package type	Leads	Packing method
KA741DTF	Full Production	SOIC	8	TAPE REEL
KA741I	Full Production	DIP	8	RAIL
KA741	Full Production	DIP	8	RAIL
KA741D	Full Production	SOIC	8	RAIL

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