



## JRC4580 Dual Channel Operational Amplifier

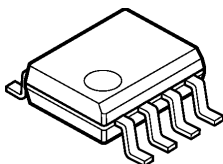
### 1 Introduction

The JRC4580 is the dual operational amplifier, specially designed for improving the tone control, which is most suitable for the audio application. Featuring noiseless, higher gain bandwidth, high output current and low distortion ratio, and it is most suitable not only for acoustic electronic parts of audio pre-amp and active filter, but also for the industrial measurement tools. It is also suitable for the head phone amp at higher output current, and further more, it can be applied for the handy type set operational amplifier of general purpose in application of low voltage single supply type which is properly biased of the input low voltage source.

### 2 Available Package

PART NUMBER	PACKAGE
JRC4580	SOP8

**Note:** For more detailed packaging information, see the part *Pin Configuration and Function* and the part *Mechanical Information*.



SOP-8

Figure 2-1. JRC4580 Package

### 3 Features

- Operating Voltage:  $\pm 2 \sim \pm 18V$
- Low input noise voltage
- Unit Gain Bandwidth: 10MHz (typ.)
- Low distortion: 0.0005% (typ.)
- Slew rate: 6V/ $\mu s$  (typ.)
- Bipolar technology

### 4 Applications

- Active Filter
- Compensation Amplifier
- Audio Preamplifier
- Headphone Amplifiers

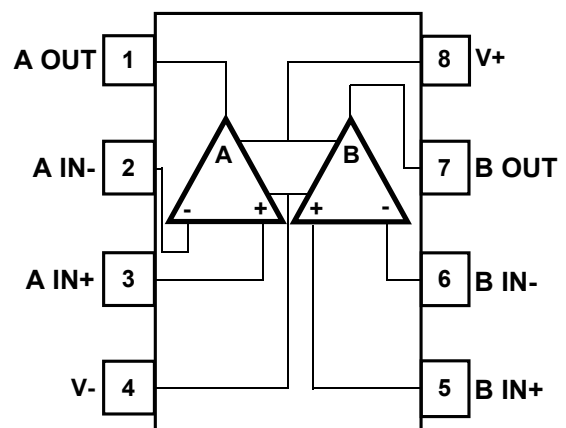


Figure 3-1. Logic Function Diagram

## 5 Pin Configuration and Marking Information

### 5.1 Pin Configuration and Function

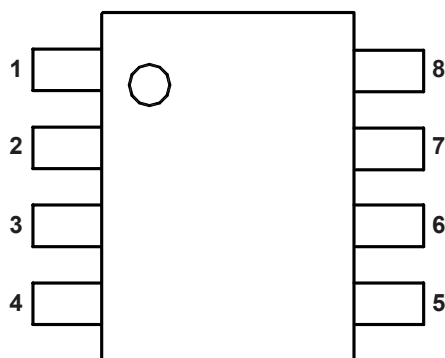


Figure 5-1. SOP-8 Package Top View

PIN NAME	JRC4580	I / O	DESCRIPTION
	SOP-8		
OUT A	1	O	Output of operational amplifier A.
A IN-	2	I	Negative input of of operational amplifier A.
A IN+	3	I	Positive input of of operational amplifier A.
V-	4	Power-	Negative power supply.
B IN+	5	I	Positive input of of operational amplifier B.
B IN-	6	I	Negative input of of operational amplifier B.
B OUT	7	O	Output of operational amplifier B.
V+	8	Power+	Positive power supply.

### 5.2 Marking Information



## 6 Specifications

### 6.1 Absolute Maximum Ratings<sup>(1)</sup>

(over operating free-air temperature range, unless otherwise specified)

CHARACTERISTIC			SYMBOL	VALUE	UNIT
Power supply voltage <sup>(2)</sup>			V+ / V-	±18V	V
Input pin voltage <sup>(2)</sup>			V <sub>IN</sub>	±15V	
Differential Input Voltage <sup>(2)</sup>			V <sub>IN DIF</sub>	±30V	
Maximum power dissipation	JRC4580	SOP8	P <sub>D Max</sub>	Internally Limited <sup>(3)</sup>	W
Maximum junction temperature			T <sub>J Max</sub>	150	°C
Storage temperature			T <sub>stg</sub>	-65 ~ 150	°C
Soldering temperature & time			T <sub>solder</sub>	260°C, 10s	-

(1) Stresses greater than those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, and functional of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute maximum ratings for extended periods may affect device reliability.

(2) All voltages are with respect to network ground terminal.

(3) Refer to *Thermal Information* for details.

### 6.2 Recommended Operating Conditions<sup>(4)</sup>

PARAMETER	SYMBOL	MIN.	NOM.	MAX.	UNIT
Operating power supply voltage	V+ / V-	±2		±18	V
Operating junction temperature	T <sub>J</sub>	-40	-	125	°C
Operating ambient temperature	T <sub>A</sub>	-20	-	85 <sup>(5)</sup>	°C

(4) JSCJ recommends that the operating conditions of the devices used by the user should not exceed the rated values in the *Recommended Operating Conditions* to ensure the stability of the normal operation of the equipment and the reliability of long-term operation. Although working beyond the rated range of the recommended conditions does not mean that the device will fail, it is still necessary to fully evaluate the possible risks caused by working beyond the rated range of the recommended conditions.

(5) JSCJ recommends that the operating junction temperature (OP T<sub>J</sub>) of the device should not exceed the rated value of the recommended operating conditions.

## 6 Specifications

### 6.3 Thermal Information

THERMAL METRIC <sup>(6)</sup>	SYMBOL	JRC4580	UNIT
		SOP-8	
Junction-to-ambient thermal resistance	$R_{\theta JA}$	150.0	°C/W
Reference maximum power dissipation for continuous operation	$P_{D Ref}$	0.83	W

(6) All numbers are typical, and apply for packages soldered directly onto a PCB board in still air.

### 6.4 Electrical Characteristics

JRC4580 ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

CHARACTERISTIC		SYMBOL	TEST CONDITIONS	MIN.	TYP. <sup>(7)</sup>	MAX.	UNIT
Power Supply Current		$I_{CC}$	$R_L = \infty$	-	4.2	9.0	mA
Input Offset Voltage		$V_{IO}$	$R_S < 10\text{k}\Omega$	-	0.3	3.0	mV
Input Offset Current		$I_{IO}$	$V_{CM} = 0\text{V}$	-	5.0	200	nA
Input Bias Current		$I_{BIAS}$	$V_{CM} = 0\text{V}$	-	100	500	nA
Input Current	Source	$I_{SOURCE}$	-	-120	-	-80	mA
	Sink	$I_{SINK}$	-	120	-	150	
Input Common Mode Voltage		$V_{IN(R)}$	-	-	$\pm 12$	$\pm 13$	V
Large Signal Voltage Gain		$G_V$	$V_{OUT P-P} = \pm 10\text{V}, R_L < 2\text{k}\Omega$	80	100	-	dB
Output Voltage Swing		$V_{OUT P-P}$	$R_L > 10\text{k}\Omega$	$\pm 12$	$\pm 14$	-	V
			$R_L > 2\text{k}\Omega$	$\pm 10$	$\pm 13$	-	
Common Mode Rejection Ratio		CMRR	$R_S < 10\text{k}\Omega$	70	100	-	dB
Power Supply Rejection Ratio		PSRR	$R_S < 10\text{k}\Omega$	75	100	-	dB
Conversion Rate		SR	-	-	6	-	V / $\mu\text{s}$
Gain Bandwidth Product		GBP	-	-	10	-	MHz

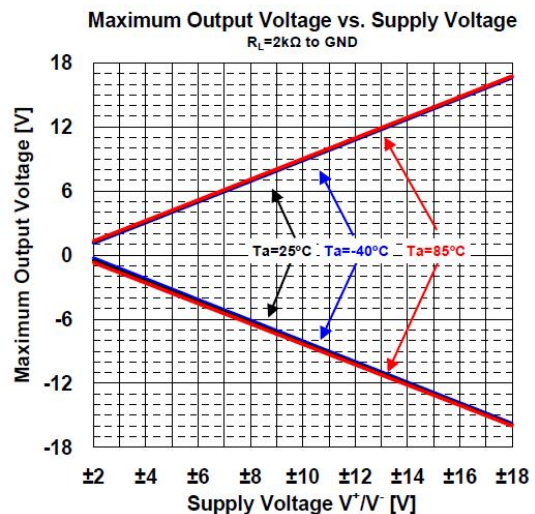
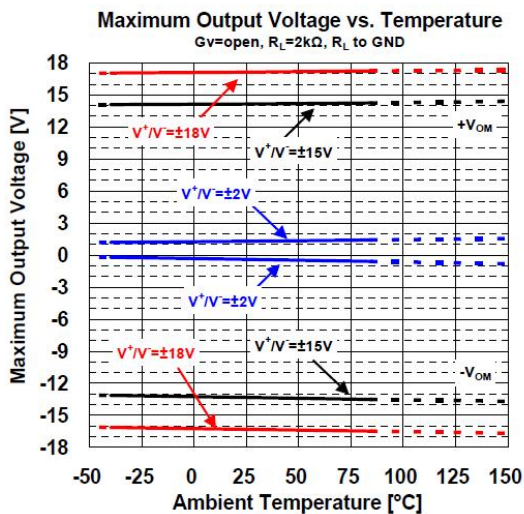
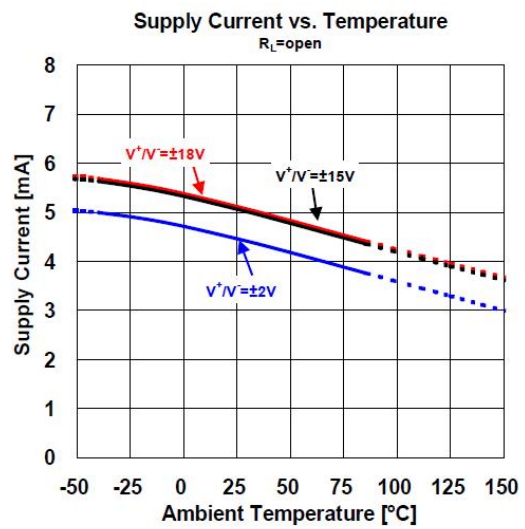
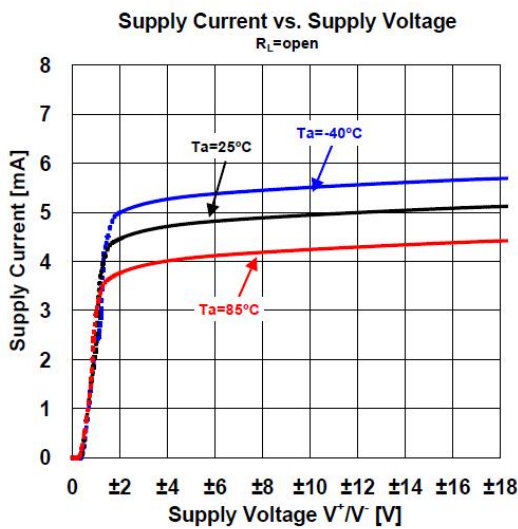
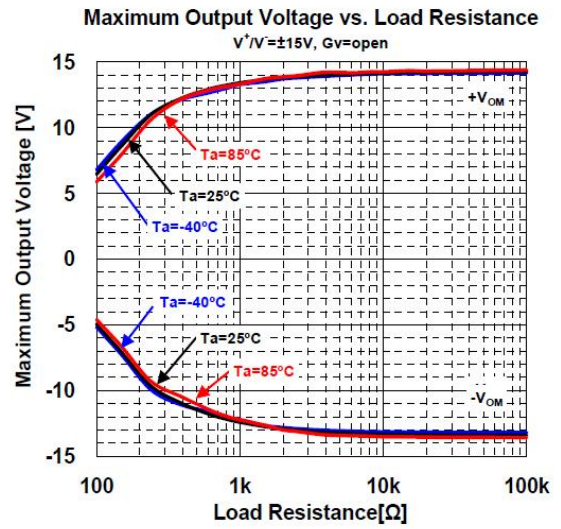
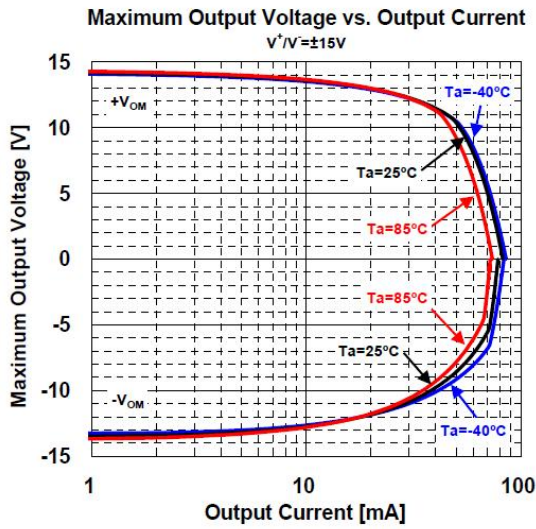
**Note:**

(7) Typical numbers are at 25°C and represent the most likely norm.

## 6 Specifications

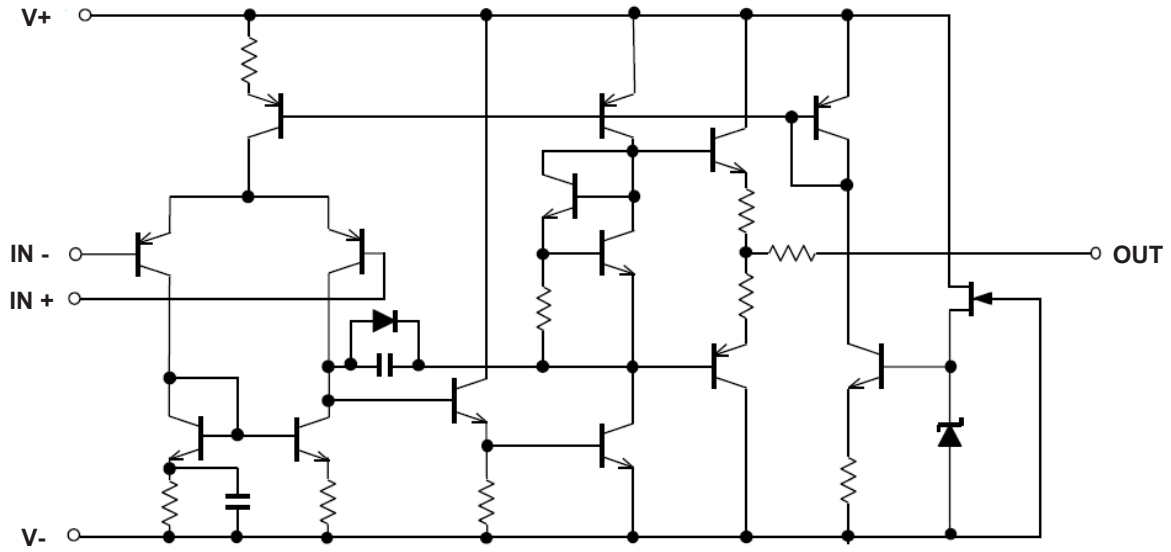
### 6.5 Typical Characteristics

JRC4580 ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)



6 Specifications

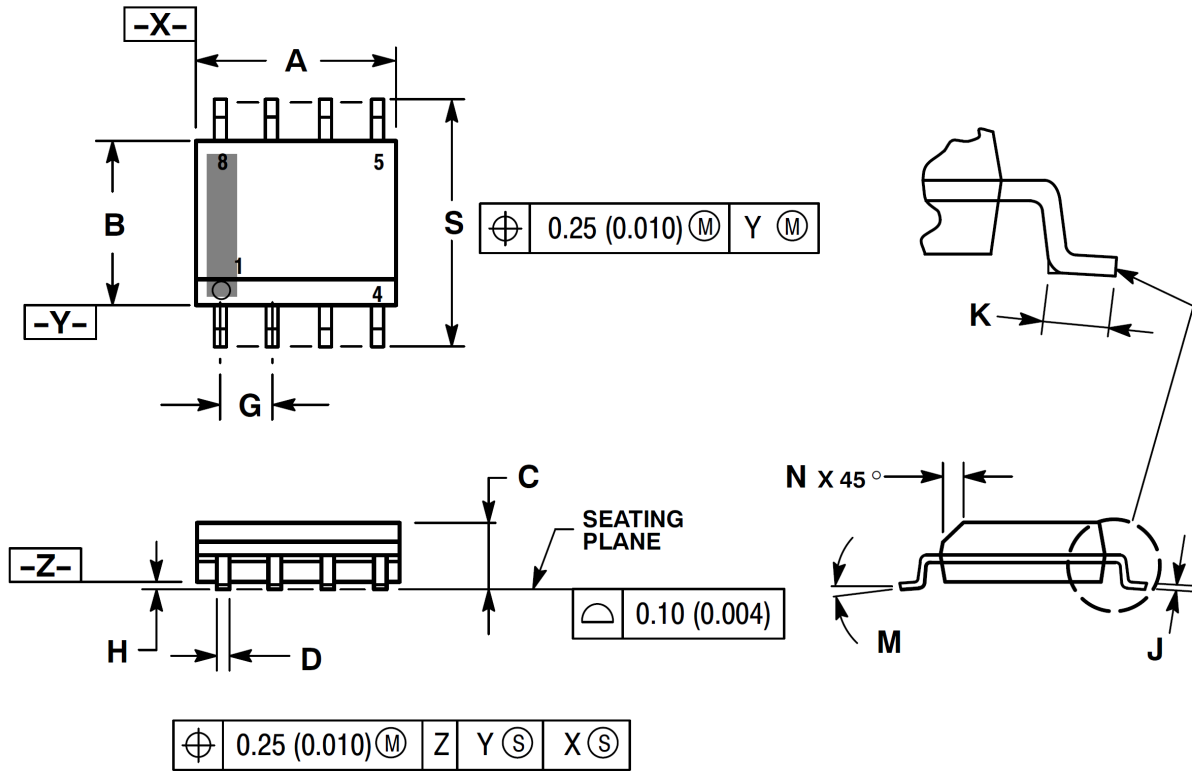
6.6 Representative Schematic Diagram



(for single operational amplifier)

7 Mechanical Information

SOP8 Package Mechanical Information



SYMBOL	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.800	-	5.000	0.189	-	0.197
B	3.800	-	4.000	0.150	-	0.157
C	1.350	-	1.750	0.053	-	0.069
D	0.330	-	0.510	0.013	-	0.020
G	1.270 Bsc.			0.050 Bsc.		
H	0.100	-	0.250	0.004	-	0.010
J	0.190	-	0.250	0.007	-	0.010
K	0.400	-	1.270	0.016	-	0.050
M	0°	-	8°	0°	-	8°
N	0.250	-	0.500	0.010	-	0.020
S	5.800	-	6.200	0.228	-	0.244

## 8 Notes and Revision History

### 8.1 Associated Product Family and Others

To view other products of the same type or IC products of other types, please click the official website of JSCJ -- <https://www.jscj-elec.com> for more details.

### 8.2 Notes

#### Electrostatic Discharge Caution



This IC may be damaged by ESD. Relevant personnel shall comply with correct installation and use specifications to avoid ESD damage to the IC. If appropriate measures are not taken to prevent ESD damage, the hazards caused by ESD include but are not limited to degradation of integrated circuit performance or complete damage of integrated circuit. For some precision integrated circuits, a very small parameter change may cause the whole device to be inconsistent with its published specifications.

### 8.3 Revision History

May 2024, released JRC4580 rev - 1.0.

# DISCLAIMER

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