

DESCRIPTION

The RS8031, RS8032, RS8034, families of products offer low voltage operation and rail-to-rail input and output, as well as excellent speed/power consumption ratio, providing an excellent bandwidth (15kHz) and slew rate of 7.5V/ms. The op-amps are unity gain stable and feature an ultra-low input bias current.

The devices are ideal for sensor interfaces, active filters and portable applications. The RS8031, RS8032, RS8034 families of operational amplifiers are specified at the full temperature range of -40°C to $+125^{\circ}\text{C}$ under single or dual power supplies of 1.4V to 5.5V.

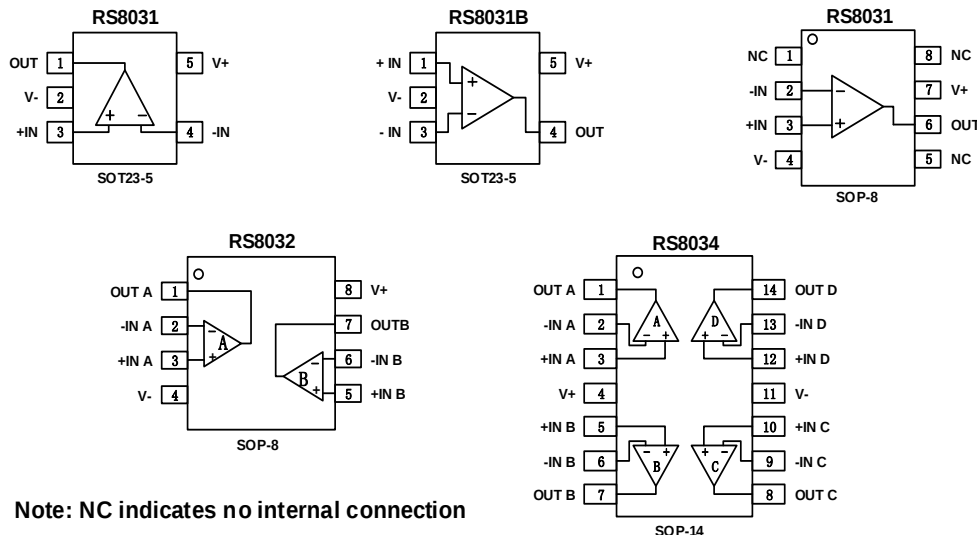
FEATURES

- GAIN BANDWIDTH: 15kHz
- RAIL-TO-RAIL INPUT AND OUTPUT
0.5mV Typical V_{os}
- INPUT VOLTAGE RANGE: -0.1V to $+5.6\text{V}$
with $V_s = 5.5\text{V}$
- SUPPLY RANGE: $+1.4\text{V}$ to $+5.5\text{V}$
- SPECIFIED UP TO $+125^{\circ}\text{C}$
- Micro SIZE PACKAGES: SOT23 -5

APPLICATIONS

- SENSORS
- PHOTODIODE AMPLIFICATION
- WEARABLE PRODUCTS
- TEMPERATURE MEASUREMENT
- BATTERY POWERED SYSTEM

PIN CONFIGURATIONS



15kHz, 750nA, Rail-to-Rail I/O CMOS Operational Amplifier

ELECTRICAL CHARACTERISTICS

(At $T_A = +25^\circ\text{C}$, $V_S = 5.0\text{V}$, $R_L = 1\text{M}\Omega$ connected to $V_S/2$, and $V_{OUT} = V_S/2$, unless otherwise noted.)

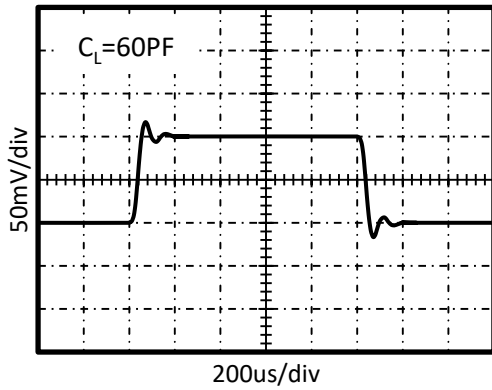
PARAMETER		CONDITIONS	RS8031,RS8032,RS8034			UNITS
			MIN	TYP	MAX	
V_S	Operating Voltage Range		1.4		5.5	V
I_Q	Quiescent Current/Amplifier			750	1500	nA
PSRR	Power-Supply Rejection Ratio	$V_S = 2.5\text{V to } 5.5\text{V}$, $V_{cm} = (V_-) + 0.5\text{V}$	62	70		dB
V_{OS}	Input Offset Voltage	$V_{cm} = V_S/2$		0.5	3	mV
$\Delta V_{OS}/\Delta T$	Input Offset Voltage Drift	$V_{cm} = V_S/2$, $-40^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$		2.3		$\mu\text{V}/^\circ\text{C}$
I_B	Input Bias Current			1	10	pA
I_{OS}	Input Offset Current			1	10	pA
V_{cm}	Common-Mode Voltage Range	$V_S = 5.5\text{V}$	-0.1		5.6	V
CMRR	Common-Mode Rejection Ratio	$V_S = 5.5\text{V}$, $V_{cm} = -0.1\text{V to } 4\text{V}$	73	90		dB
		$V_S = 5.5\text{V}$, $V_{cm} = -0.1\text{V to } 5.6\text{V}$	60	83		dB
AOL	Open-Loop Voltage Gain	$V_S = 1.4\text{V}$, $R_L = 50\text{K}\Omega$, $V_O = V_S - 0.1\text{V}$	85	102		dB
		$V_S = 5.0\text{V}$, $R_L = 50\text{K}\Omega$, $V_O = V_S - 0.1\text{V}$	92	106		dB
	Output Swing From Rail	$R_L = 50\text{K}\Omega$		5		mV
I_{out}	Output Short-Circuit Current			11		mA
SR	Slew Rate			7.5		V/ms
GBP	Gain-Bandwidth Product			15		kHz
PM	Phase Margin			60		°
$e_{n,p-p}$	Input Voltage Noise	$f = 0.1\text{ Hz to } 10\text{ Hz}$		2.4		μV_{pp}
e_n	Input Voltage Noise Density	$f = 1\text{ kHz}$		160		$\text{nV}/\sqrt{\text{Hz}}$

15kHz, 750nA, Rail-to-Rail I/O CMOS Operational Amplifier

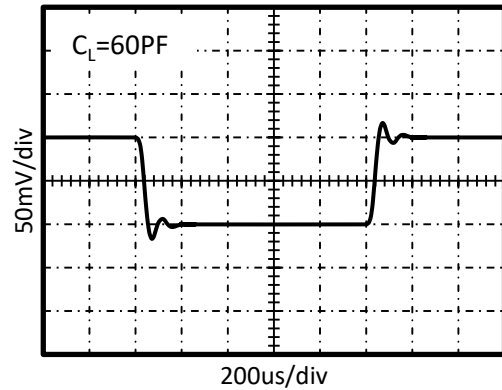
TYPICAL CHARACTERISTICS

At $T_A = +25^\circ\text{C}$, $V_S = 5\text{V}$, $R_L = 1\text{M}\Omega$ connected to $V_S/2$, $C_L = 60\text{pF}$, $V_{CM} = V_S/2$, unless otherwise noted.

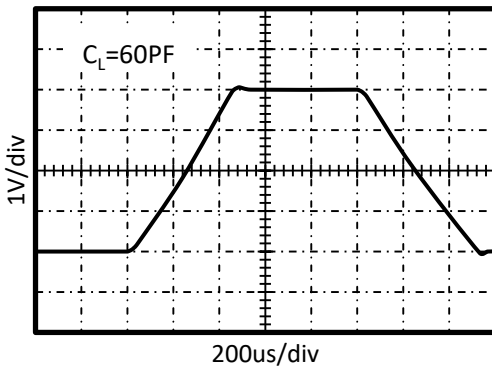
SMALL-SIGNAL STEP RESPONSE



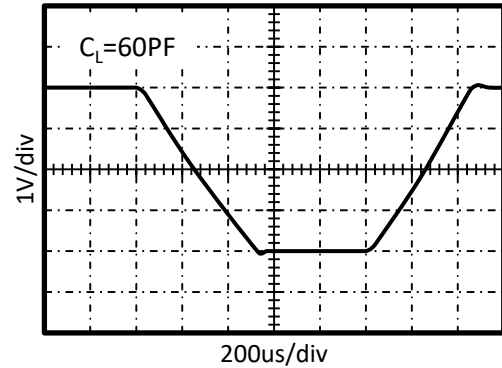
SMALL-SIGNAL STEP RESPONSE



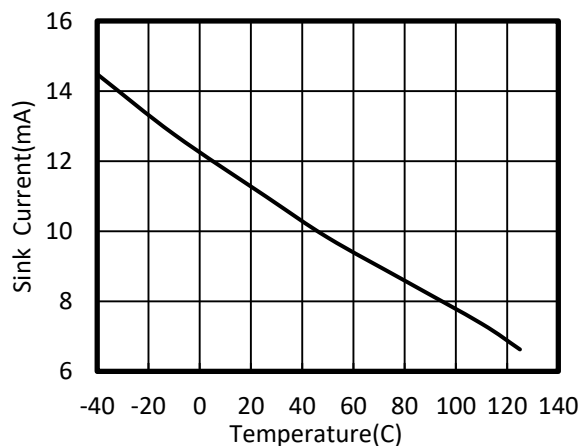
LARGE-SIGNAL STEP RESPONSE



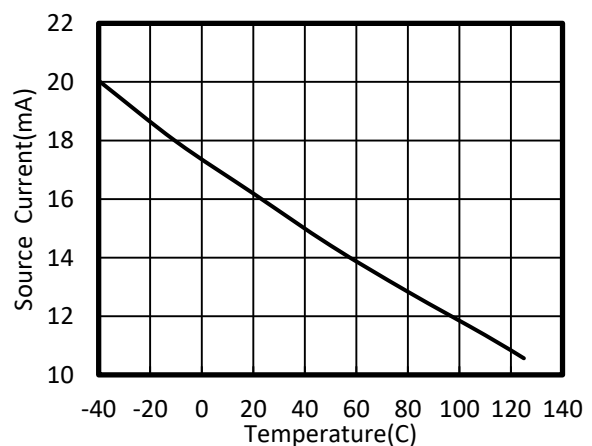
LARGE-SIGNAL STEP RESPONSE



SINK CURRENT vs TEMPERATURE

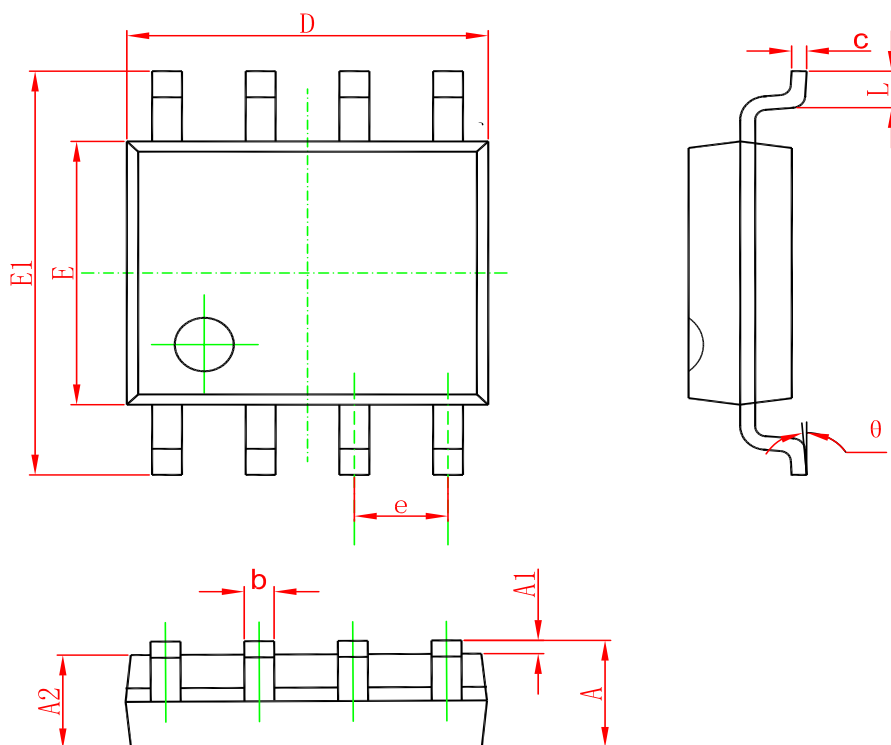


SOURCE CURRENT vs TEMPERATURE



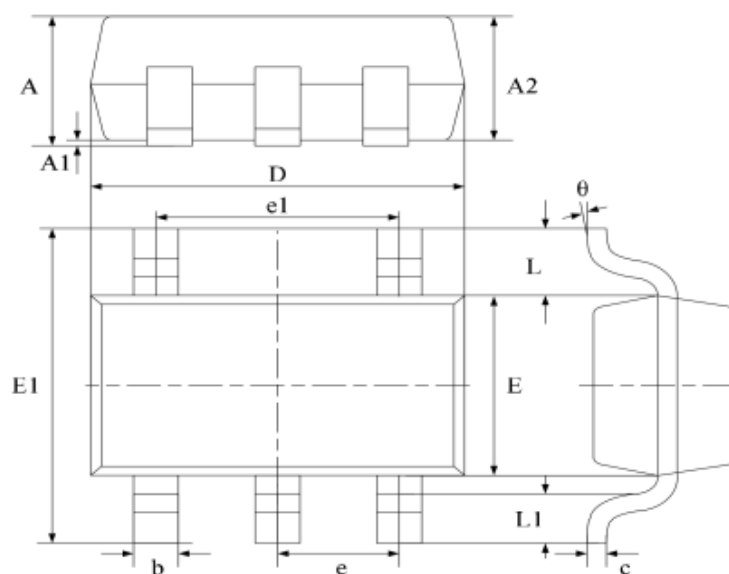
Package Dimension

SOP-8



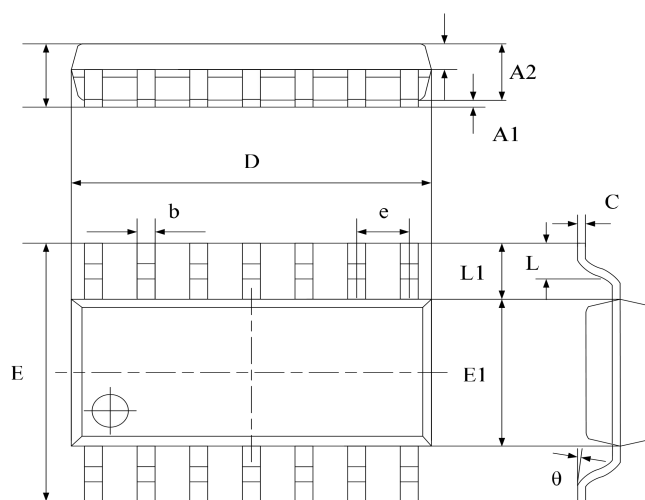
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

SOT23-5



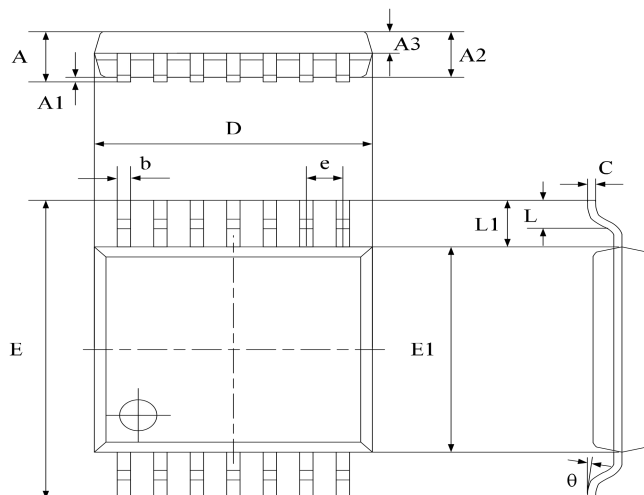
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.040	1.350	0.042	0.055
A1	0.040	0.150	0.002	0.006
A2	1.000	1.200	0.041	0.049
b	0.380	0.480	0.015	0.020
c	0.110	0.210	0.004	0.009
D	2.720	3.120	0.111	0.127
E	1.400	1.800	0.057	0.073
E1	2.600	3.000	0.106	0.122
e	0.950 typ.		0.037 typ.	
e1	1.900 typ.		0.078 typ.	
L	0.700 ref.		0.028 ref.	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

SOP-14



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.450	1.850	0.059	0.076
A1	0.100	0.300	0.004	0.012
A2	1.350	1.550	0.055	0.063
A3	0.550	0.750	0.022	0.031
b	0.406typ.		0.017typ.	
C	0.203typ.		0.008typ.	
D	8.630	8.830	0.352	0.360
E	5.840	6.240	0.238	0.255
E1	3.850	4.050	0.157	0.165
e	1.270 typ.		0.050 typ.	
L1	1.040 ref.		0.041 ref.	
L	0.350	0.750	0.014	0.031
θ	2°	8°	2°	8°

TSSOP-14



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	-	1.200	-	0.0472
A1	0.050	0.150	0.002	0.006
A2	0.900	1.050	0.037	0.043
A3	0.390	0.490	0.016	0.020
b	0.200	0.290	0.008	0.012
C	0.130	0.180	0.005	0.007
D	4.860	5.060	0.198	0.207
E	6.200	6.600	0.253	0.269
E1	4.300	4.500	0.176	0.184
e	0.650 typ.		0.0256 typ.	
L1	1.000 ref.		0.0393 ref.	
L	0.450	0.750	0.018	0.031
θ	0°	8°	0°	8°

Ordering information

Order code	Package	Baseqty	Deliverymode	Marking
UMW RS8031XF	SOT23-5	3000	Tape and reel	8031
UMW RS8032XK	SOP-8	2500	Tape and reel	RS8032
UMW RS8034XP	SOP-14	2500	Tape and reel	RS8034
UMW RS8034XQ	TSSOP-14	4000	Tape and reel	RS8034