

10.7 Ω , SPDT Analog Switch in TSOT23/MSOP/SOIC-8

Features

- Latch-up Proof
- Vss to V_{DD} Analog Signal Range
- Power Supply: ± 4.5 V to ± 25 V, 9 V to 50 V
- Low on Resistance 10.7 Ω
- Outstanding Flatness: 0.01 Ω
- 0.15 Ω R_{ON} Match Between Channels
- Break-before-make Switching Operation
- Specified Temperature: -40 °C to +125 °C

Applications

- Relay Replacement
- Automatic Test Instrumentation
- Data Acquisition
- Industrial Control
- Avionics
- Audio and Video Switching

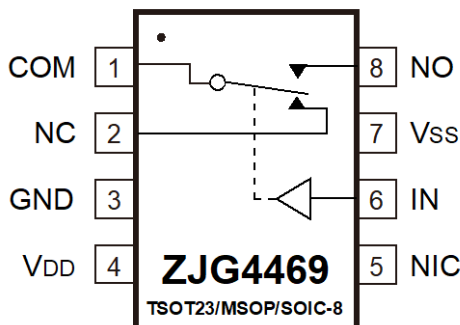
General Description

ZJG4469 is a dual or single-supply, single-pole/double-throw (SPDT) analog switch. It can operate from a single +9 V to +50 V supply, or from ± 4.5 V to ± 25 V dual supplies. It features on-resistance of 10.7 Ω .

The ZJG4469 can work with rail-to-rail analog signals, and conducts analog or digital signals in either direction. It offers a switch transition time of 170 ns, and a guaranteed break-before-make switching time of 85 ns (bipolar supply). The off-leakage current is as low as 500 pA max at 25 °C.

The ZJG4469 is available in 8-lead TSOT23, 8-lead MSOP and 8-lead SOIC packages.

Functional Block Diagram



IN	NO	NC
0	OFF	ON
1	ON	OFF

Typical Performance Characteristics

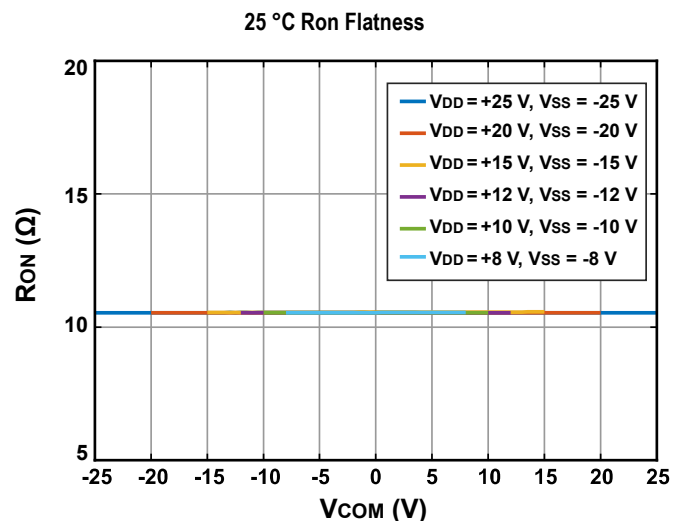


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Version (Release A)¹

Revision History

Dec. 2025 — Release A

Dec. 2024 — Initial

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Pin Configuration and Function Description

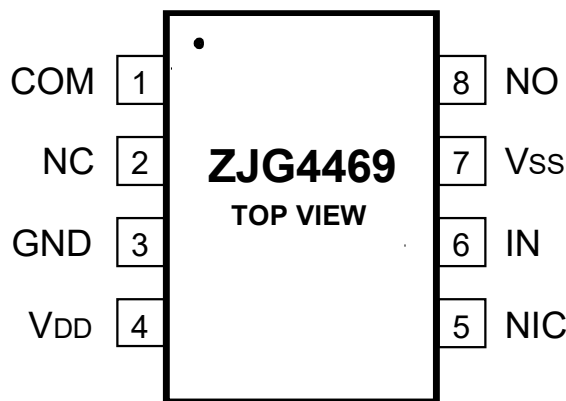


Figure 1. ZJG4469 Pin Configuration in TSOT23/MSOP/SOIC-8

Mnemonic	Pin No.	I/O ¹	Description
COM	1	A/I/O	Analog Switch Common.
NC	2	A/I/O	Normally Closed Switch Pin. NC is connected to COM when IN is low.
GND	3	G	Ground.
V _{DD}	4	P	Positive Supply Voltage.
NIC	5	DI	No Internal Connection.
IN	6	DI	Digital Control Input.
V _{SS}	7	P	Negative Supply Voltage.
NO	8	A/I/O	Normally Open Switch Pin. NO is connected to COM when IN is high.

¹ A/I/O: Analog Input or Output; P: Power; G: Ground; DI/O: Digital Input or Output.

Absolute Maximum Ratings ¹

T_A = 25 °C, unless otherwise noted.

Parameter	Rating
V _{DD} to V _{SS}	-0.3 V to +54 V
V _{DD} to GND	-0.3 V to +54 V
V _{SS} to GND	-54 V to +0.3 V
All other pins to GND	(V _{SS})-0.3 V to (V _{DD})+0.3 V
Continuous Current into any Terminal	10 mA
Continuous Current (COM, NO, NC)	30 mA
Peak Current (COM, NO, NC) (pulsed at 1 ms, 10% duty cycle)	60 mA
Electrostatic Discharge (ESD) ²	
Human Body Model (HBM) ³	6 kV
Charged Device Model (CDM) ⁴	2 kV

Thermal Resistance ⁵

Package Type	θ _{JA}	θ _{JC}	Unit
MSOP-8	163	40	°C/W
SOIC-8	158	43	°C/W
TSOT23-8	195	47	°C/W

¹ These ratings apply at 25 °C, unless otherwise noted. Note that stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

² Charged devices and circuit boards can discharge without detection.

Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

³ ANSI/ESDA/JEDEC JS-001 Compliant

⁴ ANSI/ESDA/JEDEC JS-002 Compliant

⁵ θ_{JA} addresses the conditions for soldering devices onto circuit boards to achieve surface mount packaging.

Specifications

The ● denotes the specification which apply over the specified temperature range (-40 °C to +125 °C), otherwise specifications are at $V_{DD} = +15\text{ V}$, $V_{SS} = -15\text{ V}$, $V_{IH} = 2.4\text{ V}$, $V_{IL} = 0.8\text{ V}$, $T_A = 25\text{ °C}$, unless otherwise noted.

Parameter	Symbol	Conditions		Min	Typ.	Max	Unit	
Analog Switch								
Analog Signal Range	V_{NO}, V_{NC}, V_{COM}			●	V_{SS}	V_{DD}	V	
On Resistance	R_{ON}	25°C	$I_{COM} = 10\text{ mA};$ $V_{NO}\text{ or }V_{NC} = \pm 10\text{ V}$		10.7	18	Ω	
		-40°C ~ +85°C				24	Ω	
		-40°C ~ +125°C		●		30	Ω	
On-Resistance Matching Between Channels	ΔR_{ON}	25°C	$I_{COM} = 10\text{ mA};$ $V_{NO}\text{ or }V_{NC} = \pm 10\text{ V}$		0.15	0.6	Ω	
		-40°C ~ +85°C				1.0	Ω	
		-40°C ~ +125°C		●		1.2	Ω	
On-Resistance Flatness	$R_{FLAT(ON)}$	25°C	$I_{COM} = 10\text{ mA};$ $V_{NO}\text{ or }V_{NC} = +5\text{ V}, 0\text{ V}, -5\text{ V}$		0.01	0.03	Ω	
		-40°C ~ +85°C				0.05	Ω	
		-40°C ~ +125°C		●		0.07	Ω	
Leakage Currents								
NO or NC Off-Leakage Current	$I_{NO(OFF)}, I_{NC(OFF)}$	25°C	$V_{COM} = -14\text{ V}, +14\text{ V};$ $V_{NO}\text{ or }V_{NC} = +14\text{ V}, -14\text{ V}$		± 0.05	± 0.5	nA	
		-40°C ~ +85°C				± 3	nA	
		-40°C ~ +125°C		●		± 20	nA	
COM On-Leakage Current	$I_{COM(ON)}$	25°C	$V_{COM} = +14\text{ V}, -14\text{ V}; V_{NO}\text{ or }V_{NC} = +14\text{ V}, -14\text{ V or floating}$		± 0.2	± 0.5	nA	
		-40°C ~ +85°C				± 3	nA	
		-40°C ~ +125°C		●		± 20	nA	
Digital I/O								
Input Logic High Voltage	V_{IH}			●	2.4		V	
Input Logic Low Voltage	V_{IL}			●		0.8	V	
Input Leakage	$I_{INL}\text{ or }I_{INH}$	$V_{IN} = 0\text{ or }V_{DD}$		●		0.002	μA	
						± 0.1	μA	
Digital Input Capacitance	C_{IN}					3	pF	
Dynamic Characteristics ¹								
Transition Time	t_{TRANS}	25°C	$V_{NO}\text{ or }V_{NC} = \pm 10\text{ V}; R_L = 1\text{ k}\Omega;$ $C_L = 35\text{ pF}$			170	200	ns
		-40°C ~ +85°C					240	ns
		-40°C ~ +125°C		●			250	ns
Break-Before-Make Time Delay	t_D	$V_{NO}\text{ or }V_{NC} = \pm 10\text{ V}; R_L = 300\text{ }\Omega; C_L = 35\text{ pF}$			85		ns	
				●	10			ns
Charge Injection	Q_{INJ}	$V_{GEN} = 0; R_{GEN} = 0; C_L = 1\text{ nF}$				-120	pC	
Off Isolation	V_{ISO}	$f = 1\text{ MHz}, R_L = 50\text{ }\Omega, C_L = 5\text{ pF}, V_{COM} = 1\text{ V}_{RMS}$				75	dB	
Crosstalk		$f = 1\text{ MHz}, R_L = 50\text{ }\Omega, C_L = 5\text{ pF}$				76	dB	
Total Harmonic Distortion	THD	$f = 20\text{ Hz to }20\text{ kHz}, R_L = 600\text{ }\Omega, 5\text{ V}_{RMS}$				0.01	%	
$V_{NO}\text{ or }V_{NC}$ Off-Capacitance	$C_{NO(OFF)}, C_{NC(OFF)}$	$f = 1\text{ MHz}$				5	pF	
COM On-Capacitance	$C_{COM(OFF)}$	$f = 1\text{ MHz}$				15	pF	
Power Supply								
Power Supply Range				●	± 4.5	± 25	V	
Positive Supply Current	I+	$V_{IN} = 0\text{ or }V_{DD}$			43		μA	
				●		90	μA	
Negative Supply Current	I-	$V_{IN} = 0\text{ or }V_{DD}$			41		μA	
				●		88	μA	

¹ Guaranteed by design, not subject to production test.

Typical Performance Characteristics

Unless otherwise stated, $V_{DD} = +15\text{ V}$, $V_{SS} = -15\text{ V}$, $T_A = 25\text{ }^{\circ}\text{C}$.

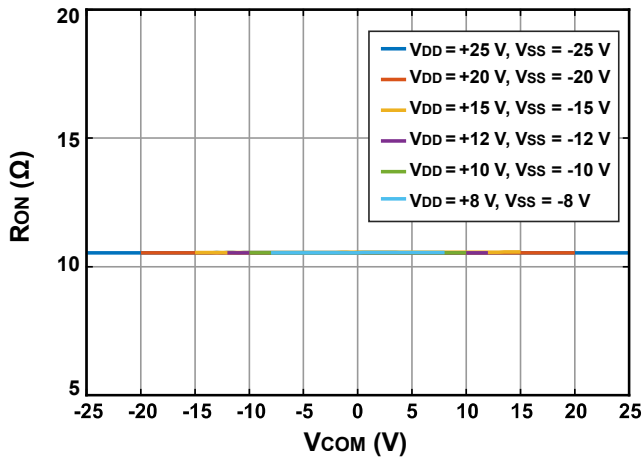


Figure 2. On-Resistance vs. V_{COM} (Dual Supplies)

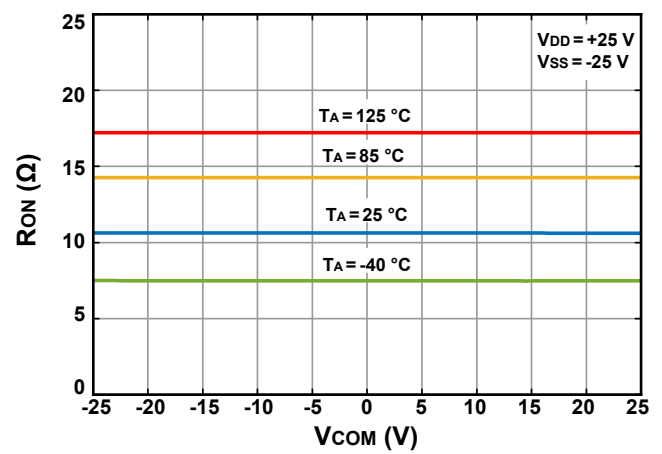


Figure 3. ON-Resistance vs. V_{COM} and Temperature

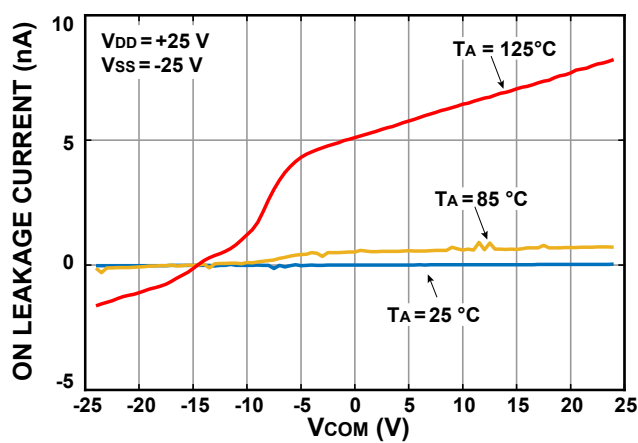


Figure 4. ON Leakage vs. Temperature

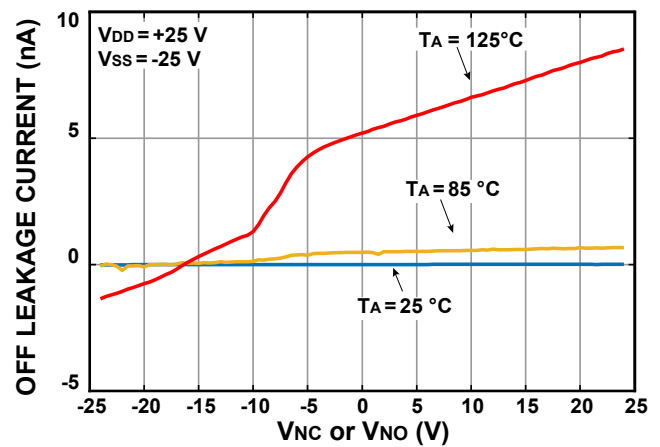


Figure 5. OFF Leakage vs. Temperature

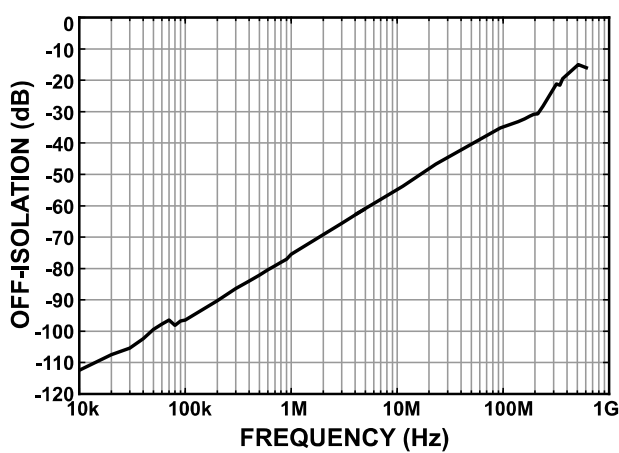


Figure 6. OFF Isolation vs. Frequency

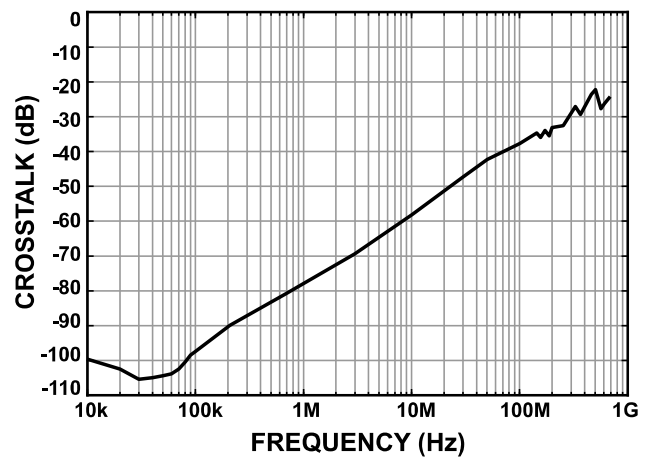


Figure 7. Crosstalk vs. Frequency

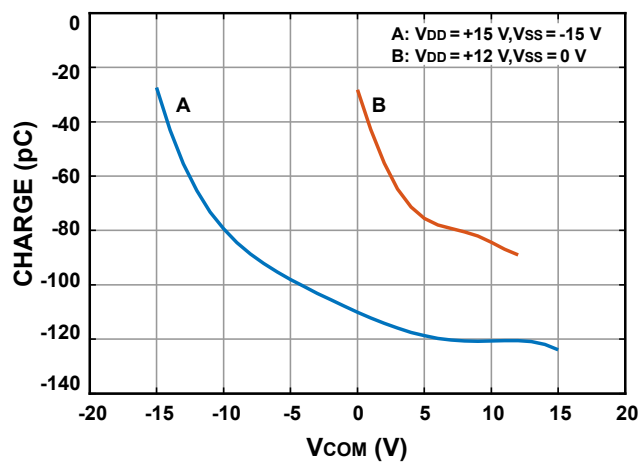


Figure 8. Charge Injection vs. V_{COM}

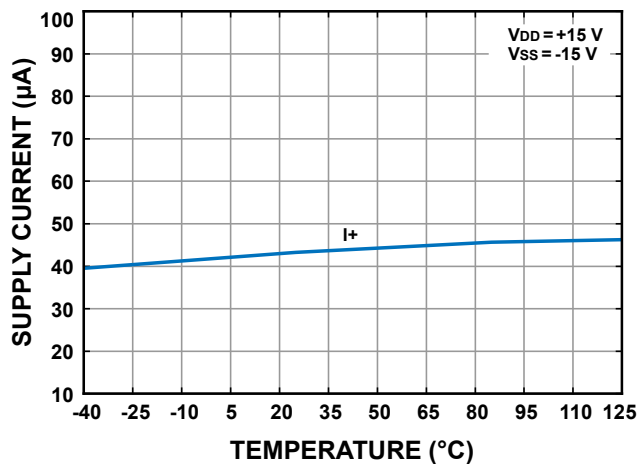


Figure 9. Supply Current vs. Temperature

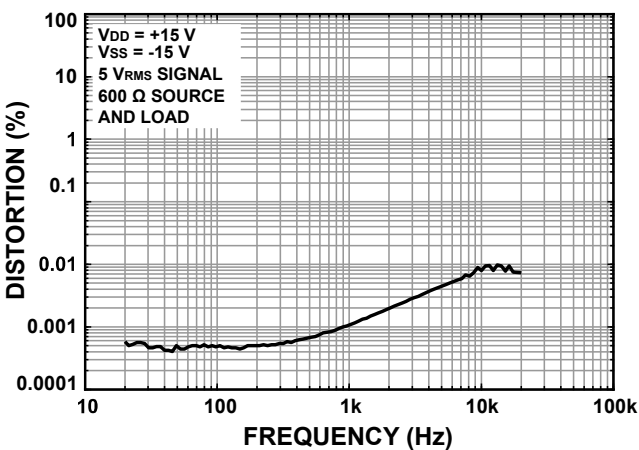


Figure 10. Total Harmonic Distortion vs. Frequency

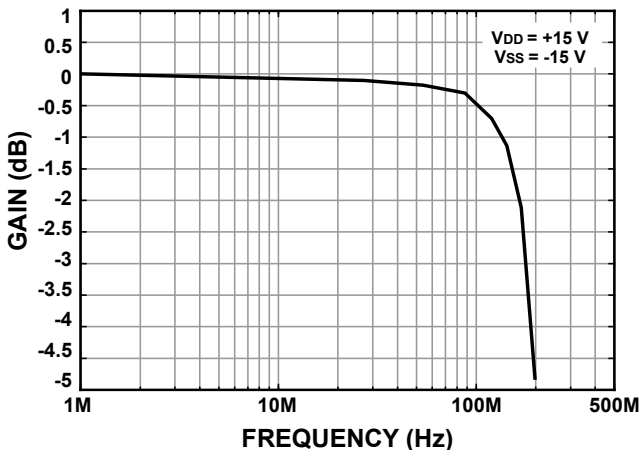


Figure 11. -3 dB Bandwidth

Outline Dimensions

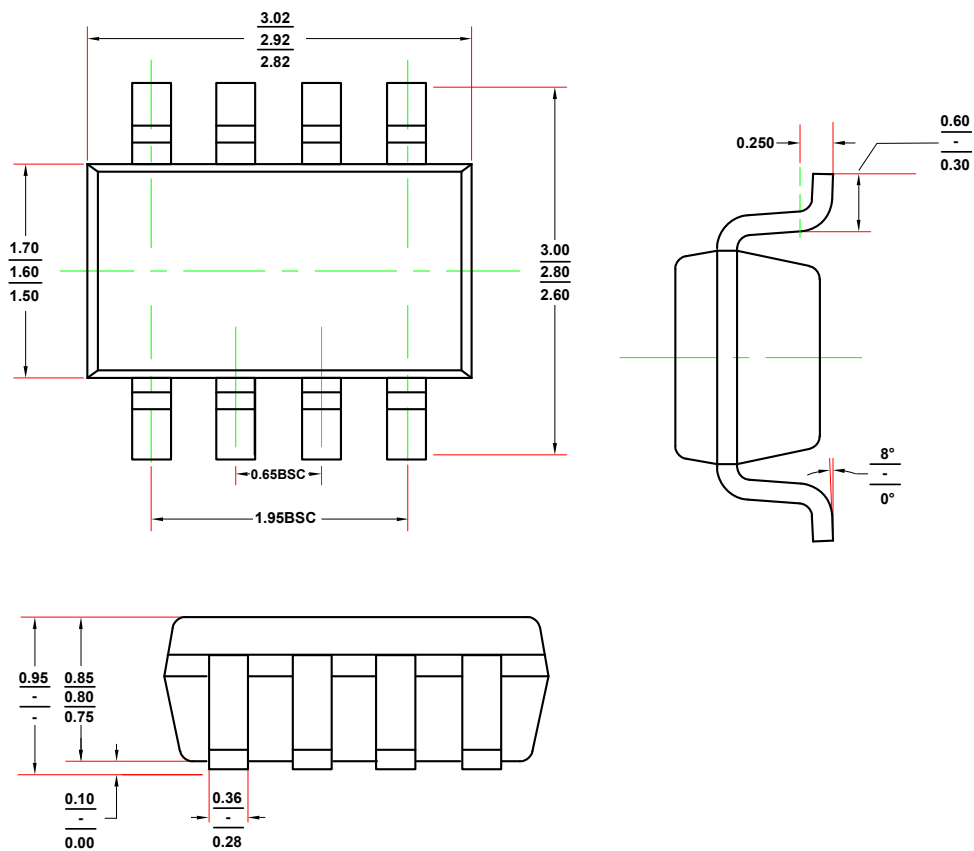


Figure 12. 8-Lead TSOT23 Package Dimensions shown in millimeters

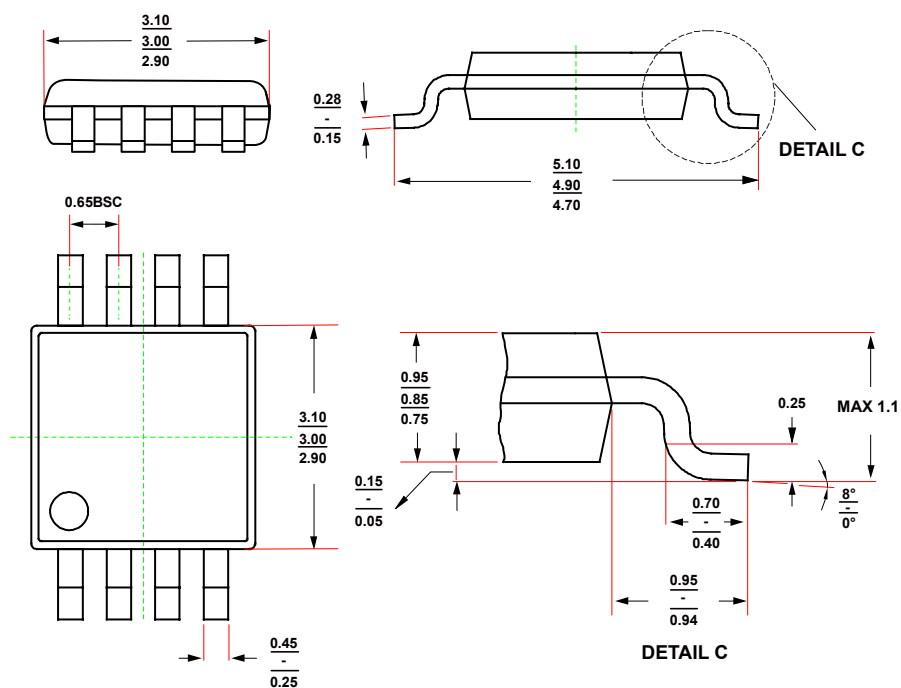


Figure 13. 8-Lead MSOP Package Dimensions shown in millimeters

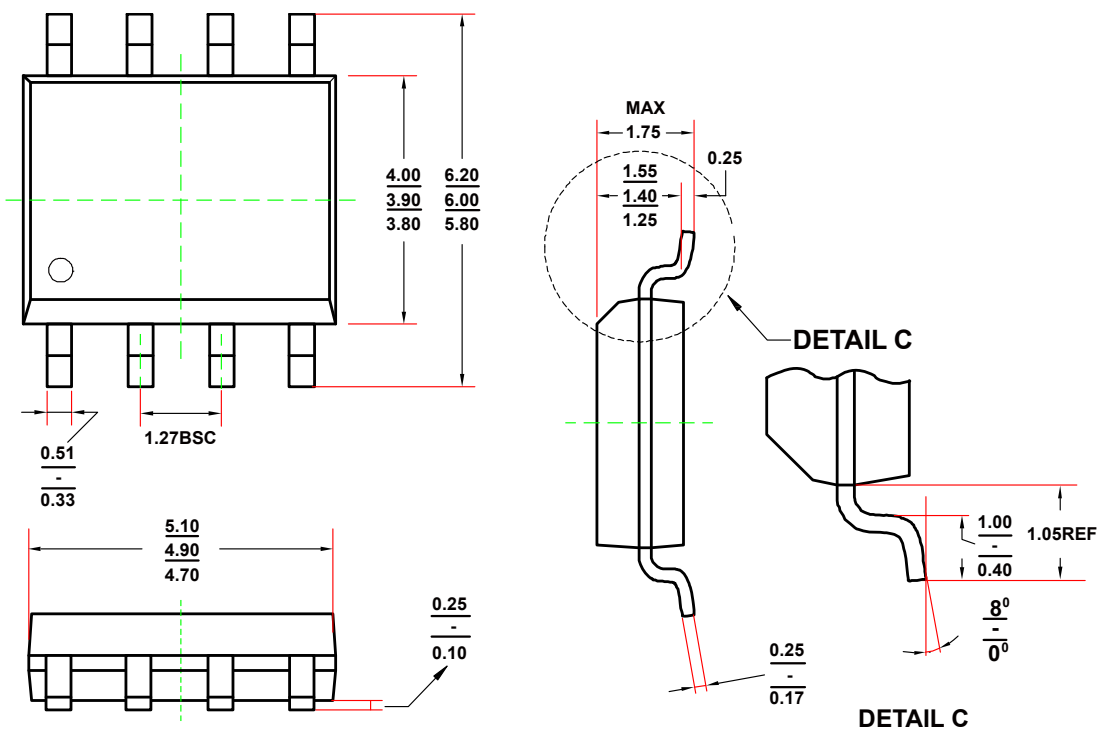


Figure 14. 8-Lead SOIC Package Dimensions shown in millimeters

Ordering Guide

Model	Orderable Device	Package	Temperature Range (°C)	External Package
ZJG4469	ZJG4469AZABR	TSOT23-8	-40 °C to +125 °C	7" Reel
	ZJG4469AUABT	MSOP-8		Tube
	ZJG4469AUABR			13" Reel
	ZJG4469ASABT	SOIC-8		Tube
	ZJG4469ASABR			13" Reel

Product Order Model

ZJXXXXX

X

X

X

X

X

Q1

Q1: Automotive Grade

External Package: T = Tube; R = Reel

Temperature Range: A = -40 °C to 125 °C Automotive Grade 1, B = -40 °C to 125 °C; E = -40 °C to 85 °C

Number of Pins: R = 3; K =5; T = 6, A = 8; B = 10; D = 14; E = 16; P = 20

Package Type: S = SOIC; U = MSOP, TSSOP, SOT; T = DFN, QFN; X = SC70; W = WLCSP; Z = TSOT23

Grade: B grade is better than A grade

Base: R = Voltage reference; A = Amplifier; C = Data Converter; G = Switches and Multiplexers; M = Others

Related Parts

Part Number	Description	Comments
ADC		
ZJC2020	20-bit 350 kSPS SAR ADC	Fully differential input, SINAD 101.4 dB, THD -118 dB
ZJC2000/2010	18-bit 400 kSPS/200 kSPS SAR ADC	Fully differential input, SINAD 99.3 dB, THD -113 dB
ZJC2001/2011	16-bit 500 kSPS/250 kSPS SAR ADC	Fully differential input, SINAD 95.3 dB, THD -113 dB
ZJC2002/2012	16-bit 500 kSPS/250 kSPS SAR ADC	Pseudo-differential unipolar input, SINAD 91.7 dB, THD -105 dB
ZJC2003/2013		Pseudo-differential bipolar input, SINAD 91.7 dB, THD -105 dB
ZJC2004/2014	18-bit 400 kSPS/200 kSPS SAR ADC	Pseudo-differential unipolar input, SINAD 94.2 dB, THD -105 dB
ZJC2005/2015		Pseudo-differential bipolar input, SINAD 94.2 dB, THD -105 dB
ZJC2007/2017	14-bit 600 kSPS/300 kSPS SAR ADC	Pseudo-differential unipolar input, SINAD 85 dB, THD -105 dB
ZJC2008/2018		Pseudo-differential bipolar input, SINAD 85 dB, THD -105 dB
ZJC2100/1-18	18-bit 400 kSPS/200 kSPS 4-ch differential SAR ADC, SINAD 99.3 dB, THD -113 dB	
ZJC2100/1-16	16-bit 500 kSPS/250 kSPS 4-ch differential SAR ADC, SINAD 95.3 dB, THD -113 dB	
ZJC2102/3-18	18-bit 400 kSPS/200 kSPS 8-ch pseudo-differential SAR ADC, SINAD 94.2 dB, THD -105 dB	
ZJC2102/3-16	16-bit 500 kSPS/250 kSPS 8-ch pseudo-differential SAR ADC, SINAD 91.7 dB, THD -105 dB	
ZJC2102/3-14	14-bit 600 kSPS/300 kSPS 8-ch pseudo-differential SAR ADC, SINAD 85 dB, THD -105 dB	
ZJC2104/5-18	18-bit 400 kSPS/200 kSPS 4-ch pseudo-differential SAR ADC, SINAD 94.2 dB, THD -105 dB	
ZJC2104/5-16	16-bit 500 kSPS/250 kSPS 4-ch pseudo-differential SAR ADC, SINAD 91.7 dB, THD -105 dB	
DAC		
ZJC2541-18/16/14	18/16/14-bit 1 MSPS single channel DAC with	Power on reset to 0 V (ZJC2541) or V _{REF} /2 (ZJC2543), 1 nV-S glitch, SOIC-8, MSOP-10/8, DFN-10 packages
ZJC2543-18/16/14	unipolar output	
ZJC2542-18/16/14	18/16/14-bit 1 MSPS single channel DAC with	Power on reset to 0 V (ZJC2542) or V _{REF} /2 (ZJC2544), 1 nV-S glitch, SOIC-14, TSSOP-16, QFN 16 packages
ZJC2544-18/16/14	bipolar output	
Amplifier		
ZJA3000-1/2/4	Single/Dual/Quad 36 V low bias current precision	3 MHz, 35 μV max Vos, 0.5 μV/°C max TC _{Vos} , 25 pA max Ibias, 1 mA/ch, input to V- (ZJA3000 only), RRO, 4.5 V to 36 V
ZJA3001-1/2/4	Op Amps	
ZJA3018-2	OVP ±75 V, 36 V, Low Power, High Precision Op Amp	1.3 MHz, 10 μV max Vos, 0.5 μV/°C max TC _{Vos} , 25 pA max Ibias, 0.5 mA/ch, OVP ±75 V (ZJA3018 only), RRO, 4.5 V to 36 V
ZJA3008-2	36 V, Low Power, High Precision Op Amp	
ZJA3512-2	Dual 36 V 7 MHz precision JFET Op Amps	7 MHz, 35 V/μS, 50 μV max Vos, 1 μV/°C max TC _{Vos} , 2 mA/ch, RRO, 9 V to 36 V
ZJA3216/06/02-1/2	Precision 20/10/5 MHz CMOS RRIO Op Amps	20/10/5 MHz, RRIO, 30 μV max Vos, 1 μV/°C max TC _{Vos} , 0.6 pA lb, 2.7 V to 5.5 V
ZJA3600/1	36 V ultra-high precision in-amp	CMRR 105 dB min (G = 1), 25 pA max lb, 25 μV max Vos _i , ±2.4 V to ±18 V, -40 °C to 125 °C
ZJA3611, ZJA3609	36 V precision wider bandwidth precision in-amp (G ≥ 10)	CMRR 120 dB min (G = 10), 25 pA max Ibias, 25 μV max Vos _i , 1.2 MHz BW (G = 10)
ZJA3676/7	Low power, G = 1 Single/Dual 36 V difference amplifier	Input protection to ±65 V, CMRR 104 dB min (G = 1), Vos 100 μV max, gain error 15 ppm max, 500 kHz BW (G = 1), 330 μA/channel, 2.7 V to 36 V
ZJA3678/9	Low power, G = 0.5/2 Single/Dual 36 V difference amplifier	
ZJA3669	High Common-Mode Voltage Difference Amplifier	±270 V CMV, 2.5 kV ESD, 96 dB min CMRR, 450 kHz BW, 4 V to 36 V, SOIC-8
ZJA3100	15 V precision fully differential amplifier	145 MHz, 447 V/μS, 50 nS to 16-bit, 50 μV max Vos, 4.6 mA I _q , SOIC/MSOP-8, QFN-16
ZJA3236/26/22-2	Low-cost 20/10/5 MHz CMOS RRIO Op Amps	20/10/5 MHz, RRIO, 2 mV max Vos, 6 μV/°C max TC _{Vos} , 0.6 pA lb, 2.7 V to 5.5 V
ZJA3622/8	36 V low-cost precision in-amp	0.5 nA max Ibias, 125 μV max Vos _i , 625 kHz BW (G = 10), 3.3 mA I _q , ±2.4 V to ±18 V
Voltage Reference		
ZJR1004	40 V supply precision voltage reference	V _{OUT} = 2.048/2.5/3.3/4.096/5/10 V, 5 ppm/°C max drift -40 °C to 125 °C
ZJR1001/2	5.5 V low power voltage reference	V _{OUT} = 2.048/2.5/3.3/4.096/5 V, 5 ppm/°C max drift -40 °C to 125 °C, ±0.05% initial error, 130 μA, ZJR1001/2 in SOT23-6, ZJR1003 in SOIC/MSOP-8
ZJR1003	(ZJR1001 with noise filter option)	
ZJR1302	5.5 V low power compact precision voltage reference	V _{OUT} = 2.048/2.5/3.3/4.096 V, 30 ppm/°C max drift -40 °C to 125 °C, 130 μA, SOT23-3
Switches and Multiplexers		
ZJG4438/4439	36 V fault protection 8:1/dual 4:1 multiplexer	Protection to ±50 V power on & off, latch-up immune, Ron 270 Ω, 14.8 pC, t _{ON} 166 nS
ZJG4428/4429	36 V 8:1/dual 4:1 multiplexer	Latch-up immune, Ron 270 Ω, 14.8 pC charge injection, t _{ON} 166 nS
Quad Matching Resistor		
ZJM5400	±75 V precision match resistors	Mismatch < 100 ppm, 10k:10k:10k:10k, 100k:100k:100k:100k, 100k:10k:10k:100k, 1k:1k:1k:1k, 1M:1M:1M:1M, 5k:1k:1k:5k, 5k:1.25k:1.25k:5k, 9k:1k:1k:9k, ESD: 3.5 kV