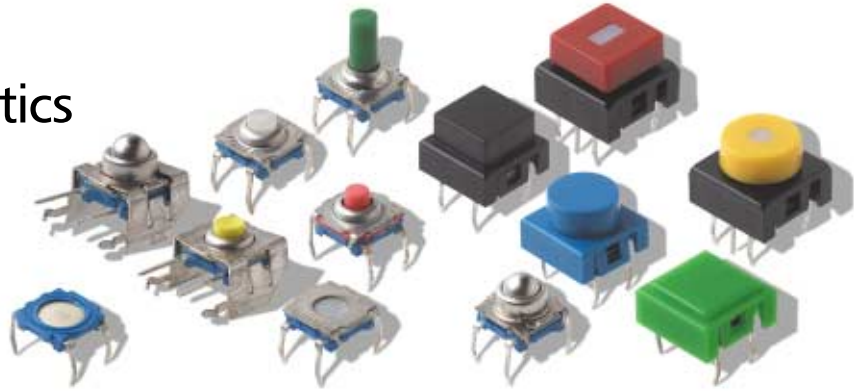


KSA Tact Switches

General Characteristics



Mechanical and environment characteristics of main KS types

All mechanical, electrical and environmental characteristics of main KS types on the following pages are included in the 2 following tables.

Note: KSA, KSB, KSF, KSL are the basic models,
 - with suffix 3N or 5N they are available with 3 Newtons (300 grams) or 5 Newtons (500 grams) actuation force,
 - with suffix V means vertical mounting.

Data	Type	KSA	KSA 3N	KSA 5N	KSB KSD	KSB 3N	KSF	KSF 3N	KSF 5N	KSL	KSL 3N	KSL 5N	KSAV	KSLV	KSI	KSJ
Actuator color silver contact version		White ²⁾ Green	Blue	Yellow	–	–	–	–	–	Dark grey	Blue	Yellow	White	Dark grey	Red	–
Actuator color gold contact version		Red	Dark grey	Orange	–	–	–	–	–	Red	Light grey	Orange	Red	Red	Red	–
Travel		0.3 ^{+0.04} ₋₀ (0.0118)	0.4 ^{+0.04} ₋₀ (.0157)	0.5 ^{+0.04} ₋₀ (0.0197)	0.2 ^{+0.01} ₋₀ (0.00787)	0.2 ^{+0.01} ₋₀ (0.00787)	0.3 ^{+0.04} ₋₀ (0.0118)	0.4 ^{+0.04} ₋₀ (0.0157)	0.5 ^{+0.04} ₋₀ (0.0197)	0.3 ^{+0.04} ₋₀ (0.0118)	0.4 ^{+0.04} ₋₀ (0.0157)	0.5 ^{+0.04} ₋₀ (0.0197)	0.3 ^{+0.04} ₋₀ (0.0118)	0.3 ^{+0.04} ₋₀ (0.0118)	1.1 ^{+0.02} (0.0433)	0.4 ^{+0.15} (0.0157)
Operating force N (grams) ± 25%		1.3 (130)	3 (300)	5 (500)	1.6 (160)	3 (300)	1.6 (160)	3 (300)	5 (500)	1.3 (130)	3 (300)	5 (500)	1.3 (130)	1.3 (130)	3 (300)	1 (100) 3 (300)
Max. actuation force N (grams)		40 (4000)	40 (4000)	75 (7500)	40 (4000)	40 (4000)	40 (4000)	40 (4000)	75 (7500)	40 (4000)	40 (4000)	75 (7500)	40 (4000)	40 (4000)	40 (4000)	40 (4000)
Operating life with actuation force = 2 time 10 ⁴ nominal force		5×10 ⁵ or 10 ⁵ (¹⁾)	10 ⁵	10 ⁵	10 ⁵	5×10 ⁵	10 ⁵ (¹⁾)	10 ⁵	5×10 ⁵	10 ⁵ (¹⁾)	10 ⁵	5×10 ⁵	5×10 ⁵ (¹⁾)	10 ⁵	10 ⁵	
M = Manual insertion A = Automatic insertion A		M A	M A	M A	M A	M A	M A	M A	M A	M A	M A	M A	M A	M A	M A	M A
S = Silver contacts G = Gold contacts		S G	S G	S G	S G ³⁾	S G	S G	S G	S G	S G	S G	S G	S G	S G	S G	S G
Storage temperature Silver version °C		-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-55 to +90	-55 to +90
Gold version °C		-55 to +125	-55 to +125	-55 to +125	-55 to +125	-40 to +90	-55 to +125	-55 to +125	-55 to +125	-55 to +125	-55 to +125	-55 to +125	-55 to +125	-55 to +125	-50 to +125	-55 to +125
Operating temperature Silver version °C		-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90	-40 to +90
Gold version °C		-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125	-40 to +125
SO ₂ and H ₂ S protected X = Yes O = No		X	X	X	O	O	X	X	X	X	X	X	X	X	X	X
Flux tight		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Flux tight washing without thermal shock		X	X	X	O	O	X	X	X	X	X	X	X	X	X	X
Flux tight washing with thermal shock		X	X	X	O	O	X	X	X	X	X	X	X	X	X	X

¹⁾ Basic models KSA, KSF, KSL on request, can be delivered for 1 million operations in silver version, in gold version they are automatically supplied with 1 million operations.

²⁾ White for 500 k operations, green for 1 million operations.

³⁾ KSD not available in gold contacts.

KSA Tact Switches

General Characteristics

Overview of the main electrical values of KS versions											
Contact material		Silver contacts			Gold contacts				Silver contacts		
Type		1.3N	3N	5N		1.3N	3N	5N		1.6N	3N
Data	KSA	X	X	X	KSA	X	X	X	KSB KSD	X	X
	KSF	X (1.6)	X	X	KSF	X (1.6)	X	X		X	X
	KSL	X	X	X	KSL	X	X	X			
	KSAV	X	X	X	KSAV	X	X	X			
	KSLV	X	X	X	KSLV	X	X	X			
	KSI	X (1.1)	X		KSI	X (1.1)	X				
	KSJ	X (1.0)	X		KSJ	X (1.0)	X				
Ground terminal		Upon request				Upon request				No	
Max. voltage		50 V				50 V				50 V	
Min. voltage		20 mV				20 mV				5 V	
Max. switching current		50 mA				10 mA				50 mA	
Min. switching current		1 mA				1 mA				10 mA	
Max. switching power		1 VA				0.2 VA				1 VA	
Contact resistance		50 mΩ				50 mΩ				100 mΩ	
Dielectric strength		300 Vrms				300 Vrms				300 Vrms	
Insulation resistance (100 V)		10 ¹¹ Ω				10 ¹¹ Ω				10 ¹¹ Ω	
Bounce		≤ 1 ms				≤ 1 ms				≤ 1 ms	
Operating life with actuation force less than 2 times nominal force		5 × 10 ⁵	10 ⁵	10 ⁵		10 ⁶	10 ⁵	10 ⁵		10 ⁵	10 ⁵
		10 ⁶ upon request	5 × 10 ⁵ upon request				5 × 10 ⁵ upon request				

Ordering code		1	2	3	4	5	6	7
		Example: KS A 1 A 3 3 1						
1	Designation: KS	→	↑	↑	↑	↑	↑	↑
2	Actuator: A = short, L = long, B = without, F = flat, I = soft, J = long travel (spherical)	→	↑	↑	↑	↑	↑	↑
3	Ground terminal: 0 = without (KSB only 0), 1 = with	→	↑	↑	↑	↑	↑	↑
4	Insertion: M = manual, A = automatic, V = vertical (for KSA, KSI and KSL, not for KSB and KSF)	→	↑	↑	↑	↑	↑	↑
5	Operation force (N (grams)), operating life (k operations): 0 = 1.0N (100 grams) and 100 k operations (KSJ) 1.1N (110 grams) and 500 k operations (KSI) 1 = 1.6N (160 grams) and 100 k operations (KSB) 2 = 1.3N (130 grams) and 500 k operations (KSA/KSL) 1.6N (160 grams) and 500 k operations (KSF) 3 = 1.3N (130 grams) and more than 1000 k operations 4 = 3.0N (300 grams) and more than 100 k operations 5 = 5.0N (500 grams) and more than 100 k operations 9 = 3.0N (300 grams) and 500 k operations	→	↑	↑	↑	↑	↑	↑
6	Operating temperature: 1 = low temperature - 40°C to + 90°C (silver contacts) 3 = high temperature - 40°C to + 125°C (gold contacts)	→	↑	↑	↑	↑	↑	↑
7	Sealing: 0 = sealed against flux, 1 = totally sealed acc. to EIA RS448-2, 2 = Mark2 version	→	↑	↑	↑	↑	↑	↑

KSJ Tact Switch with Spherical Actuator



The KSJ long travel is a miniature tact switch using the single pole normally open contact of the KSA family and is equipped with a spherical actuator. This new version is specially designed for all types of applications where:

- The actuation force can be off center $\pm 30^\circ$ with regard to vertical and even be parallel to the PCB.
- A long overtravel is required.

Main features

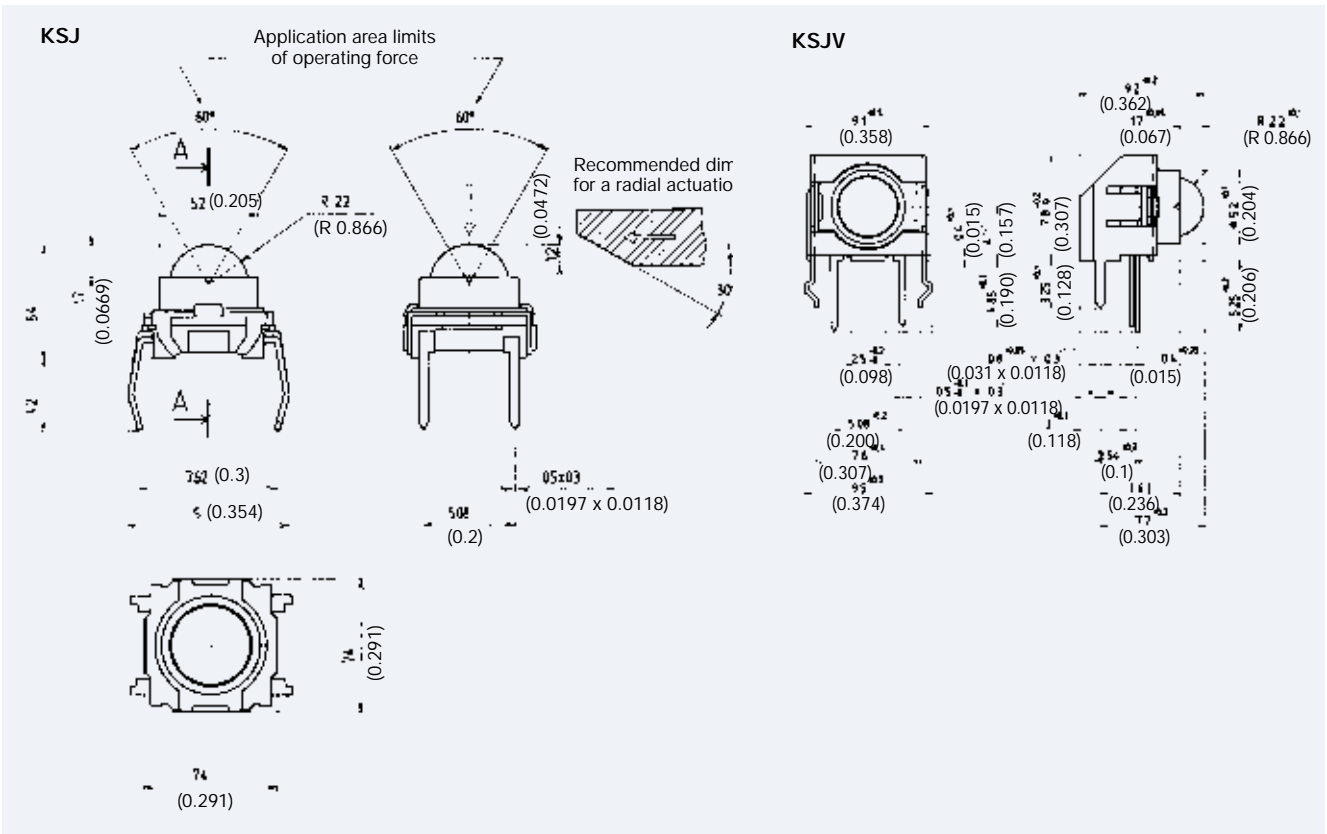
- Range of actuation force off center $\pm 30^\circ$ with regard to vertical
- Switching travel: 0.4 mm (0.0157)
- Total travel: 1.6 mm (0.063)
- Actuation force either: 3N (300 grams) or 1 N (100 grams)
- Tin plated terminals
- Sealed against flux
- Salt mist resistance: 96 hours
- Actuation force increased of 0.3N (30 grams) for gold contacts
- Delivered in boxes of 500 pieces

Construction	
Function	Momentary
Contact arrangement	1 make contact = SPST, NO
Distance between button centers, min.	7.62 (0.300)
Terminals	PC pins
Electrical data	
	S (silver) G (gold)
Switching power max.	1 VA 0.2 VA
Switching voltage min./max.	20 mV/50 V 20 mV/10 V
Switching current min./max.	1 mA/50 mA 1 mA/50 mA
Dielectric strength (50 Hz, 1 Min.)	$\cong 300$ Vrms $\cong 300$ Vrms
Operating life with operating force: 10N	$\cong 10^5$ operations $\cong 10^5$ operations
Operating life with radial actuation	3×10^4 operations 3×10^4 operations
Contact resistance	$\cong 50$ m Ω $\cong 50$ m Ω
Insulation resistance (100 V)	$\cong 10^{11}$ Ω $\cong 10^{11}$ Ω
Bounce-time	$\cong 1$ ms $\cong 1$ ms
Mechanical data	
Total travel	1.6 ± 0.1 (0.0630 \pm 0.003)
Switching travel	0.4 ± 0.15 (0.0157 \pm 0.006)
Operating force	1N (100 grams) $\pm 25\%$, 3N (300 grams) $\pm 25\%$
Maximum admissible operating force	40N (4000 grams)
Further data	
Contact material	Silver plated, Gold plated
Operating temperature	silver contacts - 40°C to + 90°C gold contacts - 40°C to + 125°C
Solderability	KSJ is protected against flux and is compatible with the following soldering processes: - Fluxing of PCB bottom side - Preheating at 85°C - Wave soldering (Pb/Sn 40-60) 250°C 2 sec. - Cooling down to ambient temperature - Eventual cleaning by brushing on soldered side. TMS Freon to be avoided.
Storage temperature	silver contacts - 55°C to + 90°C gold contacts - 55°C to + 125°C

Ordering code	1	2	3	4	5	6	7
	Example: KS	J	0	M	4	3	0
1 Designation: KS	→	↑	↑	↑	↑	↑	↑
2 Type long travel): J	→	↑	↑	↑	↑	↑	↑
3 Ground terminal: 0 = without, 1 = with	→	↑	↑	↑	↑	↑	↑
4 Insertion: M = manual, V = vertical	→	↑	↑	↑	↑	↑	↑
5 Operation force: 0 = 1N (100 grams) with 100 k operations, 4 = 3N (300 grams) with 100 k operations	→	↑	↑	↑	↑	↑	↑
6 Temperature range: 1 = low: - 40°C to + 90°C (silver contacts), 3 = high: - 40°C to + 125°C (gold contacts)	→	↑	↑	↑	↑	↑	↑
7 Sealed: 0 = against flux, 1 = totally sealed	→	↑	↑	↑	↑	↑	↑

KSJ Tact Switch with Spherical Actuator

Dimensional Drawings



Curve and PCB layout and mounting

