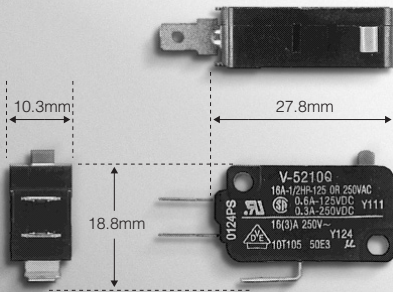


Miniature Basic Switches

V-5000 Series

Long-life, high-reliability models with a wide range of applications, from industrial products to household products.



The photograph shows a pin plunger type. Confirm the detail dimensions by drawings.

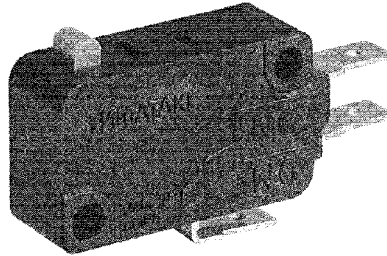
- A wide range of models is available from high-capacity to low current load types. Select the switch best suited to your particular requirements and operating conditions
- Glass impregnated PBT (polybutylene terephthalate) resin is used for the case and covers. This material is highly resistant to overtightening of screws during mounting. It also features high machining precision and little disparity in operating characteristics
- Mechanical life of 10 million operations or more
- Creep distance of 4mm or more
- VDE standard acquired products also available
- 1mm contact gap also available



CLICK

APPLICATIONS

- Copiers, facsimiles and printers
- Control equipment, automatic vendors, automobiles and small automatic machines
- Medical equipment and communications equipment
- Computer peripheral and terminal equipment
- Household equipment



CIRCUIT CONFIGURATION AND TERMINAL DIAGRAMS

(unit: mm)

Model	Circuit configuration	Terminal dimensions
V-50□□	<p>Single-Pole Double-Throw (SPDT)</p>	<ul style="list-style-type: none"> • C terminal: Quick connector (#250)
V-51□□ V-52□□ V-53□□ V-54□□ V-55□□ V-56□□ V-59□□	<p>Single-Pole Normally-Close (SPNC)</p> <p>Single-Pole Normally-Open (SPNO)</p>	<ul style="list-style-type: none"> • D terminal, DN terminal: Quick connector (#187) • E terminal: Solder and quick connector combined (#187), EN terminal: Exclusive for solder • Q terminal: 4.8 × 0.5 (IEC 760)

Note 1: The available terminal for V-50□□ Series is "C" only, and terminals D and E are not provided. From V-53□□ to V-56□□, terminal D is standard. However, terminal E is also available for joint use for soldering.




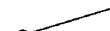





Note 2: The shape of terminals on European standard products differs. Contact your agent for details.

ORDER GUIDE

- High Capacity V-50□□C Type (21A rating, O.F.=2.94N, UL and CSA standards acquired)








Actuators	Operating characteristics		Terminal shape	Circuit configurations	Catalog listing
	Item	Characteristic value			
<p>Pin plunger</p>	<p>O.F. max.</p> <p>R.F. min.</p> <p>P.T. max.</p> <p>O.P.</p> <p>O.T. min.</p> <p>M.D. max.</p>	<p>12.94N</p> <p>0.74N</p> <p>1.6mm</p> <p>14.7±0.5mm</p> <p>0.8mm</p> <p>0.4mm</p>	#250 tab terminal	SPDT (1c)	V-5010C

● 1mm Contact Gap Type **V-5F9**□□□**N** type (6A rating, O.F.=2.75N, UL/CSA and VDE standards acquired)




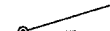



Actuators	Operating characteristics		Terminal shape	Circuit configurations	Catalog listing	
	Item	Characteristic value				
Pin plunger 	O.F. max.	2.75N	#187 tab terminal	SPDT (1c)	V-5F910DN	
	R.F. min.	0.49N				
Short lever 	P.T. max.	1.6mm	#187 tab terminal	SPDT (1c)	V-5F911DN	
	O.P.	14.7±0.5mm				
	O.T. min.	0.8mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5F910EN	
	M.D. max.	0.4mm				
	Standard lever 	O.F. max.	2.75N	#187 tab terminal	SPDT (1c)	V-5F911DN
		R.F. min.	0.49N			
P.T. max.		1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5F911EN	
O.P.		15.3±0.5mm				
Long lever 		O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	V-5F912DN
		M.D. max.	0.4mm			
	O.F. max.	1.67N	#187 tab terminal	SPDT (1c)	V-5F912DN	
	R.F. min.	0.2N				
	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5F912EN	
	O.P.	15.3±1.5mm				
Short roller lever 	O.T. min.	1.3mm	#187 tab terminal	SPDT (1c)	V-5F913DN	
	M.D. max.	1.2mm				
	O.F. max.	0.83N	#187 tab terminal	SPDT (1c)	V-5F913DN	
	R.F. min.	0.1N				
	P.T. max.	6.4mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5F913EN	
	O.P.	15.3±3mm				
Roller lever 	O.T. min.	2.6mm	#187 tab terminal	SPDT (1c)	V-5F914DN	
	M.D. max.	2.4mm				
	O.F. max.	23.33N	#187 tab terminal	SPDT (1c)	V-5F914DN	
	R.F. min.	0.39N				
	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5F914EN	
	O.P.	20.6±0.8mm				
Simulated lever 	O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	V-5F915DN	
	M.D. max.	0.4mm				
	O.F. max.	1.67N	#187 tab terminal	SPDT (1c)	V-5F915DN	
	R.F. min.	0.2N				
	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5F915EN	
	O.P.	20.6±1.6mm				
Simulated lever 	O.T. min.	1.3mm	#187 tab terminal	SPDT (1c)	V-5F916DN	
	M.D. max.	1.2mm				
	O.F. max.	1.67N	#187 tab terminal	SPDT (1c)	V-5F916DN	
	R.F. min.	0.2N				
	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5F916EN	
	O.P.	18.5±1.5mm				
Simulated lever 	O.T. min.	1.3mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5F916EN	
	M.D. max.	1.2mm				

Note. When **V-5F9**□□□**EN** is use for UL/CSA standards only, it can be used as a model of #187 tab terminal for joint for soldering.

● High Capacity V-51□□E Type (16A rating, O.F.=2.94N, UL/CSA standards acquired)








Actuators	Operating characteristics		Terminal shape	Circuit configurations	Catalog listing
	Item	Characteristic value			
Pin plunger 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	2.94N 0.74N 1.6mm 14.7±0.5mm 0.8mm 0.4mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5110E
Short lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	2.94N 0.74N 1.6mm 15.3±0.5mm 0.8mm 0.4mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5111E
Standard lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	1.77N 0.29N 3.2mm 15.3±1.5mm 1.3mm 1.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5112E
Long lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	0.88N 0.15N 6.4mm 15.3±3mm 2.6mm 2.4mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5113E
Short roller lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	3.43N 0.59N 1.6mm 20.6±0.8mm 0.8mm 0.4mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5114E
Roller lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	1.77N 0.29N 3.2mm 20.6±1.6mm 1.3mm 1.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5115E
Simulated lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	1.77N 0.29N 3.2mm 18.5±1.5mm 1.3mm 1.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5116E

● High Capacity V-52□□Q Type (16A rating, O.F.=1.96N, UL/CSA and VDE standards acquired)










Actuators	Operating characteristics		Terminal shape	Circuit configurations	Catalog listing
	Item	Characteristic value			
Pin plunger 	O.F. max.	1.96N	#187 tab terminal	SPDT (1c)	V-5210Q*
	R.F. min.	0.49N		SPNC (1b)	V-5220Q*
	P.T. max.	1.6mm		SPNO (1a)	V-5230Q*
Short lever 	O.F. max.	1.96N	#187 tab terminal	SPDT (1c)	V-5211Q
	R.F. min.	0.49N			
	P.T. max.	1.6mm			
	O.P.	15.3±0.5mm			
	O.T. min.	0.8mm			
Standard lever 	O.F. max.	1.18N	#187 tab terminal	SPDT (1c)	V-5212Q
	R.F. min.	0.2N			
	P.T. max.	3.2mm			
	O.P.	15.3±1.5mm			
	O.T. min.	1.3mm			
Long lever 	O.F. max.	0.59N	#187 tab terminal	SPDT (1c)	V-5213Q
	R.F. min.	0.1N			
	P.T. max.	6.4mm			
	O.P.	15.3±3mm			
	O.T. min.	2.6mm			
Short roller lever 	O.F. max.	2.35N	#187 tab terminal	SPDT (1c)	V-5214Q
	R.F. min.	0.39N			
	P.T. max.	1.6mm			
	O.P.	20.6±0.8mm			
	O.T. min.	0.8mm			
Roller lever 	O.F. max.	1.18N	#187 tab terminal	SPDT (1c)	V-5215Q
	R.F. min.	0.2N			
	P.T. max.	3.2mm			
	O.P.	20.6±1.6mm			
	O.T. min.	1.3mm			
Simulated lever 	O.F. max.	1.18N	#187 tab terminal	SPDT (1c)	V-5216Q
	R.F. min.	0.2N			
	P.T. max.	3.2mm			
	O.P.	18.5±1.5mm			
	O.T. min.	1.3mm			
	M.D. max.	1.2mm			

Note: * mechanical life: 1 million cycles.










● High Capacity V-59□□D Type (16A rating, O.F.=2.45N, UL/CSA)

Actuators	Operating characteristics		Terminal shape	Circuit configurations	Catalog listing
	Item	Characteristic value			
Pin plunger 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	2.45N 0.59N 1.6mm 14.7±0.5mm 0.8mm 0.4mm	#187 tab terminal	SPDT (1c)	V-5910D
Short lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	2.45N 0.59N 1.6mm 15.3±0.5mm 0.8mm 0.4mm	#187 tab terminal	SPDT (1c)	V-5911D
Standard lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	1.47N 0.25N 3.2mm 15.3±1.5mm 1.3mm 1.2mm	#187 tab terminal	SPDT (1c)	V-5912D
Long lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	0.74N 0.12N 6.4mm 15.3±3mm 2.6mm 2.4mm	#187 tab terminal	SPDT (1c)	V-5913D
Short roller lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	2.94N 0.49N 1.6mm 20.6±0.8mm 0.8mm 0.4mm	#187 tab terminal	SPDT (1c)	V-5914D
Roller lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	1.47N 0.25N 3.2mm 20.6±1.6mm 1.3mm 1.2mm	#187 tab terminal	SPDT (1c)	V-5915D
Simulated lever 	O.F. max. R.F. min. P.T. max. O.P. O.T. min. M.D. max.	1.47N 0.25N 3.2mm 18.5±1.5mm 1.3mm 1.2mm	#187 tab terminal	SPDT (1c)	V-5916D








- Standard V-52□□E Type (11A rating, O.F.=1.96N, UL/CSA standards acquired)
- Standard Low Current Load V-52□□K Type (0.1A rating, O.F.=1.96N, UL/CSA standards acquired)

Actuators	Operating characteristics		Terminal shape	Circuit configurations	Catalog listing	Low Current Load Type
	Item	Characteristic value				
Pin plunger 	O.F. max.	1.96N	#187 tab terminal	SPDT (1c)	-	V-5210DK
	R.F. min.	0.49N				
Short lever 	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5210E	V-5210EK
	O.P.	14.7±0.5mm				
	O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	-	V-5211DK
	M.D. max.	0.4mm				
	O.F. max.	1.96N				
	R.F. min.	0.49N				
Standard lever 	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5211E	V-5211EK
	O.P.	15.3±0.5mm				
	O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	V-5212D	-
	M.D. max.	0.4mm				
	O.F. max.	1.18N				
	R.F. min.	0.2N				
Long lever 	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5212E	V-5212EK
	O.P.	15.3±1.5mm				
	O.T. min.	1.3mm	#187 tab terminal	SPDT (1c)	-	V-5213DK
	M.D. max.	1.2mm				
	O.F. max.	0.59N				
	R.F. min.	0.1N				
Short roller lever 	P.T. max.	6.4mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5213E	V-5213EK
	O.P.	15.3±3mm				
	O.T. min.	2.6mm	#187 tab terminal	SPDT (1c)	V-5214D	V-5214DK
	M.D. max.	2.4mm				
	O.F. max.	2.35N				
	R.F. min.	0.39N				
Roller lever 	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5214E	V-5214EK
	O.P.	20.6±0.8mm				
	O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	V-5215D	V-5215DK
	M.D. max.	0.4mm				
	O.F. max.	1.18N				
	R.F. min.	0.2N				
Simulated lever 	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5215E	V-5215EK
	O.P.	20.6±1.6mm				
	O.T. min.	1.3mm	#187 tab terminal	SPDT (1c)	V-5216D	V-5216DK
	M.D. max.	1.2mm				
	O.F. max.	1.18N				
	R.F. min.	0.2N				
Simulated lever 	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5216E	V-5216EK
	O.P.	18.5±1.5mm				
Simulated lever 	O.T. min.	1.3mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5216E	V-5216EK
	M.D. max.	1.2mm				

- Standard V-53□□□ Type (11A rating, O.F.=0.98N, UL/CSA standards acquired)
- Standard Low Current Load V-53□□□K Type (0.1A rating, O.F.=0.98N, UL/CSA standards acquired)








Actuators	Operating characteristics		Terminal shape	Circuit configurations	Catalog listing	Low Current Load Type
	Item	Characteristic value				
Pin plunger 	O.F. max.	0.98N	#187 tab terminal	SPDT (1c)	V-5310D	V-5310DK
	R.F. min.	0.25N				
Short lever 	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5310E	V-5310EK
	O.P.	14.7±0.5mm				
	O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	V-5311D	V-5311DK
	M.D. max.	0.4mm				
	O.F. max.	0.98N				
	R.F. min.	0.25N				
Standard lever 	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5311E	V-5311EK
	O.P.	15.3±0.5mm				
	O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	V-5312D	V-5312DK
	M.D. max.	0.4mm				
	O.F. max.	0.59N				
	R.F. min.	0.1N				
Long lever 	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5312E	V-5312EK
	O.P.	15.3±1.5mm				
	O.T. min.	1.3mm	#187 tab terminal	SPDT (1c)	V-5313D	V-5313DK
	M.D. max.	1.2mm				
	O.F. max.	0.29N				
	R.F. min.	0.05N				
Short roller lever 	P.T. max.	6.4mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5313E	V-5313EK
	O.P.	15.3±3mm				
	O.T. min.	2.6mm	#187 tab terminal	SPDT (1c)	V-5314D	V-5314DK
	M.D. max.	2.4mm				
	O.F. max.	1.18N				
	R.F. min.	0.2N				
Roller lever 	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5314E	V-5314EK
	O.P.	20.6±0.8mm				
	O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	V-5315D	V-5315DK
	M.D. max.	0.4mm				
	O.F. max.	0.59N				
	R.F. min.	0.1N				
Simulated lever 	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5315E	V-5315EK
	O.P.	20.6±1.6mm				
	O.T. min.	1.3mm	#187 tab terminal	SPDT (1c)	V-5316D	V-5316DK
	M.D. max.	1.2mm				
	O.F. max.	0.59N				
	R.F. min.	0.1N				
Simulated lever 	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5316E	V-5316EK
	O.P.	18.5±1.5mm				
Simulated lever 	O.T. min.	1.3mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5316E	V-5316EK
	M.D. max.	1.2mm				

- Standard V-54□□□ Type (5A rating, O.F.=0.98N, UL/CSA standards acquired)
- Standard Low Current Load V-54□□□K Type (0.1 A rating, O.F.=0.98N, UL/CSA standards acquired)










Actuators	Operating characteristics		Terminal shape	Circuit configurations	Catalog listing	Low Current Load Type
	Item	Characteristic value				
Pin plunger 	O.F. max.	0.98N	#187 tab terminal	SPDT (1c)	V-5410D	V-5410DK
	R.F. min.	0.25N				
	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5410E	V-5410EK
	O.P.	14.7±0.5mm				
	O.T. min.	0.8mm				
	M.D. max.	0.4mm				
Short lever 	O.F. max.	0.98N	#187 tab terminal	SPDT (1c)	V-5411D	V-5411DK
	R.F. min.	0.25N				
	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5411E	V-5411EK
	O.P.	15.3±0.5mm				
	O.T. min.	0.8mm				
	M.D. max.	0.4mm				
Standard lever 	O.F. max.	0.59N	#187 tab terminal	SPDT (1c)	V-5412D	V-5412DK
	R.F. min.	0.1N				
	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5412E	V-5412EK
	O.P.	15.3±1.5mm				
	O.T. min.	1.3mm				
	M.D. max.	1.2mm				
Long lever 	O.F. max.	0.29N	#187 tab terminal	SPDT (1c)	V-5413D	V-5413DK
	R.F. min.	0.05N				
	P.T. max.	6.4mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5413E	V-5413EK
	O.P.	15.3±3mm				
	O.T. min.	2.6mm				
	M.D. max.	2.4mm				
Short roller lever 	O.F. max.	1.18N	#187 tab terminal	SPDT (1c)	V-5414D	V-5414DK
	R.F. min.	0.2N				
	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5414E	V-5414EK
	O.P.	20.6±0.8mm				
	O.T. min.	0.8mm				
	M.D. max.	0.4mm				
Roller lever 	O.F. max.	0.59N	#187 tab terminal	SPDT (1c)	V-5415D	V-5415DK
	R.F. min.	0.1N				
	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5415E	V-5415EK
	O.P.	20.6±1.6mm				
	O.T. min.	1.3mm				
	M.D. max.	1.2mm				
Simulated lever 	O.F. max.	0.59N	#187 tab terminal	SPDT (1c)	V-5416D	V-5416DK
	R.F. min.	0.1N				
	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5416E	V-5416EK
	O.P.	18.5±1.5mm				
	O.T. min.	1.3mm				
	M.D. max.	1.2mm				

• Light Operating Force V-55□□□ Type (5A rating, O.F.=0.49N, UL/CSA standards acquired)

• Light Operating Force Low Current Load V-55□□□K Type (0.1A rating, O.F.=0.49N, UL/CSA standards acquired)

Actuators	Operating characteristics		Terminal shape	Circuit configurations	Catalog listing	Low Current Load Type
	Item	Characteristic value				
Pin plunger 	O.F. max.	0.49N	#187 tab terminal	SPDT (1c)	V-5510D	V-5510DK
	R.F. min.	0.12N				
	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5510E	V-5510EK
	O.P.	14.7±0.5mm				
	O.T. min.	0.8mm				
	M.D. max.	0.4mm				
Short lever 	O.F. max.	0.49N	#187 tab terminal	SPDT (1c)	V-5511D	V-5511DK
	R.F. min.	0.12N				
	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5511E	V-5511EK
	O.P.	15.3±0.5mm				
	O.T. min.	0.8mm				
	M.D. max.	0.4mm				
Standard lever 	O.F. max.	0.29N	#187 tab terminal	SPDT (1c)	V-5512D	V-5512DK
	R.F. min.	0.05N				
	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5512E	V-5512EK
	O.P.	15.3±1.5mm				
	O.T. min.	1.3mm				
	M.D. max.	1.2mm				
Long lever 	O.F. max.	0.15N	#187 tab terminal	SPDT (1c)	V-5513D	V-5513DK
	R.F. min.	0.025N				
	P.T. max.	6.4mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5513E	V-5513EK
	O.P.	15.3±3mm				
	O.T. min.	2.6mm				
	M.D. max.	2.4mm				
Short roller lever 	O.F. max.	0.59N	#187 tab terminal	SPDT (1c)	V-5514D	V-5514DK
	R.F. min.	0.1N				
	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5514E	V-5514EK
	O.P.	20.6±0.8mm				
	O.T. min.	0.8mm				
	M.D. max.	0.4mm				
Roller lever 	O.F. max.	0.29N	#187 tab terminal	SPDT (1c)	V-5515D	V-5515DK
	R.F. min.	0.05N				
	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5515E	V-5515EK
	O.P.	20.6±1.6mm				
	O.T. min.	1.3mm				
	M.D. max.	1.2mm				
Simulated lever 	O.F. max.	0.29N	#187 tab terminal	SPDT (1c)	V-5516D	V-5516DK
	R.F. min.	0.05N				
	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5516E	V-5516EK
	O.P.	18.5±1.5mm				
	O.T. min.	1.3mm				
	M.D. max.	1.2mm				

- Light Operating Force V-56□□□ Type (5A rating, O.F.=0.25N, UL/CSA standards acquired)
- Light Operating Force Low Current Load V-56□□□K Type (0.1A rating, O.F.=0.25N, UL/CSA standards acquired)

Actuators	Operating characteristics		Terminal shape	Circuit configurations	Catalog listing	Low Current Load Type
	Item	Characteristic value				
Pin plunger 	O.F. max.	0.25N	#187 tab terminal	SPDT (1c)	V-5610D	V-5610DK
	R.F. min.	0.06N				
Short lever 	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5610E	V-5610EK
	O.P.	14.7±0.5mm				
	O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	V-5611D	V-5611DK
	M.D. max.	0.4mm				
	O.F. max.	0.25N				
	R.F. min.	0.06N				
Standard lever 	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5611E	V-5611EK
	O.P.	15.3±0.5mm				
	O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	V-5612D	V-5612DK
	M.D. max.	0.4mm				
	O.F. max.	0.15N				
	R.F. min.	0.025N				
Long lever 	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5612E	V-5612EK
	O.P.	15.3±1.5mm				
	O.T. min.	1.3mm	#187 tab terminal	SPDT (1c)	V-5613D	V-5613DK
	M.D. max.	1.2mm				
	O.F. max.	0.074N				
	R.F. min.	0.015N				
Short roller lever 	P.T. max.	6.4mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5613E	V-5613EK
	O.P.	15.3±3mm				
	O.T. min.	2.6mm	#187 tab terminal	SPDT (1c)	V-5614D	V-5614DK
	M.D. max.	2.4mm				
	O.F. max.	0.29N				
	R.F. min.	0.05N				
Roller lever 	P.T. max.	1.6mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5614E	V-5614EK
	O.P.	20.6±0.8mm				
	O.T. min.	0.8mm	#187 tab terminal	SPDT (1c)	V-5615D	V-5615DK
	M.D. max.	0.4mm				
	O.F. max.	0.15N				
	R.F. min.	0.025N				
Simulated lever 	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5615E	V-5615EK
	O.P.	20.6±1.6mm				
	O.T. min.	1.3mm	#187 tab terminal	SPDT (1c)	V-5616D	V-5616DK
	M.D. max.	1.2mm				
	O.F. max.	0.15N				
	R.F. min.	0.025N				
Simulated lever 	P.T. max.	3.2mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5616E	V-5616EK
	O.P.	18.5±1.5mm				
Simulated lever 	O.T. min.	1.3mm	Solder and quick connector combined (#187)	SPDT (1c)	V-5616E	V-5616EK
	M.D. max.	1.2mm				

SPECIFICATIONS (for detailed specifications of low current load type, see the followed page.)

Type		1mm contact gap type	High capacity			Standard			Low operating force															
Catalog listing		V-5F9□□□	V-50□□C	V-52□□Q	V-51□□□	V-52□□E	V-53□□□	V-54□□□	V-55□□□	V-56□□□														
External standard	Conformed standards	JIS C 4505																						
	Approved standards	VDE, UL/CSA	UL/CSA	VDE, UL/CSA	UL/CSA																			
Structure	Contact type	Single-Pole Double-Throw (SPDT), Single-Pole Normally-Close (SPNC), Single-Pole Normally-Open (SPNO)																						
	Contact shape	Rivet																						
	Contact material	Silver alloy						Silver																
	Terminal shape	C terminal: Quick connector #250 Q terminal: Quick connector 4.8×0.5 (IEC 60760) D, DN terminals: Quick connector #187				E terminal: Solder and quick connector combined #187 EN terminal: Soldering exclusive (C, D, DN, E, EN or Q) in the catalog listings indicates terminal shape.																		
Electrical rating		See Table 1-1.																						
Electrical characteristics	Dielectric strength	Between non-continuous terminals 1,000Vac (2,000Vac for V-5F9□□□, 1,250Vac for V-52□□Q) 50/60Hz for 1 minute																						
		Between each terminal and non-conducting metal part 1,500Vac (2,000Vac for V-5F9□□□ and V-52□□Q) 50/60Hz for 1 minute																						
	Insulation resistance	Between each terminal and ground 1,500Vac (2,000Vac for V-5F9□□□ and V-52□□Q) 50/60Hz for 1 minute																						
	Initial contact resistance	Min. 100MΩ 500Vdc megger																						
Temperature rise		Max. 50mΩ (6 to 8Vdc 1A voltage drop method)																						
Temperature rise		30°C																						
Mechanical characteristics	Actuator strength	Withstand load 10 times O.F. (operating direction) for 1 minute																						
	Terminal strength	C terminal: Withstand tensile and pressing load of 50N for 1 minute D, DN terminals: Withstand tensile load of 80N for 1 minute Q terminal: Withstand tensile and pressing load of 92N for 1 minute E, EN terminals: Withstand tensile load of 23N for 1 minute																						
	Impact resistance *	300m/s ²			300m/s ²	200m/s ²	300m/s ²	200m/s ²	200m/s ²	50m/s ²														
	Vibration resistance *	1.5mm peak-to-peak amplitude, frequency 10 to 55Hz, for 2 continuous hours Contact release of 1ms or less at free position and operating limit positions.																						
	Allowable operating speed	Table below mm/s to 1m/s																						
		<table border="1"> <thead> <tr> <th>Actuator type</th> <th>0: Pin plunger</th> <th>1: Short lever</th> <th>2: Standard lever</th> <th>3: Long lever</th> <th>4: Short roller lever</th> <th>5: Roller lever</th> <th>6: Simulated lever</th> </tr> </thead> <tbody> <tr> <td>Min. speed</td> <td>0.24</td> <td>0.4</td> <td>0.6</td> <td>1.2</td> <td>0.4</td> <td>0.6</td> <td>0.6</td> </tr> </tbody> </table>									Actuator type	0: Pin plunger	1: Short lever	2: Standard lever	3: Long lever	4: Short roller lever	5: Roller lever	6: Simulated lever	Min. speed	0.24	0.4	0.6	1.2	0.4
Actuator type	0: Pin plunger	1: Short lever	2: Standard lever	3: Long lever	4: Short roller lever	5: Roller lever	6: Simulated lever																	
Min. speed	0.24	0.4	0.6	1.2	0.4	0.6	0.6																	
Operating cycle	Min. speed: Unstable state of contact must be 0.1s or less. Max. speed: Actuator must not be damaged. Max. 600 cycles/minute																							
Life	Mechanical life	Min. 10 million cycles (Function after operation is 70 to 100% of rated value. Operating frequency: 200 times/minute.) * *																						
	Electrical life	30Vac-6A, Min. 100,000 cycles	250Vac-21A, Min. 100,000 cycles	250Vac-16A, Min. 125,000 cycles	250Vac-11A, Min. 125,000 cycles	250Vac-11A, Min. 100,000 cycles	250Vac-5A, Min. 100,000 cycles																	
Environmental characteristics	Operating temperature range	-10 to +105°C	-20 to +85°C	-10 to +105°C	-20 to +105°C (Freezing or condensation not allowed.)																			
	Operating humidity range	Max. 85%RH																						
Mounting	Recommended tightening torque	0.4 to 0.6N-m (M3 screw)																						
	Insulation	Use an isolator when mounting.																						

Note: * indicates pin plunger type values. All unmarked items are values common to all catalog listings.

Note: ** The mechanical life of V-52□□Q is 1 million cycles.

Table 1-1 Electrical rating

Series	V-5F9□□□	V-50□□C	V-59□□D	V-52□□Q	V-51□□□	V-52□□E V-53□□□	V-54□□□ V-55□□□ V-56□□□
Rating	UL/CSA/EN rating 6A-30VDC	UL/CSA rating 21A-1/2HP-125, 250Vac, 0.6A-125Vdc, 0.3A-250Vdc	UL/CSA rating 16A-1/2HP-125, 250Vac, 0.6A-125Vdc, 0.3A-250Vdc	UL/CSA rating 16A-1/2HP-125, 250Vac, 0.6A-125Vdc, 0.3A-250Vdc EN rating 16A-250Vac	UL/CSA rating 16A-1/2HP-125, 250Vac, 0.6A-125Vdc, 0.3A-250Vdc	UL/CSA rating 16A-1/3HP-125, 250Vac, 0.6A-125Vdc, 0.3A-250Vdc	UL/CSA rating 11A-1/3HP-125, 250Vac, 0.5A-125Vdc, 0.25A-250Vdc UL/CSA rating 5A-1/6HP-125, 250Vac, 0.5A-125Vdc, 0.25A-250Vdc

Switch Information Relating to EN 61058 of **V-52□□Q** and **V-5F9□□□N**

Switch category	Switch for equipment
Degree of protection against electric shock	Within Class I equipment
Degree of protection against entry of solid objects and dust	IP40
Degree of contamination in operating environment	Clean state
Operating temperature range	-10 to +105°C
Rated voltage, rated current	Resistive load: 16A-250Vac (6A-30Vac for V-5F9□□□N), Motor load: 3A-250Vac
Rated frequency	50 to 60Hz
Type of terminal	4.8×0.5 (IEC 760)
Electrical lead used	Flexible lead, max. cross-sectional area 2.5mm ² , receptacle terminals used
Number of operations	50,000 times (100,000 times for V-5F9□□□N)
Switch operation method	Indirect operation
Contact gap	Microgap (3mm or less)
Category by heat and fire resistance	D
Tracking index (PTI)	250V
Switch mounting method	M3, 2 locations

Table 1-2 Electric duty

Rating		AC rating								DC rating									
Rated voltage		125Vac				250Vac				8Vdc		14Vdc		30Vdc		125Vdc		250Vdc	
Model	Switching load (A)	Resistance	Induction	Electric motor		Resistance	Induction	Electric motor		Resistance	Induction	Resistance	Induction	Resistance	Induction	Resistance	Induction	Resistance	Induction
				N.C.	N.O.			N.C.	N.O.										
V-5F9□□□N										11	6	11	6	6	4	0.5	0.05	0.25	0.04
V-50□□C		21	14	6	3	21	14	4	2	21	14	21	14	6	4	0.6	0.3	0.3	0.06
V-51□□□		16	10	4	2	16	10	3	1.5	16	10	16	10	6	4	0.6	0.3	0.3	0.06
V-52□□Q																			
V-59□□D																			
V-52□□E		11	7	3	1.5	11	7	2	1	11	6	11	6	6	4	0.5	0.1	0.25	0.04
V-53□□□																			
V-54□□□																			
V-55□□□		5	3	2	1	5	3	1	0.5	5	3	5	3	3	2	0.5	0.1	0.25	0.04
V-56□□□																			

LOW CURRENT LOAD TYPE SPECIFICATIONS

Catalog listing	V-52□□□K	V-53□□□K	V-54□□□K	V-55□□□K	V-56□□□K			
Conformed standards	JIS C 4505							
Approved standards	UL/CSA (approval No. UL: E 37559, CSA: LR 61643)							
Contact type	Single-Pole, Double-Throw (SPDT), Single-Pole Normally-Close (SPNC), Single-Pole Normally-Open (SPNO)							
Contact shape	Cross point							
Contact material	Gold alloy							
Terminal shape	D terminal: Quick connector #187, E terminal: Solder and quick connector combined #187							
Electrical rating	125Vac-0.1A, 30Vdc-0.1A, UL/CSA rating (min. rating 5Vdc-1mA)							
Dielectric strength	Between non-continuous terminals 1,000Vac							
	Between each terminal and non-conducting metal part 1,500Vac							
	Between each terminal and ground 1,500Vac							
Insulation resistance	Min. 100M Ω 500Vdc megger							
Initial contact resistance	Max. 50m Ω (6 to 8Vdc, 0.1A, voltage drop method)							
Temperature rise	30°C							
Actuator strength	Withstand load 10 times O.F. (operating direction) for 1 minute							
Terminal strength	E terminal: Soldered terminal: Withstand tensile load of 23N for 1 minute Quick connector: Withstand tensile and pressing load of 80N for 1 minute D terminal: Withstand tensile and pressing load of 80N for 1 minute							
Impact resistance *	300m/s ²	200m/s ²	300m/s ²	200m/s ²	100m/s ²			
	Contact release 1ms or less at free position and operating limit positions							
Vibration resistance *	1.5mm peak-to-peak amplitude, frequency 10 to 55Hz, for 2 continuous hours, contact release 1ms or less at free position and operating limit positions							
Allowable operating speed	Table below mm/s to 1m/s							
	Actuator type	0: Pin plunger	1: Short lever	2: Standard lever	3: Long lever	4: Short roller lever	5: Roller lever	6: Simulated lever
	Min. speed	0.24	0.4	0.6	1.2	0.4	0.6	0.6
Min. speed: Unstable state of contact must be max. 0.1s, Max. speed: Actuator must not be damaged.								
Operating cycle	Max. 600 cycles/minute							
Mechanical life	Min. 10 million cycles (operating cycle 200 cycles/minute)							
Electrical life	Min. 2 million cycles (operating cycle 20 cycles/minute)							
Operating temperature range	-20 to +105°C							
Operating humidity range	Max. 85%RH							
Mounting	0.4 to 0.6N-m (M3 screw)							
Insulation	Use an isolator when mounting.							

Note: * indicates pin plunger type values. All unmarked items are values common to all catalog listings.

PRECAUTIONS

● Mounting

- To secure the switch body, tighten the M3 screw on a flat and smooth surfaced by a torque of 0.4 to 0.6N-m.
We also recommend combined use of a spring washer and locking the M3 screw with adhesive to prevent the M3 screw from coming loose.
- Make sure that sufficient insulating space is maintained between terminals and the ground when the switch is mounted.
- At the switch's free position, ensure a gap between the operating mechanism and plunger or lever. Also, make sure that the plunger is pressed vertically.
- Set function after operation to at least 70% of the rated O.T. as the standard setting.
- When mounting the lever type switch, do not apply unnecessary force from the direction opposite to operation direction and from the side.

● Wiring

● Soldered terminals

Solder the terminal using a 60W soldering iron (soldering iron tip temperature: max. 350°C) making sure that the soldering time is kept to within five seconds. During soldering, prevent force from being applied to the terminals.

● Quick connector terminals

Insert the quick connector terminal into the receptacle for the #187 or #250 tab in parallel with the terminal.

● Selecting the switch

- Select the switch taking into consideration that the switch should not malfunction even if the operating characteristics change by $\pm 20\%$ of the rated values.

● Environmental considerations

- Avoid use at dusty locations or at locations subject to corrosive gases or silicon that may adversely influence the contacts.

● Handling precautions

- When using the switch for switching inductive loads (relays, solenoids, buzzers, etc.), arc may cause the contacts to malfunction. To prevent this, we recommend inserting an adequate spark eliminating circuit.
- Reliability may drop if synchronization occurs in the AC circuit.

● Checking the actual load

- To improve reliability during actual use, we request that you check the quality of the switch in an actual operating state.