

MICRO SWITCH

V-TYPE

The best quality for customers' satisfaction

V형 마이크로 스위치 (V - Type Micro Switch)



특징 (Feature)

- 미소부하 0.1부터 최대 21A까지 개폐 가능한 스위치
- 적재적소에 따른 다양한 Actuator와 접촉형식
- 각종 자동화기기는 물론 가전제품용에도 적합
- 종래의 V형을 완전히 개선하여 사용이 편리
- UL, cUL(CSA), VDE, ENEC, KC 인증
- RoHS, REACH 적용
- Wide switching capacity range from 0.1A to 21A
- Variety of actuator & contact configuration
- Suitable for all kinds of automation and home appliance.
- Convenient utility through improvement of existing V type
- UL, cUL(CSA), VDE, ENEC, KC(Korea) approved
- RoHS, REACH applicated

용도 (Application)

- 전자레인지, 세탁기, 냉장고, 기타 가전제품 등
- 복사기, 자동판매기
- 전산기 주변 단말기
- 통신기기, 의료기기
- 산업기기
- Microwave ovens, Washing machines, Refrigerators, the other Home appliances
- Copy machines, Automatic vending machines
- Monitors related to computer
- Communication machines, Medical instruments
- Industry instruments

형명분류 (Nomenclature Breakdown)

G S M - V 1 6 1 1 A 2

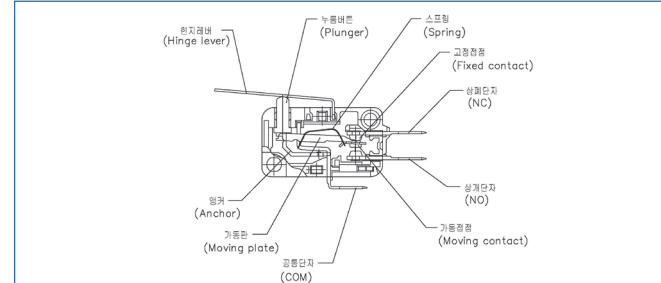
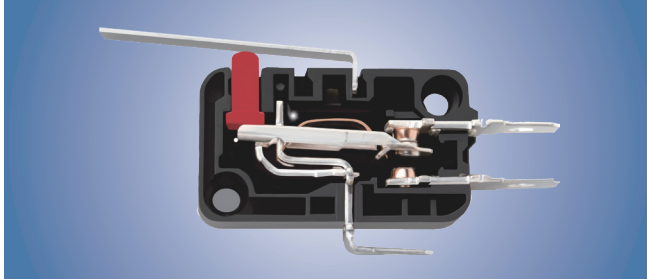
정격 (Rating)	액추에이터 (Actuator)	접촉형식 (Contact configuration)	단자 (Terminal)	동작력 (Operating force)
21 : 21 A 16 : 16 A 11 : 11 A 6 : 6 A 3 : 3 A 03 : 0.3 A 01 : 0.1 A	0 : 핀누름 버튼 (Pin plunger) 1 : 힌지 쇼트 레버 (Short hinge lever) 2 : 힌지 레버 (Hinge lever) 3 : 힌지 롱 레버 (Long hinge lever) 4 : 힌지 R 레버 (Simulated hinge lever) 5 : 힌지 롤러 쇼트 레버 (Short hinge roller lever) 6 : 힌지 롤러 레버 (Hinge roller lever) 18 : 힌지 스텝 레버 (Stepped hinge lever)	1 : 단극 쌍투형 S.P.D.T(1c) 2 : 상시 폐로형 S.P.S.T-NC(1b) 3 : 상시 개로형 S.P.S.T-NO(1a)	A : Solder or # 187 tab B : # 187 tab C : # 250 tab	4 : 400g 3 : 300g 2 : 200g 1 : 120g 06 : 60g 03 : 30g

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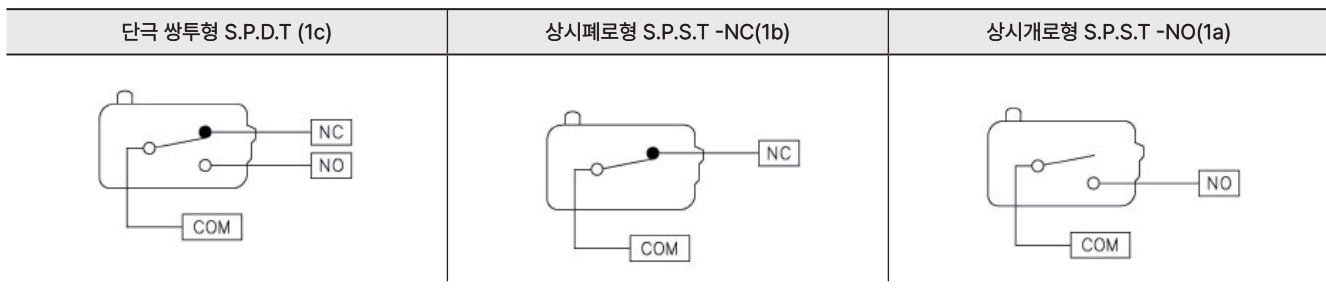
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구조 (Structure)



접촉형식 (Contact Configuration)



정격 (Ratings)

종류 (Type)	항목 (Item)	정격전압 (Rated voltage) (V)	무유도 부하 (A) Non-inductive load				유도 부하 (A) Inductive load				돌입전류 (Inrush current)
			저항부하 Resistive load		램프부하 Lamp load		유도부하 Inductive load		전동기 부하 Motor load		
			NC	NO	NC	NO	NC	NO	NC	NO	
21A	250V AC	21	3	12	4	Max. 50A					
	8V DC	21	5	12	7						
	30V DC	14	5	12	5						
	125V DC	0.6	0.1	0.6	0.1						
	250V DC	0.3	0.05	0.3	0.05						
16A	250V AC	16	2	10	3	Max. 40A					
	8V DC	16	4	10	6						
	30V DC	10	4	10	4						
	125V DC	0.6	0.1	0.6	0.1						
	250V DC	0.3	0.05	0.3	0.05						
11A	250V AC	11	1.5	6	2	Max. 24A					
	8V DC	11	3	6	3						
	30V DC	10	3	6	3						
	125V DC	0.6	0.1	0.6	0.1						
	250V DC	0.3	0.05	0.3	0.05						
6A	250V AC	6	0.5	4		Max. 15A					
	8V DC	6	3	4							
	30V DC	5	3	4							
	125V DC	0.4	0.1	0.4							
	250V DC	0.3	0.05	0.2							
3A	250V AC	3				Max. 10A					
	8V DC	3									
	30V DC	3									
	125V DC	0.2									
	250V DC	0.1									
0.3A	24V DC	0.3		0.3							
0.1A	125V AC	0.1		0.1							
	30V DC	0.1		0.1							

주) 1. 램프부하는 정격전류 10배의 돌입전류를 가지고, 전동기 부하는 6배의 돌입전류를 가집니다.

Note) 1. Lamp load has 10 times of inrush current comparing with rated current, while motor load has 6 times of inrush current comparing with rated current

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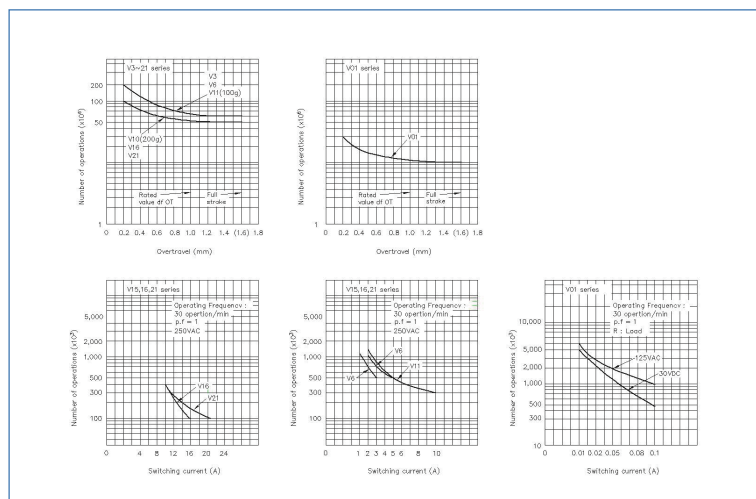
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성능 (Characteristics)

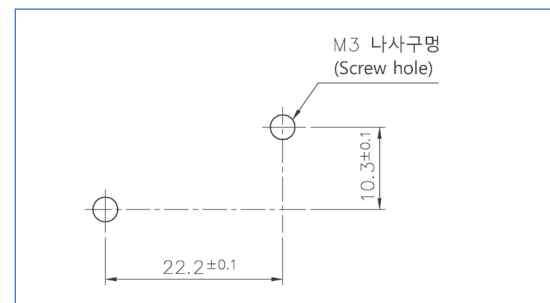
항목 (Item)		종류 (Type)	GSM-V21	GSM-V16	GSM-V11	GSM-V6	GSM-V3	GSM-V03	GSM-V01
허용조작속도 (Operating speed)			0.1mm~1m/s(핀누름버튼형의 경우)(for pin plunger models)						
허용동작빈도 (Operating frequency)			기계적 : 600회/분, 전기적 : 30회/분 (Mechanically: 600 operations/min. Electrically: 30 operations/min)						
절연저항 (Insulation resistance)			100MΩ 이상 (DC 500V 절연저항계에서) (Min. 100MΩ at 500VDC with insulation tester)						
접촉저항 (Contact resistance)			최대 15mΩ (초기치) Max. 15mΩ (Initial)			최대 30mΩ (초기치) Max. 30mΩ (Initial)		최대 50mΩ (초기치) Max. 50mΩ (Initial)	
내전압 (Dielectric strength)			비연속 단자간 1,000VAC, 50/60Hz, 1분간 (1,000VAC, 50/60Hz for 1 min. between noncontinuous terminals) 각 단자와 비충전 금속부간, 각 단자와 접지간 1,500VAC, 50/60Hz, 1분간 (1,500VAC, 50/60Hz for 1 min. between each terminal & noncurrent carrying parts, between each terminal & ground)						
내진동성 (Vibration durability)			오동작 내구성 : 10~55Hz, 진동폭: 1.5mm에서 (Malfunction durability : 10~55 Hz at 1.5mm amplitude)						
충격 (Shock)	기계적 내구성 (Mechanical durability)	최대 1,000 m/s ² (Max. 100G)				최대 400 m/s ² (Max. 40G)			
	오작동 내구성 (Malfunction durability)	최대 300 m/s ² (Max. 30G)		최대 200 m/s ² (Max. 20G)		최대 100 m/s ² (Max. 10G)			
수명 (Service life)	기계적 (Mechanical)	1,000만회 이상 (Min. 10,000,000 operations)							
	전기적 (Electrical)	10만회 이상 (Min. 100,000 operations)				50만회 이상 (Min. 500,000 operations)		100만회 이상 (Min. 1,000,000 operations)	
중량 (Weight)			약 6.2g (핀누름버튼형 기준) (Approx. 6.2g pin plunger)						
사용 주위 온도 (Environmental temperature)			-25 ~ +130℃						
사용 주위 습도 (Environmental humidity)			85% RH 이하 (Max. 85% RH)						

특성자료 (Characteristic Data)



취부구멍 가공치수

(Mounting Holes) (Unit : mm)



- 스위치 취부는 적절한 토크 (4~6kgf·cm)로 설치하여 주십시오.
(Installation of switch should be done by apt torque.)

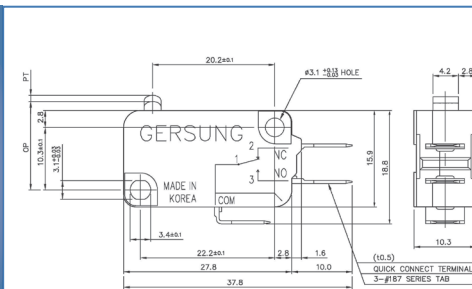
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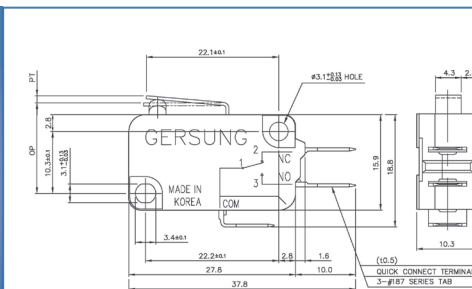
외형 치수 및 특성 (Dimensions and operating characteristics)

핀누름 버튼형 (Pin plunger)



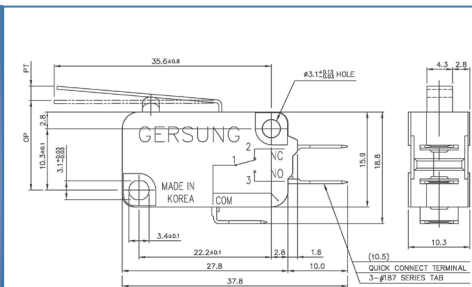
	V160		V110		V60	V30	V030	V010
OF Max.	200g	120g	200g	120g	120g	120g	60g	60g
RF Min.	50g	20g	50g	20g	20g	20g	12g	12g
PT Max.	1.2mm							
OT Min.	1.0mm							
MD Max.	0.4mm							
OP	14.7 ± 0.4mm							

한지 쇼트 레버형 (Short hinge lever)



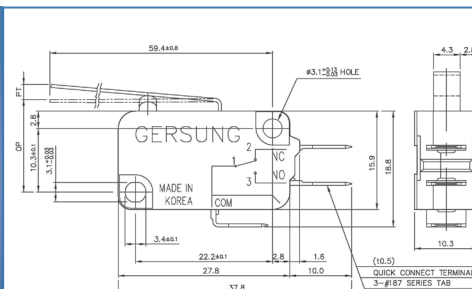
	V161		V111		V61	V31	V031	V011
OF Max.	200g	120g	200g	120g	120g	120g	60g	60g
RF Min.	50g	20g	50g	20g	20g	20g	12g	12g
PT Max.	1.6mm							
OT Min.	0.8mm							
MD Max.	0.6mm							
OP	15.2 ± 0.5mm							

한지 레버형 (Hinge lever)



	V162		V112		V62	V32	V032	V012
OF Max.	120g	60g	120g	60g	60g	60g	35g	35g
RF Min.	20g	10g	20g	10g	10g	10g	6g	6g
PT Max.	4.0mm							
OT Min.	1.6mm							
MD Max.	1.5mm							
OP	15.2 ± 1.2mm							

한지 롱 레버형 (Long hinge lever)



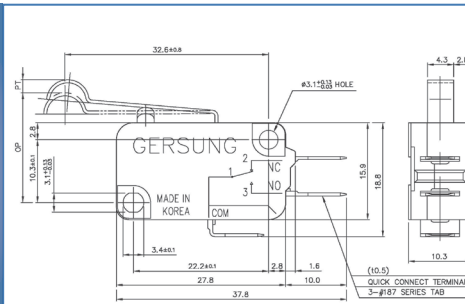
	V163		V113		V63	V33	V033	V013
OF Max.	60g	30g	60g	30g	30g	30g	15g	15g
RF Min.	10g	5g	10g	5g	5g	5g	3g	3g
PT Max.	9.0mm							
OT Min.	2.0mm							
MD Max.	2.8mm							
OP	15.2 ^{+2.6} _{-3.2} mm		15.2 ± 2.6mm					

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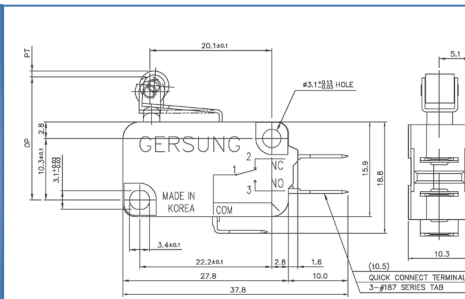
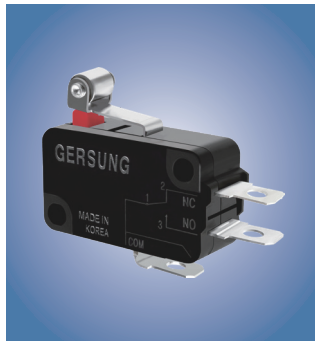
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■ 한지 R 레버형 (Simulated hinge lever)



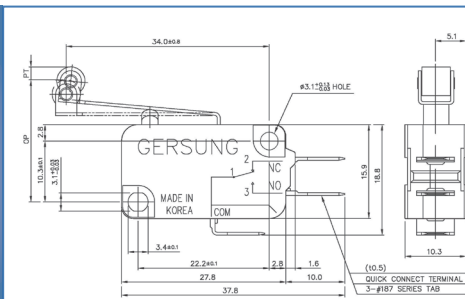
	V164		V114		V64	V34	V034	V014
OF Max.	120g	60g	120g	60g	60g	60g	35g	35g
RF Min.	20g	10g	20g	10g	10g	10g	6g	6g
PT Max.	4.0mm							
OT Min.	1.6mm							
MD Max.	1.5mm							
OP	18.7 ± 1.2mm							

■ 한지 롤러 쇼트 레버형 (Short hinge roller lever)



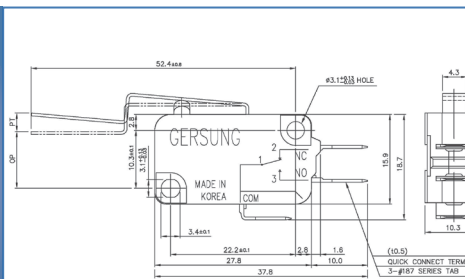
	V165		V115		V65	V35	V035	V015
OF Max.	200g	120g	200g	120g	120g	120g	60g	50g
RF Min.	50g	20g	50g	20g	20g	20g	12g	12g
PT Max.	1.6mm							
OT Min.	0.8mm							
MD Max.	0.6mm							
OP	20.7 ± 0.6mm							

■ 한지 롤러 레버형 (Hinge roller lever)



	V166		V116		V66	V36	V036	V016
OF Max.	120g	60g	120g	60g	60g	60g	35g	35g
RF Min.	20g	10g	20g	10g	10g	10g	6g	6g
PT Max.	4.0mm							
OT Min.	1.6mm							
MD Max.	1.5mm							
OP	20.7 ± 1.2mm							

■ 한지 스텝 레버형 (Stepped hinge lever)



	V1618		V1118		V618	V318	V0318	V0118
OF Max.	125g	65g	125g	65g	65g	65g	35g	35g
RF Min.	25g	10g	25g	10g	10g	10g	6g	6g
PT Max.	5.5mm							
OT Min.	2.0mm							
MD Max.	1.5mm							
OP	10.0 ± 1.2mm							