



안독전자(주)



HANDOUK Electronics Co., Ltd.

인천광역시 부평구 청천동 440-4 (남광센트렉스 412호)
Tel : (032)363-3800(대), 3801~4 Fax : (032)363-3805
Rm 412, Cheongcheon-dong 440-4, Bupyeong-gu, Incheon 403-858, Korea
Tel : +82-32-363-3800(Rep), 3801~4 Fax : +82-32-363-3805

All the data sheets are subject to change without notice. For updated information please visit our website



HANDOUK

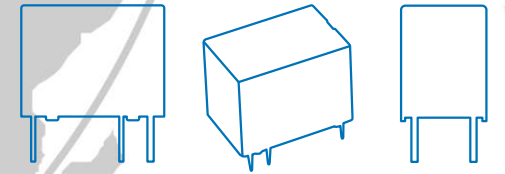
Electronics



HANDOUK Electronics Co., Ltd.

한독전자(주) **HANDOUK Electronics Co., Ltd.**

It's Possible



HANDOUK has:

- Telecom relays
- Miniature power relays
- General purpose relays
- Automotive relays
- Solid state relays
- Relay sockets

Totally six classifications, more than 50 series, and more than 15,000 specifications, and 2 ~ 3 new series relays are developed each year. All Handouk relays have UL& CUR, and some TUV, VDE, SEMKO approved. They are widely used in fields like industrial control, automotives, telecom equipments, Home appliance and metering instruments.

Company history:

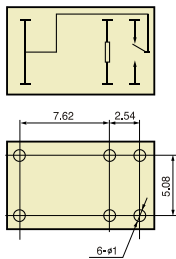
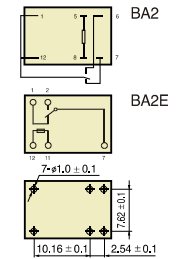
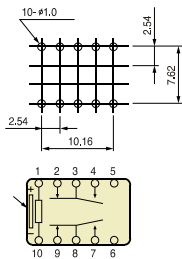
- 2001 한독전자 설립
- 2002 UL 승인 취득 : E197546, E222977
- 2003 릴레이 홈페이지 구축 www.handouk.co.kr
- 2003 VDE취득 : NO. 40008094외
- 2005 TUV취득 : R50056430외
- 2005 한독전자(주)로 법인전환
- 2008 본사 부평공단 확장 이전

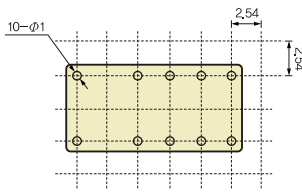
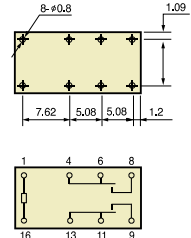
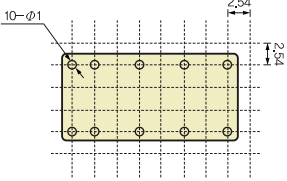
PROFESSIONAL
RELAY
MANUFACTURER



Telecom Relay

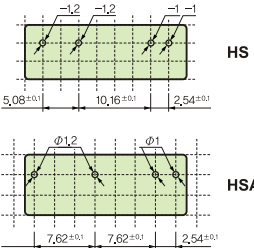
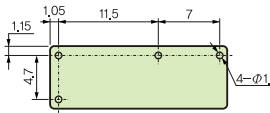
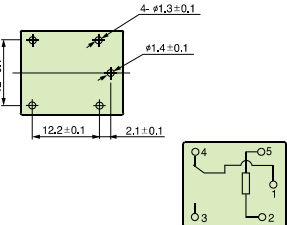
Classification

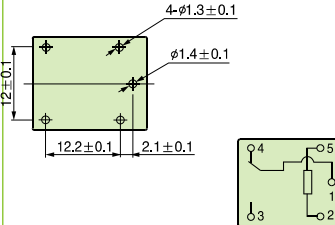
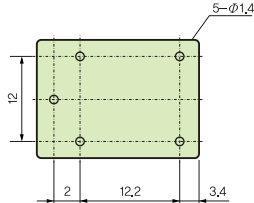
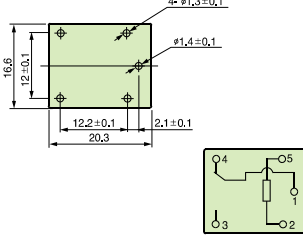
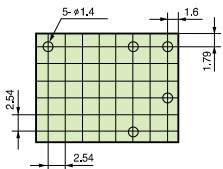
Model	BA1	BA2	BA3
Appearance 형 상			
Size:L×W×H	12.4×7.4×9.9mm	15.7×10.4×11.4mm	14×9×4.75mm
Features 특 정	- 2A carrying current - High sensitivity: 150mW, 200mW - Sub miniature - DIP standard terminal - Au-clad contacts - Sealed version	- Small size and low cost - DIP standard terminal - Several sensitivity coil - Sealed version	- DIP standard terminal - High sensitivity: 0.14W or 0.10W - Monostable or bistable relays - Single and double coil magnet latching type available
Contact Form 접점구조	1C	1A, 1C	2C
Contact Ratings 접점용량	2A 120VAC 2A 24VDC	3A 120VAC 3A 24VDC	1A 30VDC 0.5A 125VAC
Max Switching Voltage 최대개폐 전압	120VAC / 60VDC	240VAC / 60VDC	220VAC / 250VDC
Max Switching Current 최대개폐 전류	2A	5A	1A
Max Switching Power 최대개폐력	240VA / 48W	360VA / 90W	62.5VA / 30W
Contact Resistance 접촉저항	Max. 100mΩ	Max. 100mΩ	Max. 50mΩ
Coil Voltage 코일전압	DC 3~24VDC	3~48VDC	3~24VDC
Coil Power 소비전류	DC 0.15W, 0.2W	0.2W, 0.36W, 0.45W	0.10W, 0.14W, 0.2W
Operate Time 동작시간	4ms	5ms	2ms
Release Time 복귀시간	3ms	5ms	2ms
Dielectric Strength 내전압	Open Contacts 접점간 1,000VAC	500VAC	1,000VAC
Insulation Resistance 절연저항	Contacts and Coil 접점, 코일간 1,000MΩ	1,000VAC	1,000VAC
Shock Resistance 충격전압	Functional 기능적 10G	100MΩ	50G
	Destructive 파괴적 100G	50G	100G
Vibration Resistance 진동저항	10~55HZ, 1.5mm	10~55HZ, 1.5mm	10~55HZ, 3mm
Humidity 습도	35~85% RH	40~85% RH	85%
Ambient Temperature 주위온도	-30~70℃	-30~70℃	-40~85℃
Electrical Life 전기적 수명	1×10 ⁵	1×10 ⁵	1×10 ⁵
Mechanical Life 기계적 수명	1×10 ⁷	1×10 ⁷	5×10 ⁸
Weight 무게	2.2g	3.5g	1.5g
Layout(Bottom View) 치 수			
Safety Standard 안전규격			
Mounting 장착	P.C.B	P.C.B	P.C.B

BC2	BC3	BC4
		
15.0×7.5×9.0	21×10×12.2mm	20.2×10×10.6mm
- Meets EN60950 / EN41003 - Surge voltage up to 2500VAC, meets FCC part 68 and telecordia - 2kV dielectric strength (between coil and contacts) - Bifurcated contacts - Single side stable and latching types available	- DIL pitch terminals - High sensitivity - Dielectric strength 1000VAC - Fully sealed - Bifurcated contact	- High sensitivity: 150mW - High switching capacity : 60W / 125VA - Epoxy wash tight for automatic wave soldering and cleaning - Bifurcated contacts - Single side stable and latching types available
2C	2C(Bifurcated Crossbar)	2C
2A 30VDC 0.5A 125VAC 220VAC / 250VDC	1A 24VDC 0.5A 120VAC 60VAC / 240VDC	1A 125VAC 2A 30VDC 250VAC / 220VDC
2A	2A	2A
62.5VA / 60W	120VA / 60W	125VA / 60W
Max. 50mΩ	Max. 100mΩ	Max. 50mΩ
1.5~48VDC	3~48VDC	3~48VDC
0.10W, 0.14W, 0.2W	0.15W, 0.20W, 0.36W, 0.45W	Bistable : 0.75W, 0.1W / Monostable : 0.15W, 0.2W
4ms	6ms	3ms
4ms	4ms	3ms
1,000VAC	500VAC	1,000VAC
2,000VAC	1,000VAC	1,500VAC
1,000MΩ	100MΩ	1,000MΩ
75G	10G	50G
100G	50G	100G
10~55HZ, 3.3mm	10~55HZ, 1.5mm	10~55HZ, 196m/s ² (20g)
85%	40~85%	85%
-40~85℃	-40~70℃	-40~85℃
1×10 ⁵	1×10 ⁵	1×10 ⁵ (2A 30VDC), 5×10 ⁵ (1A 30VDC)
1×10 ⁸	1×10 ⁷	1×10 ⁸
2g	5g	4.5g
		
		
P.C.B	P.C.B	P.C.B

Miniature Power Relay

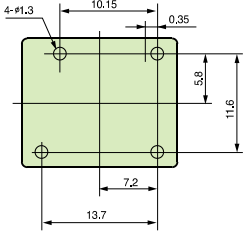
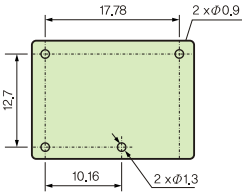
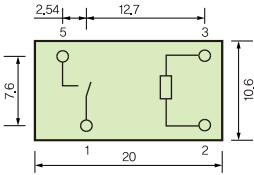
Classification

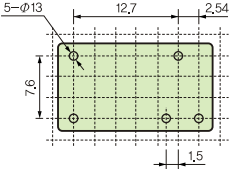
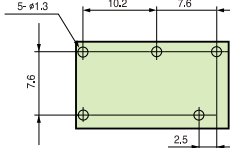
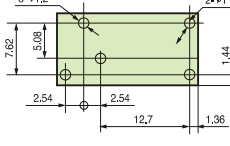
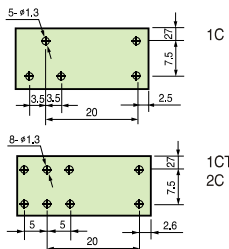
Model	HS/A	HU	HA1
Appearance 형상			
Size:L×W×H	20.0×5.0×12.5mm	20.4×7.0×15.0mm	19×15.4×15.5mm
Features 특징	- 5A switching capability - 2kV dielectric strength (between coil and contacts) - Surge voltage up to 4kV (between coil and contacts) - Slim size (width 5mm, height 12.5mm) - High sensitive : 0.12W	- 10kV impulse withstand voltage (between coil and contacts) - Highly efficient magnetic circuit for high sensitive : 200mW - Class F insulation available - Extremely small footprint utilizing PCB area	- 10A switching capability - Small footprint - Sealed type available
Contact Form 접점구조	1A	1A	1A, 1C
Contact Ratings 접점용량	5A250VAC 5A30VDC	3A250VAC 3A30VDC	1A:10A240VAC, 12A24VDC 1C:7A240VAC, 10A24VDC
Max Switching Voltage 최대개폐 전압	250VAC / 110VDC	277VAC / 30VDC	250VAC / 30VDC
Max Switching Current 최대개폐 전류	5A	5A	15A
Max Switching Power 최대개폐력	1.250VA / 150W	831VA / 90W	2,770VA / 240W
Contact Resistance 접촉저항	Max.100mΩ	Max.100mΩ	Max.100mΩ
Coil Voltage 코일전압	DC 5~24VDC	4.5~24VDC	3~48VDC
Coil Power 소비전력	DC 0.12W to 0.18W	0.2W	0.36W
Operate Time 동작시간	10ms	10ms	10ms
Release Time 복귀시간	5ms	10ms	5ms
Dielectric Strength 내전압	Open Contacts 접점간 1,000VAC Contacts and Coil 접점, 코일간 2,000VAC	750VAC 4,000VAC	750VAC 1,500VAC
Insulation Resistance 절연저항	1,000MΩ	1,000MΩ	100MΩ
Shock Resistance 충격전압	Functional 기능적 100m/s ² Destructive 파괴적 1000m/s ²	100m/s ² 1,000m/s ²	10G 100G
Vibration Resistance 진동저항	10~55HZ, 1.5mm	10~55HZ, 1.5mm	10~55HZ
Humidity 습도	5~85% RH	35~85% RH	40~85% RH
Ambient Temperature 주위온도	-40~85℃	-40~85℃	-40~70℃
Electrical Life 전기적 수명	2×10 ⁷	1×10 ⁵	1×10 ⁵
Mechanical Life 기계적 수명	1×10 ⁵	1×10 ⁷	1×10 ⁷
Weight 무게	3g	4g	10g
Layout(Bottom View) 치수			
Safety Standard 안전규격			
Mounting 장착	P.C.B	P.C.B	P.C.B

HA2	HA2D	HA3	HB
			
22.5×16.5×16.5mm	22.5×16.5×16.5mm	20.3×16.6×20.2mm	21.3×16.2×14.4mm
- SPST & SPDT configuration - Standard PC layout - Sealed type available	- 12A switching capability - High performance, Low profile - 2kV dielectric strength (between coil and contacts) - VDE 0631 / 0700 - UL 94, V-0, CTI 250 flammability class	- 10A Switching capability - SPST & SPDT configuration - Small footprint - Sealed type available	- Subminiature size - 10A(6A) Switching Capabilites - SPDT configuration
1A, 1C	1A, 1C	1C(T), 1A(T)	1C
1A:10A240VAC, 12A24VDC 1C:7A240VAC, 7A24VDC	1A:10A250VAC 1C: 10A/7A, 250VDC	1A:12A240VAC, 15A24VDC 1C:10A240VAC, 10A24VDC	Medium: 6A300VAC/28VDC Heavy: 10A125VAC/24VDC
250VAC / 30VDC	250VAC / 30VDC	250VAC / 30VDC	300VAC / 28VDC
12A	12A	15A	10A
2,400VA / 280W	2,500VA / 300W	2,770VA / 240W	1,800VA / 240W
Max.100mΩ	Max.100mΩ	Max.100mΩ	Max.100mΩ
3~48VDC	3~48VDC	3~48VDC	5~48VDC
0.36W	0.36W	0.36W	0.45W
10ms	10ms	10ms	6ms
5ms	5ms	5ms	3ms
750VAC	750VAC	750VAC	750VAC
1,500VAC	2,000VAC	1,500VAC	2,000VAC
100MΩ	100MΩ	100MΩ	100MΩ
100m/s ²	100m/s ²	100m/s ²	100m/s ² (10G)
1,000m/s ²	1,000m/s ²	1,000m/s ²	1,000m/s ² (100G)
10~55HZ, 1.5mm	10~55HZ, 1.5mm DA	10~55HZ	10~55HZ, 1.5mm DA
35~95% RH	35~85% RH	35~85% RH	98% RH
-40~70℃	-40~85℃	-40~70℃	-55~90℃
1×10 ⁵	1×10 ⁵	1×10 ⁵	1×10 ⁵
1×10 ⁷	1×10 ⁷	1×10 ⁷	1×10 ⁷
10g		13g	8g
			
		 	
P.C.B	P.C.B	P.C.B	P.C.B

Miniature Power Relay

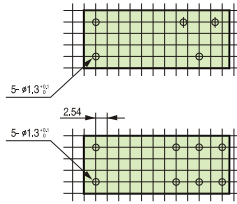
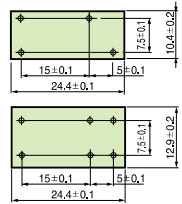
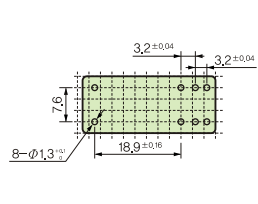
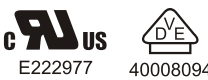
Classification

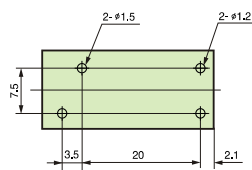
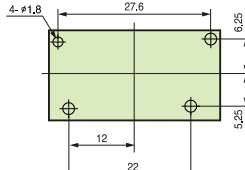
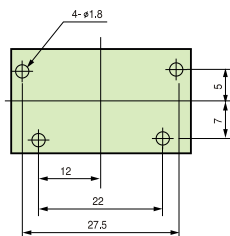
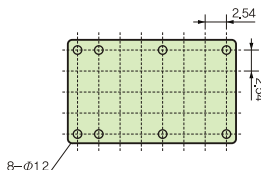
Model	HC1	HC3	HE
Appearance 형상			
Size:L×W×H	18.4×15.2×10.2mm	22.0×16×10.9mm	20×10.6×15.6mm
Features 특징	- 12A switching capability - SPST-NO configuration - Low seated height - Small footprint - Sealed version available	- Low height, flat construction - 16A switching capability - High sensitive 200mW - PCB & QC terminals available - Wash tight and flux proofed types available (with vent-hole cover)	- 10A switching capability - Sub miniature - PCB layout - Sealed types
Contact Form 접점구조	1A	1A, 1C	1A
Contact Ratings 접점용량	12A 125VAC 10A 277VAC / 30VDC	NO : 16A 250VAC NC : 6A 250VAC	10A 120VAC / 5A 240VAC 5A 30VDC
Max Switching Voltage 최대개폐 전압	277VAC	250VAC / 30VDC	250VAC / 30VDC
Max Switching Current 최대개폐 전류	12A	16A	10A
Max Switching Power 최대개폐력	2,770VA / 300W	4,000VA / 300W	1,200VA / 150W
Contact Resistance 접촉저항	Max. 100mΩ	Max. 100mΩ	Max. 100mΩ
Coil Voltage 코일전압	DC 3~24VDC	5~48VDC	5~48VDC
Coil Power 소비전력	DC 0.45W	0.2W, 0.4W	0.2W, 0.45W
Operate Time 동작시간	8ms	10ms	8ms
Release Time 복귀시간	5ms	5ms	5ms
Dielectric Strength 내전압	Open Contacts 접점간 1,000VAC Contacts and Coil 접점, 코일간 2,500VAC	1,000VAC 2,500VAC	1,000VAC 2,500VAC
Insulation Resistance 절연저항	100MΩ	1,000MΩ	1,000MΩ
Shock Resistance 충격전압	Functional 기능적 100m/s ² Destructive 파괴적 1,000m/s ²	100m/s ² 1,000m/s ²	100m/s ² 1,000m/s ²
Vibration Resistance 진동저항	10~55HZ	10~55HZ	10~55HZ
Humidity 습도	35~95% RH	35~85% RH	40~85% RH
Ambient Temperature 주위온도	-40~85℃	-40~85℃	-40~70℃
Electrical Life 전기적 수명	1×10 ⁵	1×10 ⁵	1×10 ⁵
Mechanical Life 기계적 수명	1×10 ⁷	1×10 ⁷	1×10 ⁷
Weight 무게	6g	8g	8g
Layout(Bottom View) 치수			
Safety Standard 안전규격			
Mounting 장착	P.C.B	P.C.B	P.C.B

HE1	HF	HG	HL1
			
18.4×10.2×15.3mm	20.5×10.6×15.3mm	20.5×10.5×20.5mm	29×12.7×20mm
- 10A switching capability - Subminiature standard PCB layout - Wash tight and flux proofed types available	- 10A Switching capability - SPST-NO & SPDT configuration - Standard PCB layout - Sealed version available	- SPST-NO & SPDT configuration - Slim type meet high density mounting - Wide operating range - Sealed version available	- 1A, 1C, 2A, 2C configurations - 5KV dielectric between coil and contacts - 3A, 8A, 10A, 12A, 16A contact rating
1A, 1C	1A, 1C	1A, 1C	1A, 1C, 2A, 2C
1A: 10A 125VAC / 1AT: 8A 250VAC / 1C: 3A 250VAC	1A: 10A 125VAC, 5A 30VDC 1C: 3A 250VAC, 3A 30VDC	1A: 5A 250VAC, 5A 30VDC 1C: 3A 250VAC, 3A 30VDC	1CT: 16A 240VAC / 1C: 10A 240VAC / 1CH: 16A 240VAC 2C: 5A 240VAC / 2CM: 8A 240VAC
250VAC / 30VDC	277VAC / 30VDC		240VAC / 30VDC
12A	10A	5A	12A
1,250VA / 150W	1,250VA / 150W	1,250VA / 150W	3,840VA / 480W
Max. 100mΩ	Max. 100mΩ	Max. 100mΩ	Max. 100mΩ
3~24VDC	3~48VDC	3~48VDC	3~100V
0.2W, 0.45W	0.2W, 0.45W	0.25W, 0.36W	0.54W, 0.72W
8ms	8ms	10ms	20ms
5ms	5ms	5ms	10ms
1,000VAC	1,000VAC	1,000VAC	1,000VAC
2,500VAC	4,000VAC	2,000VAC	5,000VAC
100MΩ	500MΩ	1,000MΩ	100MΩ
100m/s ²	100m/s ²	100m/s ²	100m/s ²
1,000m/s ²	1,000m/s ²	500m/s ²	1,000m/s ²
10~55HZ	10~55HZ	10~55HZ	10~55HZ, 1.5mm
35~95% RH	35~95% RH	45~85% RH	35~95% RH
-40~70℃	-40~70℃	-40~85℃	-30~70℃
1×10 ⁵	1×10 ⁵	1×10 ⁵	1×10 ⁵
1×10 ⁷	1×10 ⁷	1×10 ⁷	1×10 ⁷
7g		8g	14g
			
			 
P.C.B	P.C.B	P.C.B	P.C.B

Miniature Power Relay

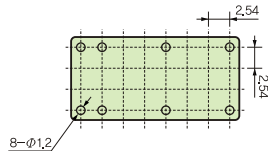
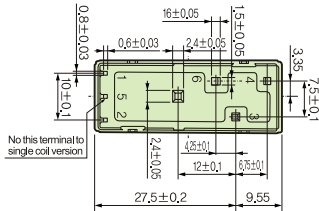
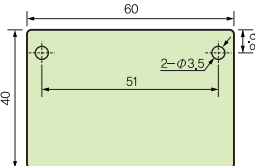
Classification

Model	HL2	HL3	HL51
Appearance 형 상			
Size:L×W×H	29×12.7×15.7mm	1A:24.4×10.4×25 2A:24.4×12.9×24.8	28.5×10.1×12.5mm
Features 특 징	- Low height - Sensitivity 250mW, 400mW - 5KV dielectric strength between coil and contacts	- 1A, 2A configuration - Immersion cleanable - Sealed version available - Application : HAVC, CTV monitor, emergency light	- 10A switching capability - 5kV dielectric strength (between coil and contacts) - Low height : 12.5mm - Creepage distance : 8mm (VDE0435/0631/0700) - Product in accordance to IEC 60335-1 available
Contact Form 접점구조	1A, 1C, 2A, 2C	1A 2A	1A, 1B, 1C 2A, 2B, 2C
Contact Ratings 접점용량	T:16A250VAC H:12A250VAC M:8A250VAC	1A:10A250VAC 2A:5A250VAC 10A30VDC 5A30VDC	1C:10A 2C:5A 250VAC/30VDC 250VAC/30VDC
Max Switching Voltage 최대개폐 전압	440VAC / 125VDC	250VAC / 30VDC	250VAC / 30VDC
Max Switching Current 최대개폐 전류	12A / 16A / 8A	12A 7A	10A 5A
Max Switching Power 최대개폐력	3,000VA/4,000VA/2,000VA	2,500VA/300W 1,250VA/150W	2,500VA/300W 1,250VA/150W
Contact Resistance 접촉저항	Max.100mΩ	Max.100mΩ	Max.100mΩ
Coil Voltage 코일전압	DC 5~110VDC AC 24V - 230VAC	3~48VDC	5~60VDC
Coil Power 소비전력	DC 0.25W/0.4W AC	0.25W, 0.54W	0.22~0.29W
Operate Time 동작시간	15ms	20ms	10ms
Release Time 복귀시간	8ms	10ms	5ms
Dielectric Strength 내전압	Open Contacts 접점간 1,000VAC Contacts and Coil 접점, 코일간 5,000VAC	1,000VAC 4,000VAC	1,000VAC 5,000VAC
Insulation Resistance 절연저항	1,000MΩ	100MΩ	1,000MΩ
Shock Resistance 충격전압	Functional 기능적 100m/s ² Destructive 파괴적 1,000m/s ²	100m/s ² 1,000m/s ²	NC : 50m/s ² / NO : 100m/s ² 1,000m/s ²
Vibration Resistance 진동저항	10~150HZ	10~55HZ	10~55HZ
Humidity 습도	35~85% RH	20~85% RH	35~85% RH
Ambient Temperature 주위온도	-40~85℃	-40~70℃	-40~85℃
Electrical Life 전기적 수명	1×10 ⁵	1×10 ⁵	1×10 ⁵
Mechanical Life 기계적 수명	1×10 ⁷	1×10 ⁷	1×10 ⁷
Weight 무게	13.5g	1A: 11g 2A: 13g	8g
Layout(Bottom View) 치 수			
Safety Standard 안전규격			
Mounting 장착	P.C.B	P.C.B	P.C.B

HM1	HM3	HM4	HT1
			
29×12.6×24.4mm	30.5×16×23.5mm	31×18.5×29mm	20.0×15.0×10.2mm
- 16A switching capability - Low height : 24.4mm - 5KV dielectric & 10KV surge - 8mm creepage distance	- Ideal for motor switching in appliances and HAVC - 20A switching capability - Designed for high inrush compressor loads	- Ideal for motor switching in appliances and HAVC, Lamp, transformer, heater - Slim type meet high density mounting - PCB & QC Terminals	- Latching types available - High switching capacity - High sensitivity : 200mW - 4kV dielectric strength (Between coil & contacts) - 1 FormA, 2 FormA and 1A+1B contact arrangement
1A 16A 250VAC 16A 30VDC 277VAC / 30VDC 16A 4,000VA / 480W Max.100mΩ 5~48VDC 0.54W 20ms 10ms 1,000VAC 5,000VAC 1,000MΩ 100m/s ² 1,000m/s ² 10~55HZ 35~85% RH -40~85℃ 1×10 ⁵ 5×10 ⁷ 13g	1A 20A 250VAC Motor in-rush : 80A 250VAC 250VAC / 30VDC Max.20A, 80A(Motor inrush) 5,000VA Max.100mΩ 5~48VDC 0.9W 20ms 10ms 1,500VAC 4,500VAC 100MΩ 200m/s ² 1,000m/s ² 10~55HZ 45~85% RH -25~75℃ 1×10 ⁵ 1×10 ⁷ 23g	1A 20A 220VAC 1.5HP 250VAC 250VAC 25A 6,250VA Max.50mΩ 5~48VDC 0.9W 15ms 10ms 1,000VAC 2,000VAC 1,000MΩ 200m/s ² 1,000m/s ² 10~55HZ 35~95% RH -25~55℃ 1×10 ⁵ 5×10 ⁶ 23g	1A 2A 1A+1B 10A 250VAC 8A 250VAC 8A 30VDC 8A 30VDC 277VAC 10A 8A 2,500VA/300W 2,000VA/300W Max.30mΩ 3~24VDC 0.2W, 0.28W 10ms 10ms 1,000VAC 4,000VAC 1,000MΩ 100m/s ² 1,000m/s ² 10~55HZ 5~85% RH -40~70℃ 1×10 ⁵ 5×10 ⁷ 6g
			
			
P.C.B, T.M.P	P.C.B, T.M.P	P.C.B, T.M.P	P.C.B

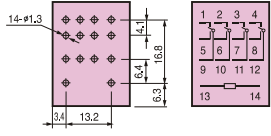
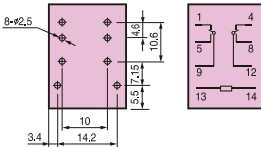
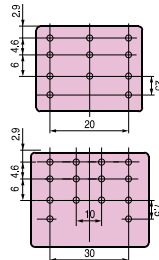
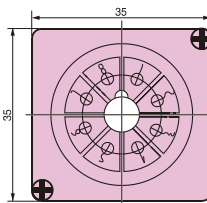
Miniature Power Relay

Classification

Model	HT2		HT3		HT4
Appearance 형상					
Size:L×W×H	20.2×11.0×10.4mm		39.0×15.0×30.2mm		68.0×40.0×21.0mm
Features 특징	- Latching types available - High switching capacity - High sensitivity 1A: 8A250VAC 2A, 1A+ 1B : 5A250VAC - 1 Form A, 2 Form A and 1A+1B contact arrangement		- Latching relay - 50A switching capability - Lamp load up to 5,000W - Capacitor load up to 200uF (Min. inrush current at 500A/10μs) - Creepage distane : 8mm - 4kV dielectric strength (between coil & contacts)		- Latching relay - 100A switching capability - Strong resistance ability to shock & vibration - Heavy load up to 27.7kVA - 4kV dielectric strength (between coil and contacts)
Contact Form 접점구조	1A	2A1A+1B	1A	1C	1A
Contact Ratings 접점용량	8A250VAC 5A30VDC	5A250VAC 5A30VDC	50A250VAC	40A250VAC	100A277VAC/280VDC
Max Switching Voltage 최대개폐 전압	380VAC / 125VDC		440VAC		440VAC
Max Switching Current 최대개폐 전류	8A		50A		100A
Max Switching Power 최대개폐력	2,000VA/150W	1,250VA/150W	12,500VA	10,000VAC	2,800W/27,700VA
Contact Resistance 접촉저항	Max. 50mΩ		50mΩ		100mΩ
Coil Voltage 코일전압	DC	3~24VDC	6~48VDC		6~48VDC
Coil Voltage 코일전압	AC				
Coil Power 소비전력	DC	0.15W, 0.3W	15W, 3W		Single coil : 2.4W / Double coil : 4.8W
Coil Power 소비전력	AC				
Operate Time 동작시간	10ms		15ms		20ms
Release Time 복귀시간	5ms		15ms		20ms
Dielectric Strength 내전압	Open Contacts 접점간	1,000VAC	1,500VAC		2,000VAC
	Contacts and Coil 접점, 코일간	3,000VAC	4,000VAC		4,000VAC
Insulation Resistance 절연저항	1,000MΩ		1,000MΩ		1,000MΩ
Shock Resistance 충격전압	Functional 기능적	200m/s ²	100m/s ²		100m/s ²
	Destructive 파괴적	1,000m/s ²	1,000m/s ²		1,000m/s ²
Vibration Resistance 진동저항	10~55HZ		10~55HZ		10~55HZ
Humidity 습도	5~85% RH		98% RH		95% RH
Ambient Temperature 주위온도	-40~70℃		-40~70℃		-40~70℃
Electrical Life 전기적 수명	1×10 ⁵		1×10 ⁵		2×10 ⁴
Mechanical Life 기계적 수명	1×10 ⁷		1×10 ⁶		1×10 ⁶
Weight 무게					
Layout(Bottom View) 치수					
Safety Standard 안전규격					
Mounting 장착	P.C.B		P.C.B		Screw

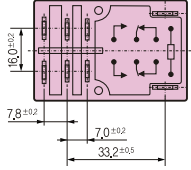
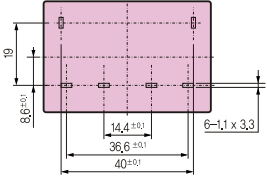
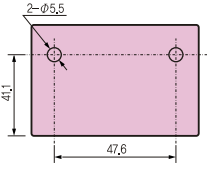
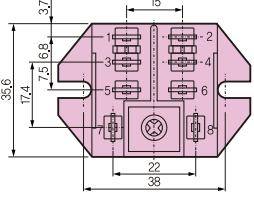
General Relay

Classification

GA	GB-1C(2C)	GB-3C(4C)		GC
				
28×21.5×36mm	28 X 21.5 X 35mm	3C: 27.6×31.5×36mm / 4C: 27.6×41.5×36mm		Open Type: 31.5×26×46.5mm / Sealed Type: 34.5×34.5×55mm
- Wide range of relay version including diodes, high capacity, etc.	- Wide range of relay version test button available	- 3C, 4C configurations		- 10A switching capability
- 2C to 4C configurations	- 15A transfer contacts	- 10A transfer contacts		- 2C, 3C configurations
- Various terminals, test button available	- 1C, 2C configurations	- Various terminals		- Standard octal-type termination
	- Various sockets available	- Various sockets available		- Various sockets available
2C, 3C	4C	1C, 2C		2C, 3C
2C, 3C: 5A	4C: 3A	1C: 16A 240VAC 16A 30VDC		10A 250VAC
220VAC/30VDC	220VAC/30VDC	2C: 10A 240VAC 10A 30VDC		10A 28VDC
250VAC / 28VDC	250VAC / 28VDC	250VAC / 28VDC		250VAC / 28VDC
5A	3A	16A		10A
1,250VA/140W	750VA/140W	4,000VA/450W 2,500VA/280W		280W / 2,500VA
Max. 50mΩ	Max. 50mΩ	Max. 50mΩ		Max. 50mΩ
6~240VDC	6~240VDC	6~240VDC		6~220VDC
6~380VAC	6~380VAC	6~380VAC		6~240VAC
0.9W	0.9W	0.9W		1.5W
1.2VA	1.2VA	1.2VA		2.5VA
20ms	20ms	20ms		30ms
20ms	20ms	20ms		20ms
1,000VAC	1,000VAC	1,000VAC		1,200VAC
1,800VAC	1,800VAC	1,800VAC		2,500VAC
500MΩ	500MΩ	500MΩ		100MΩ
100m/s ² (10G)	100m/s ²	100m/s ² (10G)		100m/s ²
1,000m/s ² (100G)	1,000m/s ²	1,000m/s ² (100G)		1,000m/s ²
10~55HZ	10~55HZ	10~55HZ		10~55HZ
35~85% RH	35~85% RH	35~85% RH		35~85% RH
-55~70℃	-55~70℃	-35~70℃		-30~75℃
1×10 ⁵	1×10 ⁵	1×10 ⁵		1×10 ⁵
1×10 ⁷	1×10 ⁷	1×10 ⁷		1×10 ⁷
2C: 32g 4C: 35g	35g	3C: 50g	4C: 65g	75g
				
				
P.C.B, Piug-in	P.C.B, Piug-in	P.C.B, Piug-in		Piug-in

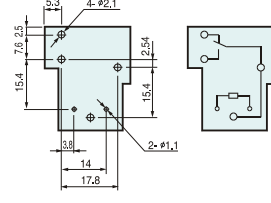
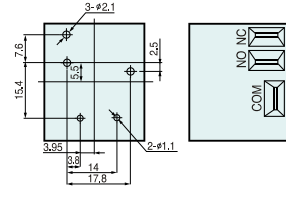
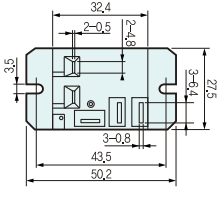
General Relay

Classification

GD	GE	GF	GW
			
52.1×34.5×26.4mm	51.5×35.0×36.0mm	64×59×62mm	38×35.6×40mm
- Creepage distance : 8mm - 4kV dielectric strength (between coil and contacts) - Wash tight and dust protected types - PCB & QC layouts	- 4KV dielectric strength (between coil and contacts) - Heavy load up to 7500VA - 3mm contact gap available	- High capacity : 100A - Heavy load - Good reliability	- High capacity : 30A - Bracked Mount - High reliability
2A, 2C	1A2A	1A, 1B, 1C2A, 2B, 2C	1A, 1B, 1C2A, 2B, 2C
NO : 16A 277VAC NC : 3A 277VAC	30A 250VAC 30A 28VAC	100A 250VAC 100A 24VDC	30A 250VAC 30A 280VDC
277VAC / 30VDC	277VAC / 28VDC	250VAC / 24VDC	250VAC / 30VDC
30A	30A25A	100A80A	30A
8,310VA / 560W	7,500VA / 840W	25,000VA / 2,400W	7,500VA / 900W
Max.50mΩ	Max.100mΩ	Max.50mΩ	Max.50mΩ
5~110VDC	3~200VDC	6~110VDC	6~110VDC
24-277VA	6~220VAC	6~380VAC	6~220VAC
1.7W	1.9W	2W	2W
4.0VA	2.7VA	17.5VA	4VA
25ms	30ms	25ms	20ms
25ms	30ms	25ms	15ms
1,500VAC	2,000VAC	1,500VAC	1,500VAC
4,000VAC	4,000VAC	2,500VAC	2,500VAC
1,000MΩ	1,000MΩ	1,000MΩ	500MΩ
100m/s ²	100m/s ²	100m/s ²	100m/s ²
1,000m/s ²	1,000m/s ²	1,000m/s ²	1,000m/s ²
10~55HZ	10~55HZ	10~55HZ	10~55HZ
35~85% RH	98% RH 40℃	35~95% RH	35~85%
-40~85℃	-55~70℃	-35~70℃	-35~70℃
1×10 ⁵	1×10 ⁵	1×10 ⁵	1×10 ⁵
5×10 ⁶	1×10 ⁷	1×10 ⁷	1×10 ⁷
86g	120g	315g	80.5g
			
			
P.C.B, Piug-in	P.C.B, Piug-in	Screw	Piug-in

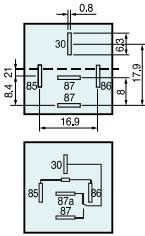
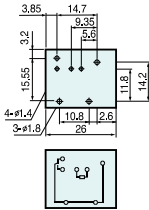
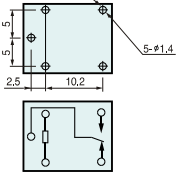
Automotive Relay

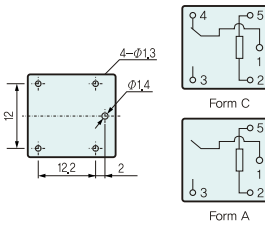
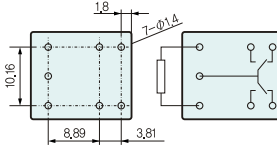
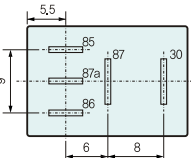
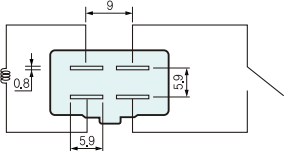
Classification

Model	RA	RB	RH
Appearance 형 상			
Size:L×W×H	32.2×27.2×20.4mm	32.4×27.4×28mm	50.2×27.5×27.8mm
Features 특 징	- High power & low cost - 30A switching capability - Less than 1W coil power - Open & sealed type available	- QC & PC Terminals - High electric strength 3,000VAC - Optional flanged case for panel mounting	- 30A switching capability - 2.5kV dielectric strength (between coil and contacts) - Heavy load up to 7,200VA - Wash tight and dust protected types available
Contact Form 접점구조	1A, 1C	1A, 1C	1A1B1C(NO)1C(NC)
Contact Ratings 접점용량	30(40)A 240VAC 30(40)A 280VAC	30A 240VAC 30A 280VAC	30A 240VAC 15A 240VAC 20A 240VAC 20A 28VDC 10A 28VDC 10A 28VDC
Max Switching Voltage 최대개폐 전압	240VAC / 28VDC	240VAC / 28VDC	277VAC / 28VDC
Max Switching Current 최대개폐 전류	40A	30A	40A15A20A10A
Max Switching Power 최대개폐력	9,600VA / 1,120W	9,600VA / 1,120W	7,200VA 560W3,600VA 280W4,800VA 560W2,400VA 280W
Contact Resistance 접촉저항	Max.100mΩ	Max.100mΩ	Max.50mΩ
Coil Voltage 코일전압	DC3~48VDC AC	3~48VDC	5~110VDC
Coil Power 소비전류	DC0.93W AC	0.93W	0.9W2VA
Operate Time 동작시간	15ms	15ms	15ms
Release Time 복귀시간	10ms	10ms	10ms
Dielectric Strength 내전압	Open Contacts 접점간1,500VAC Contacts and Coil 접점, 코일간1,500VAC	1,500VAC1,500VAC	1,500VAC2,500VAC
Insulation Resistance 절연저항	100MΩ	100MΩ	1,000MΩ
Shock Resistance 충격전압	Functional 기능적100m/s ² (10G) Destructive 파괴적1,000m/s ² (100G)	100m/s ² 1,000m/s ²	100m/s ² 1,000m/s ²
Vibration Resistance 진동저항	10~55HZ 1.5mm	10~55HZ	10~55HZ
Humidity 습도	40~85% RH	35~85% RH	98% RH 40℃
Ambient Temperature 주위온도	-40~85℃	-40~85℃	-55~105℃
Electrical Life 전기적 수명	1×10 ⁵	1×10 ⁵	1×10 ⁵
Mechanical Life 기계적 수명	1×10 ⁷	1×10 ⁷	1×10 ⁷
Weight 무게	36g	36g	
Layout(Bottom View) 치 수			
Safety Standard 안전규격	 E197546  TÜV Rheinland R50056430	 E197546  TÜV Rheinland R50056430	 E222977
Mounting 장착	P.C.B	P.C.B, T.M.P	P.C.B, T.M.P

Automotive Relay

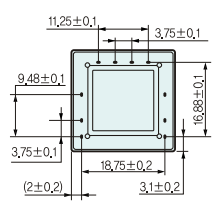
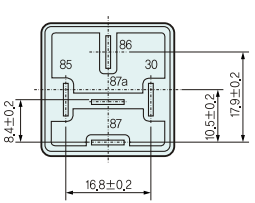
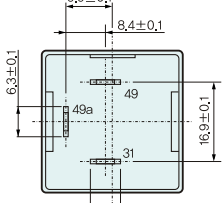
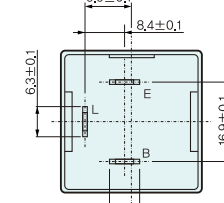
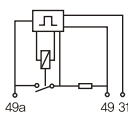
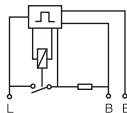
Classification

Model	RC		RD		RE	
Appearance 형상						
Size:L×W×H	28×28×24.8mm		21×26×21mm		15.7×12.3×14mm	
Features 특징	- 40A continous rating 85℃ - 1A & 1C arrangement - Plug-in or PC terminals - Optional mounting bracket		- 40A continous rating 85℃ - PC board terminals - Inrush current 100A - Open & sealed version available		- 20A switching capability - Small size auto relay	
Contact Form 접점구조	1A	1C	1A	1C	1A	1C
Contact Ratings 접점용량	40A 14VDC	NO/NC 30/20A 14VDC	45A 14VDC	NO/NC 45/30A 14VDC	1A 20A 14VDC 7A 120VAC	1C 12A 14VDC 7A 120VAC
Max Switching Voltage 최대개폐 전압	30VDC		30VDC		16VDC	
Max Switching Current 최대개폐 전류	40A		40A		25A	
Max Switching Power 최대개폐력	560W		630W		840VA / 400W	
Contact Resistance 접촉저항	Max.100mΩ		Max.100mΩ		Max.100mΩ	
Coil Voltage 코일전압	DC		DC		DC	
	3~24VDC		3~24VDC		6~24VDC	
Coil Power 소비전력	DC		DC		DC	
	1.6W, 1.9W		1.6W, 1.9W		0.6W, 0.8W	
Operate Time 동작시간	10ms		5ms		10ms	
Release Time 복귀시간	10ms		4ms		5ms	
Dielectric Strength 내전압	Open Contacts 접점간		500VAC		500VAC	
	Contacts and Coil 접점, 코일간		750VAC		500VAC	
Insulation Resistance 절연저항	100MΩ		100MΩ		100MΩ	
Shock Resistance 충격전압	Functional 기능적		20G		10G	
	Destructive 파괴적		100G		100G	
Vibration Resistance 진동저항	10~55HZ, 1.5mm		10~55HZ, 1.5mm		10~55HZ, 2.0mm	
Humidity 습도	40~85% RH		40~85% RH		35~85% RH	
Ambient Temperature 주위온도	-40~85℃		-40~85℃		-40~85℃	
Electrical Life 전기적 수명	1×10 ⁵		1×10 ⁵		1×10 ⁵	
Mechanical Life 기계적 수명	1×10 ⁷		1×10 ⁷		1×10 ⁷	
Weight 무게	40g		21g		6g	
Layout(Bottom View) 치수						
Safety Standard 안전규격						
Mounting 장착	P.C.B, Piug-in		P.C.B		P.C.B	

RE1		RF		RG		RK	
							
19.2×15.5×15.5mm		18×15.5×20mm		23×15.5×26mm		28×25×49.4mm / 28×23×29.4mm	
- 20A switching capability - Small footprint - Sealed type available		- Max. switching current 20A - 10A continuous rating 85℃ - Different contact form available - Open or sealed cover available		- Max. switching current 25A - Different terminal available		- Open or sealed cover available - 40A continuous rating 85℃	
1A	1C	1A, 1B, 1C	2A, 2B, 2C	1A	1C	1A	
20A/14VDC	15A/14VDC	10A14VDC	15A 140VDC	25A14VDC	20A 14VDC	30A 14VDC 15A 28VDC	
16VDC		75VDC		75VDC		28VDC	
20A		20A		25A		30A	
280W		200W		350W		720W	
Max.100mΩ		Max.100mΩ		Max.50mΩ		Max.50mΩ	
9~24VDC		6~24VDC		6~48VDC		6~24VDC	
0.64W, 0.8W		1.1W		1.6W		1.44W	
15ms		5ms		10ms		15ms	
10ms		3ms		10ms		8ms	
500VAC		500VAC		500VAC		500VAC	
1,500VAC		500VAC		1,000VAC		500VAC	
100MΩ		100MΩ		100MΩ		100MΩ	
10G		20G, 11ms		10G		10G	
100G		100G		100G		100G	
10~55HZ, 1.5mm		10~55HZ, 1.5mm		10~55HZ		10~55HZ	
40~85% RH		40~85% RH		45~85% RH		45~85% RH	
-40~85℃		-40~85℃		-40~85℃		-40~85℃	
1×10 ⁵		1×10 ⁵		1×10 ⁵		1×10 ⁵	
1×10 ⁷		1×10 ⁷		1×10 ⁷		1×10 ⁷	
10g		9.5g		18g		28g	
							
P.C.B		P.C.B		P.C.B, Piug-in		Piug-in	

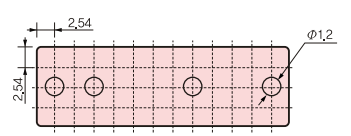
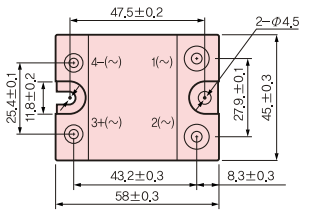
Automotive Relay

Classification

Model	RS	RV7	RM1 (Flasher Controller)	RM2A (Flasher Controller)
Appearance 형상				
Size: L×W×H	22.8×22.3×20.4mm	26.5×26.5×25.2mm	30.0×30.0×40.0mm	30×30×30mm
Features 특징	- Extremely silent version - 20A switching capability - Extremely small relay - 2 separate systems - Power door & windows, seatbelt preveation applications	- 70A switching capability - Ambient temp up to 125°C - SPST contact - Sealed IP67 and dust cover structure - With transient suppression resistor	- Special integrate circuit, good performance - Special high-performance contacts, ultra-long life - Surface mounting technology, advanced craftwork - Solid base design, stable Structure	- Special integrate circuit, good performance - Special high-performance contacts, ultra-long life - Surface mounting technology, advanced craftwork - Solid base design, stable Structure
Contact Form 접점구조	2C	1A		
Contact Ratings 접점용량	20A 14VDC	70A 14VDC	Lamp: 2x21W+5W 13.5VDC 4x21W+2x5W 13.5VDC	Lamp: 2x21W+5W 13.5VDC 4x21W+2x5W 13.5VDC
Max Switching Voltage 최대개폐 전압	40VDC	6~24VDC	12V	12V
Max Switching Current 최대개폐 전류	25A	70A		
Max Switching Power 최대개폐력	280W	980W		
Contact Resistance 접촉저항	Max. 100mΩ	Max. 50mΩ		
Coil Voltage 코일전압	DC 12V	6~24VDC	12V, 24V	12V
Coil Power 소비전력	DC 0.56W	1.6W, 1.8W, 2.0W, 2.2W		
Operate Time 동작시간	3ms	10ms	60~100(c/min)	70~90(c/min)
Release Time 복귀시간	1.5ms	7ms	120~250(c/min)	120~230(c/min)
Dielectric Strength 내전압	Open Contacts 접점간 500VAC Contacts and Coil 접점, 코일간 500VAC	500VAC		
Insulation Resistance 절연저항	100MΩ	100MΩ		
Shock Resistance 충격전압	Functional 기능적 300m/s ² Destructive 파괴적 450m/s ²	300m/s ²	200m/s ² (20G)	200m/s ² (20G)
Vibration Resistance 진동저항	10~55HZ	10~55HZ, 180m/s ² (18g)	10~55HZ, 49m/s ²	10~55HZ, 49m/s ²
Humidity 습도	35~85% RH	35~85% RH	35~85% RH	35~85% RH
Ambient Temperature 주위온도	-40~85°C	-40~125°C	-40~85°C	-40~85°C
Electrical Life 전기적 수명	2×10 ⁵	1×10 ⁵	Continuous: 1000h(2x21W x 5W)	Continuous: 1000h(2x21W x 5W)
Mechanical Life 기계적 수명	1×10 ⁷	1×10 ⁷	360h(4x21W+2x5W)	360h(4x21W+2x5W)
Weight 무게	15g	40g	40g	40g
Layout(Bottom View) 치수				
Safety Standard 안전규격				
Mounting 장착	P.C.B	P.C.B, Plug-in	Plug-in	Plug-in

Solid State Relay

Classification

Model	SG	SJ
Appearance 형상		
Size: L×W×H	43.8×9.5×26.5mm	58.4×45.7×23mm
Features 특징	- Input : DC control - Double SCRAC output or TRIAC AC output - Dielectric strength : 4,000VAC, 1min - DBC board - Printed circuit board mount	- 4000V dielectric strength - Photo isolation - Built-in sunbber - Zero cross or random turn-on - panel mount
Input 입력		
Input Voltage 입력전압	3 -15VDC, 15-32VDC	3 -32VDC, 110VAC, 220VAC
Input Current(max.) 입력전류	40mA(1B), 20mA(2B)	25mA
Status Indications 표시등	NO	YES / NO
Output 출력		
Load Voltage Raunge 부하전압범위	48 to 530VAC	48 to 400VAC
Max. Rated Switching Current 최대정격개폐전류	5A	40A
Max. Surge Current (10ms) 돌입전류	65Apk, 250Apar	10 times of rated current
Max. On-state Voltage Drop 최대전압강하	1.5VAC	1.5VAC
Max. Off-state Leakage Current 최대누수전류	1.5mA	5mA
Min. Off-state (dv / dt)	200V / μS	200V / μS
Frequency Range 주파수 범위	47 to 63Hz	47 to 63Hz
Max. Turn-on Time Zero-cross Turn-on	1/2 cycle + 1ms	1/2 cycle + 1ms
Random Turn-on	1ms	1ms
Max. Turn-off Time 최대복귀시간	1/2 cycle + 1ms	1/2 cycle + 1ms
General 일반		
Dielectric Strength 내전압	4,000VAC 1min	4,000VAC 1min
Min. Insulation Resistance 최소절연저항	1,000MΩ	1,000MΩ
Ambient Operating Temperature Range 주위온도	-30°C to +80°C	-30°C to +80°C
Layout(Bottom View) 치수		
Safety 안전규격		
Mounting 장착	P.C.B	Panel