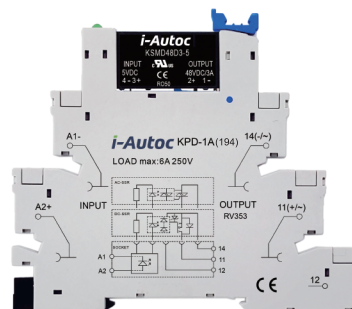


Product Description

- ◆ Transistor or MOSFET Output
- ◆ Optical Isolation
- ◆ PCB or Socket Mounted
- ◆ Load Current: 0.1A, 3A, 4A, 6A
- ◆ Load Voltage: 24VDC, 48VDC
- ◆ Dielectric Strength: 2500Vrms
- ◆ RoHS Compliant



Product Selection

KSM	D	24	D	3	-5	D
KSM Series	Load Type D: DC Load	Load Voltage 24:24VDC 48:48VDC	Control Mode D: DC Control	Load Current 0.1: 0.1Amp 3: 3Amp 4: 4Amp 6: 6Amp	Control Voltage 5: 5VDC 12: 12VDC 24: 24VDC 48: 48VDC 60: 60VDC	Socket Blank: Without Socket D: With Socket ⁽¹⁾

Note: (1) The types of sockets are listed in the table below.

Socket Model	Socket Type	Applicable Control Voltage
KPD-1A(194)	Screw Terminal	5VDC
KPD-1A	Screw Terminal	12VDC/24VDC/48VDC/60VDC
KPD-1A-C1	Spring Terminal	5VDC
KPD-1A-C2	Spring Terminal	12VDC/24VDC/48VDC/60VDC

Technical Specifications

Input Specifications (Ta=25°C)	Condition	Symbol	KSMD...3/4/6-5			KSMD...3/4/6-12			KSMD...3/4/6-24			KSMD...3/4/6-48			KSMD...3/4/6-60			Unit
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Control Voltage ⁽²⁾		U _c	4	5	6	9.6	12	14.4	19.2	24	28.8	38.4	48	57.6	48	60	72	VDC
Input Current (Typ)	@U _c	I _c	6.6	8.9	11.1	7.1	9.2	11.2	4.5	5.7	6.9	2.8	3.5	4.2	2.3	2.9	3.5	mA
Turn-off Voltage		U _{c off}	1			2.4			2.4			4.8			4.8			VDC
Input Impedance			0.44			1.19			4			13.3			20			kΩ

Input Specifications (Ta=25°C)	Condition	Symbol	KSMD...0.1-5			KSMD...0.1-12			KSMD...0.1-24			KSMD...0.1-48			KSMD...0.1-60			Unit
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Control Voltage ⁽²⁾		U _c	4	5	6	9.6	12	14.4	19.2	24	28.8	38.4	48	57.6	48	60	72	VDC
Input Current (Typ)	@U _c	I _c	6.7	9.1	11.4	5.6	7.2	8.8	6	7.6	9.2	3.8	4.7	5.7	3.1	3.8	4.6	mA
Turn-off Voltage		U _{c off}	1			2.4			2.4			4.8			4.8			VDC
Input Impedance			0.43			1.51			3			99			15.3			kΩ

Note: (2) For KSMD with control voltage at 12V, 24V, 48V, 60V that operating with the socket, the minimum control voltage should increase 1.4V.

For example, for KSMD24D2-12D, please ensure that the minimum control voltage is 9.6V+1.4V=11V Min

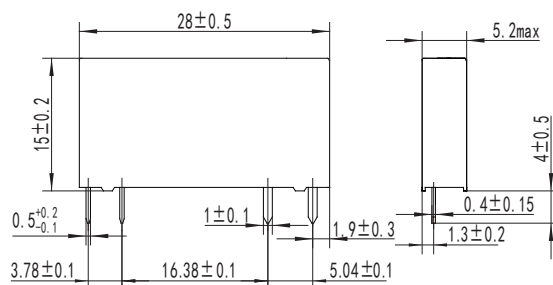
Output Specifications (Ta=25°C)	Condition	Symbol	Model	Min	Typ	Max	Unit
Load Voltage		U_e	24V	3	24	30	VDC
			48V	3	48	58	VDC
Load Current		I_e	0.1A	0.001		0.1	A
			3A	0.002		3	A
			4A	0.002		4	A
			6A	0.002		6	A
Turn-on Time		t_{on}				300	μs
Turn-off Time		t_{off}				300	μs
Off-State Leakage Current	@ Rated Load Voltage	I_{ik}				100	μA
On-State Voltage Drop	@ Rated Load Current	U_d	0.1A		0.75	1.5	V
On-state Resistance	@Tj=25°C	R_d	3A/4A		16		mΩ
	@Tj=125°C					37	mΩ
	@Tj=25°C		6A		10		mΩ
	@Tj=125°C					20	mΩ
TVS Breakdown Voltage	@1mA		24V	37	39	41	VDC
			48V	64.6	68	71.4	VDC
MOSFET Transient Overvoltage		U_p	24V		75		Vpk
			48V		100		Vpk
Non-repetitive Surge Current	@10ms	I_{TSM}	0.1A		1		Apk
			3A		30		Apk
			4A		48		Apk
			6A		60		Apk

General Specifications (Ta=25°C)	Condition	Symbol	Model	Min	Typ	Max	Unit
Dielectric Strength	50/60Hz, Input/Output	V_{iso}			2500		Vrms
Insulation Resistance	@500VDC, Input/Output	R_{iso}			1000		MΩ
Ambient Temperature Range		T_{OPR}		-30		+80	°C
Storage Temperature Range		T_{SPR}		-30		+100	°C
Weight			Without Socket		4		g
			With Socket		30		g

Applications

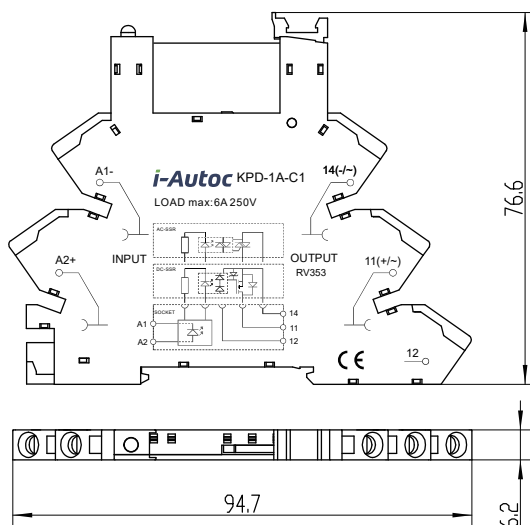
Suitable for high density PCB mounted, PLC control applications, and etc.

Outline Dimensions

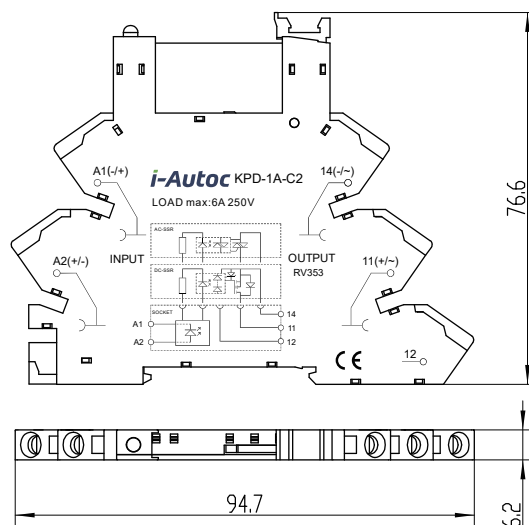


KSMD SSR

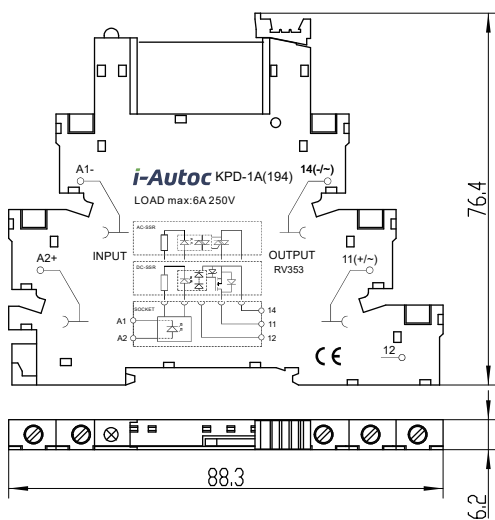
Outline Dimensions



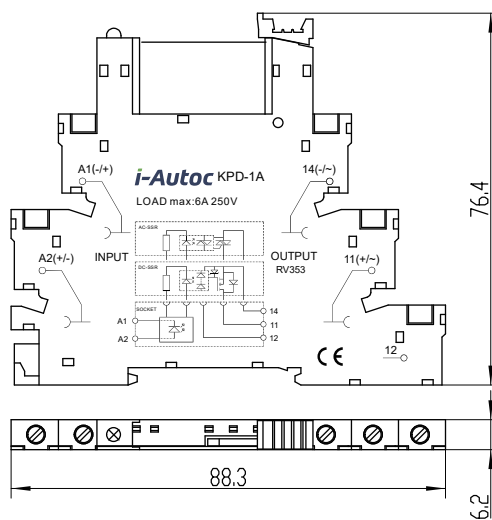
KSMD+KPD-1A-C1



KSMD+KPD-1A-C2

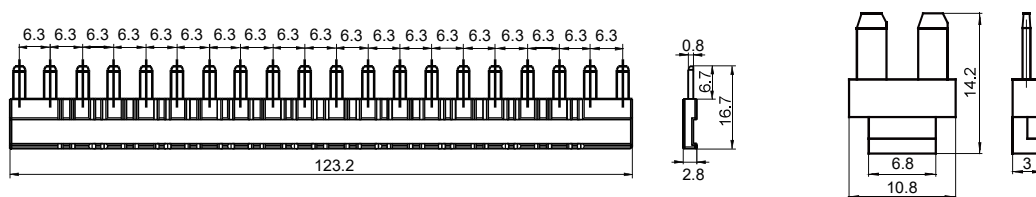


KSMD+KPD-1A(194)

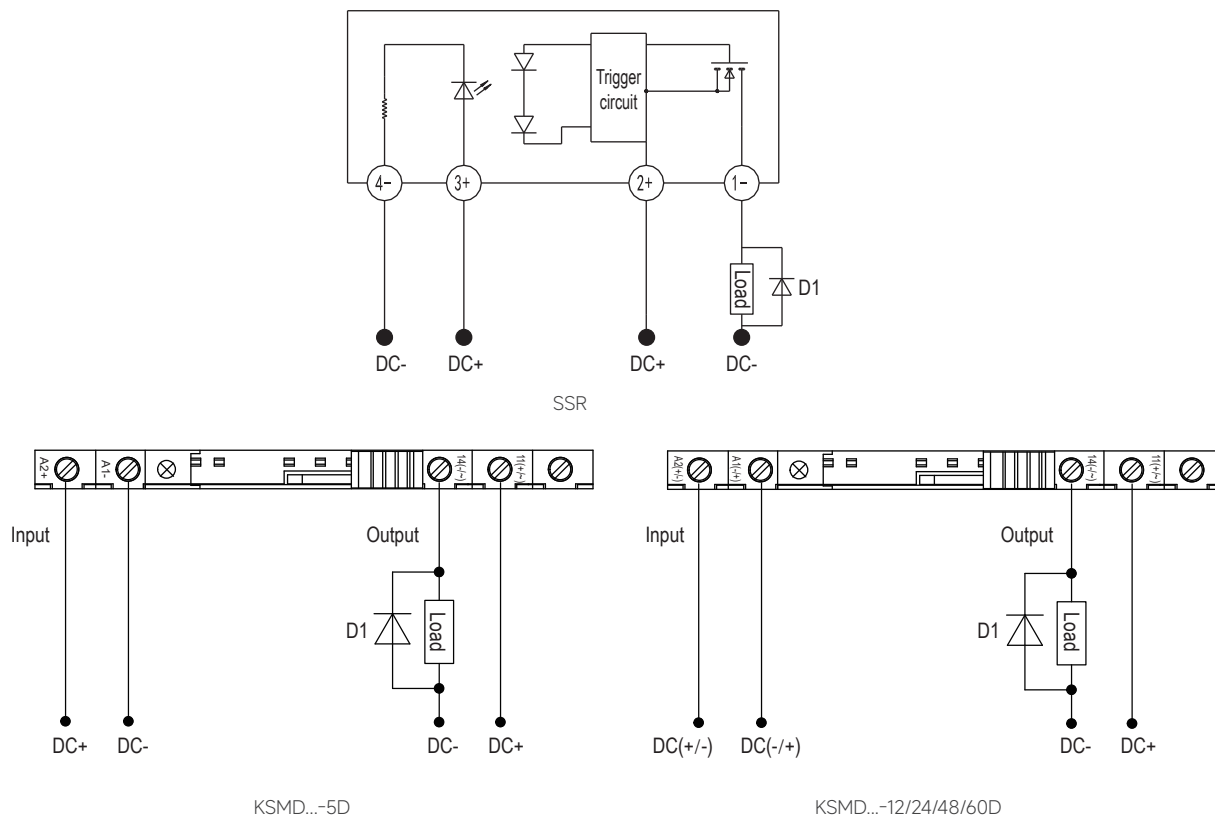


KSMD+KPD-1A

Jumper Strap Dimensions

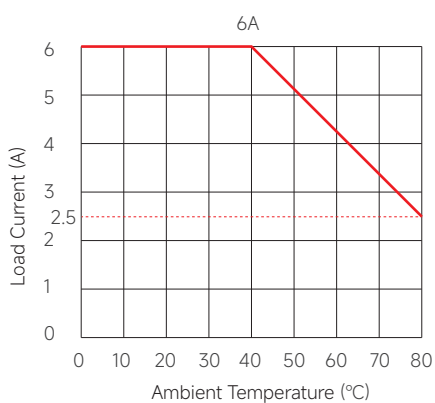
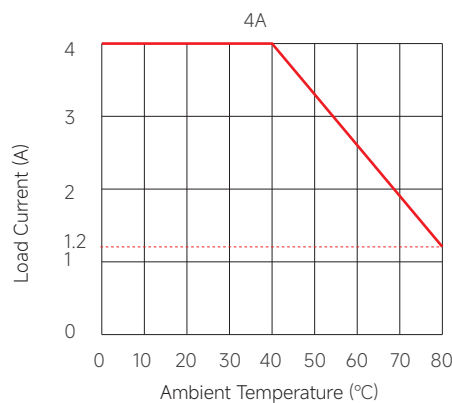
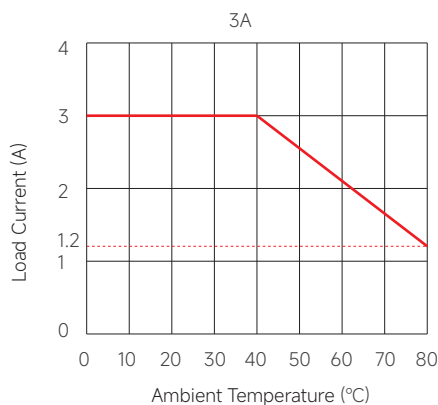
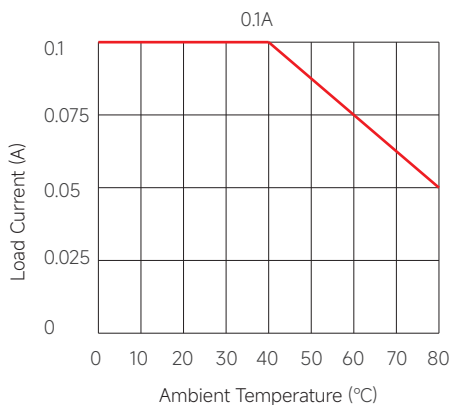


Wiring Diagram



Note: When the relay is used for inductive load control, please be sure to use a suppression circuit, just like the drawing above. Both load terminals are inverse anti-parallel with a fly-wheel diode D1. D1: Fast Recovery Diode

Thermal Derating Curve



Installation Instructions**1. Install the relay**

Set the blue clip of socket in the open state (see Figure 1), and insert the relay into the socket cavity (see Figure 2). Then press the relay down until the relay is fully installed in the socket (see Figure 3).

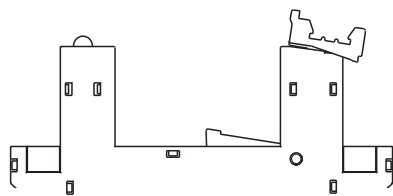


Figure 1

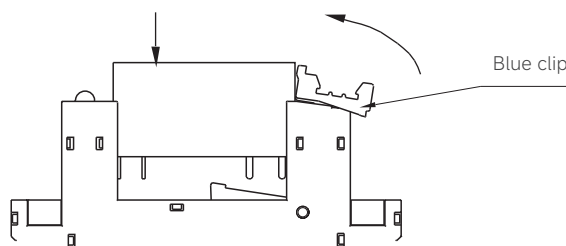


Figure 2

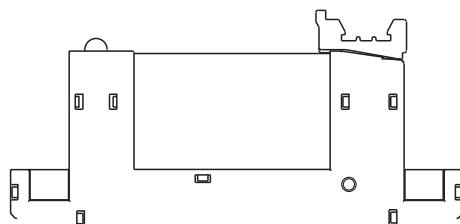


Figure 3

2. Remove the relay

Pull the blue clip of socket to remove the relay (see Figure 4-6).

Note: When disassembling the relay, in order to prevent the relay from being ejected and causing it to fall, please be sure to hold the relay and then pull the blue clip to remove the relay.

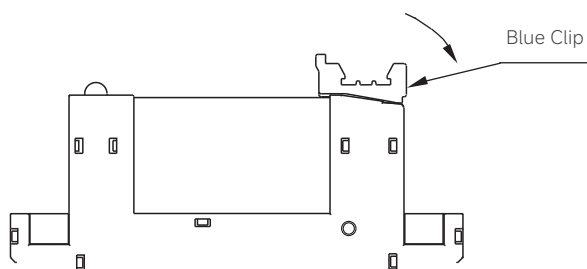


Figure 4

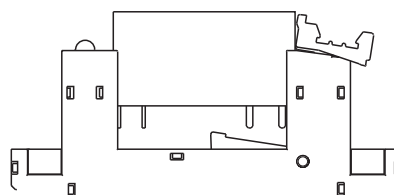


Figure 5

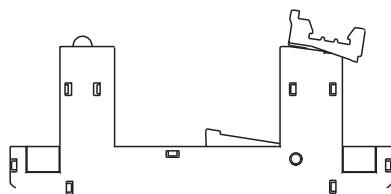


Figure 6

3. Install the socket

Insert part A of the socket into the din-rail first, and then press the socket down in the direction of the arrow(see Figure 7).

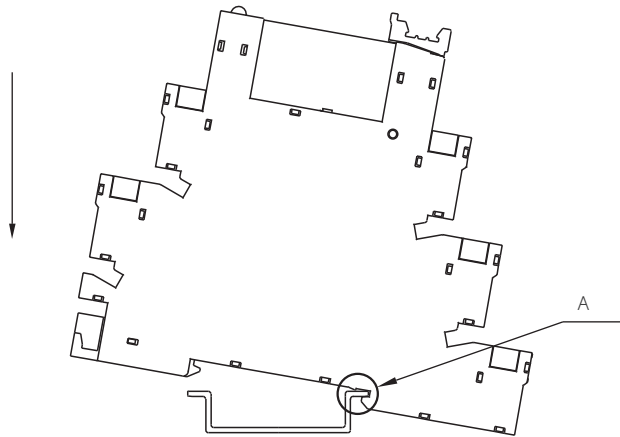


Figure 7

4. Remove the socket

Insert a proper size screwdriver into part B of the socket, turn the screwdriver in the direction of the arrow, and then remove the socket (see Figure 8).

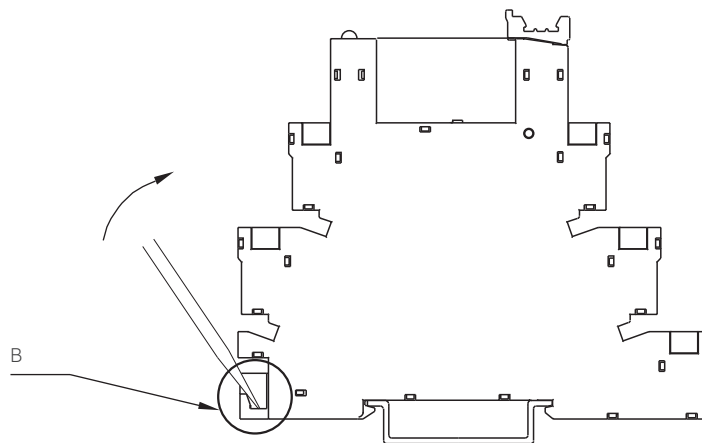


Figure 8

General Notes

1. Soldering must be finished within 10 seconds at 260°C, or finished within 5 seconds at 350°C. Otherwise, it may cause damage to the relay.
2. Terminal polarity must be observed. Otherwise, it may cause damage to the relay.
3. When the ambient temperature of the product is high, derate the product according to the temperature curve.
4. Capacitive load will produce very high surge current at the moment of conduction, which may lead to the damage of solid state relay due to the excessive surge current. Therefore, if the actual load is capacitive, or the load has paralleled large capacitance, it is strongly recommended that NTC should be connected in series in the load loop to suppress surge current in order to avoid damage to the product.

**Warnings**

1. The product's may become hot during operation, allow it to cool before touching.
2. Disconnect all power before installing or working with this equipment.
3. Verify all connections and replace all covers before turning on power.

Certification Standards

Certification	Test Standard
UL	UL508
	C22.2 No. 14-13
CE	EN 60947-1:2007/A2:2014
	EN 60947-5-1:2017
TUV	EN 60947-1:2007/A2:2014
	EN 60947-5-1:2017