General purpose miniature power relay

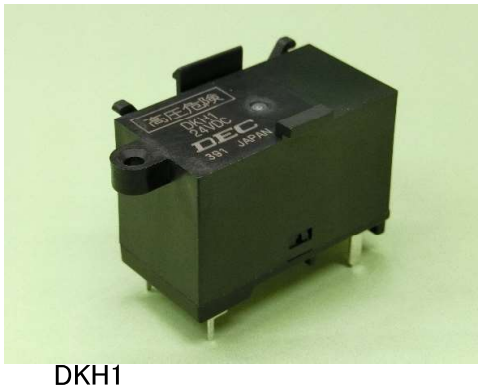
RoHS compliant

DK series

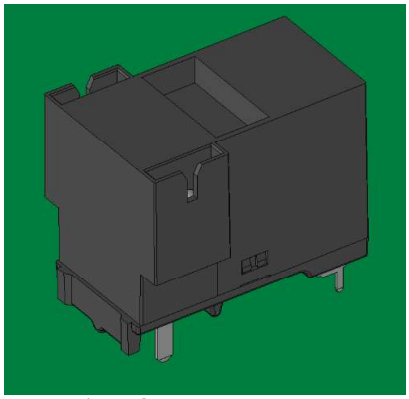
Power relay series pursuing reliability and safety

DK1
(for high voltage,
tab terminal type)

DK1 (PCB terminal type)



DKH1



DKH1-MG

■ It is currently suitable for use in such applications.

- Control panel, Power supply equipment
- Commercial equipment, Measuring instruments, Medical devices
- Various household appliances that handle high voltage
- Ideal for switching high voltage of microwave ovens
- Solar power system
- Electricity storage system
- Charging stand for electric vehicles and plug-in hybrid vehicles
- Various high voltage DC load control

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General purpose miniature power relay that can be used for a wide range of applications from control to power.

DK series

■ Features

DK for type	○ Power relay specialized for controlling high-voltage equipment. ○ There are two types, direct mounting on case (panel or chassis) type and PCB mounting type. ○ For handling high-voltage, the contact circuit is equipped with a #250 tab terminal so that an insulated receptacle can be used. ○ Ideal for switching the capacity of high-voltage capacitors corresponding to 50Hz/60Hz power frequency of microwave ovens.
DKH for type	○ High insulation design Between coil and contact: AC5000V 1min Between open contact : AC5000V 1min
DKH-MG for type	○ Compatible with maximum DC500V 30A cutoff ○ No mounting polarity on the contact side. (Compatible with charging/discharging.)

■ Model numbering system

DK or DKH □ □ □ - □ □ - □

Rated coil voltage: Numeric part indication	DC (V): 12, 17, 18, 24
Coil type	D: DC
Number of contact poles	1: 1 pole
Shape indication 1	O: PCB terminal F: Tab terminal (coil terminal: #187 tab terminal, contact terminal: #250 tab terminal), directly attached to panel or chassis
Contact configuration	(M): Make contact
Shape indication 2	MG: With magnet (DKH type only)

■ Safety standards

Electrical Appliances and Materials Safety Act	Conformable

■ Coil ratings

AC/DC	Voltage	Rated current (mA)	Coil resistance (Ω)	Operate voltage (V)	Release voltage (V)	Maximum voltage (V)	Hold voltage (V)	Power consumption (W)
				Ratio to rated voltage				
DC	12	75	160	80% max. ※① 150% to 250% (Applied time 0.3 to 1s) DKH type only double voltage operation.	10% min.	110%	※② 55% to 70% (DKH type only)	0.9 (Applied coil voltage 100%) 0.27 (Applied coil voltage 55%, DKH type only)
	17	51.5	330					
	18	50	360					
	24	37.5	640					

● Notes:
1. Rated current and coil resistance are values at coil temperature of 20°C, tolerance is ±10%.
2. Operate voltage and release voltage are values at coil temperature of 20°C.
3. Maximum voltage is the maximum value of the allowable voltage fluctuation range of the relay coil operating power supply with the ambient temperature at 20°C.
4. For the DKH type, be sure to use the holding voltage of ※② after double voltage operation of ※①.
5. For the DKH type, please use a varistors to absorb surges from the coil.
Please note that if a diode is used, the release time will be longer and the performance will not be guaranteed.

※Barista selection guideline
Varistor voltage: 1.5 times or more of coil rated voltage.
Please note that setting the varistor voltage high will affect the surge absorption effect.

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■ Ratings・Performance

Specifications	Item		Performance		
			DK	DKH	DKH-MG
Contact specification	Contact configuration		1a		
	Contact resistance (at DC6V 1A)		50mΩ max.		100mΩ max.
	Contact material		Ag alloy		
Ratings	Rated load	Resistive load	AC3400V 0.6A	—	DC500V 30A
		Inverter load	—	AC200V 30A	—
	Max. switching capacity	Resistive load	2040VA	—	15 000W
		Inverter load	—	6000VA	—
	Max. switching voltage		AC4000V	AC200V	DC500V
	Max. switching current		0.6A	30A	
Electrical capability	Insulation resistance		100MΩ min. (at DC500V)		
	Dielectric strength	Between coil and contact	AC4000V 1 min	AC5000V 1 min	AC4000V 1 min
		Between open contact	AC4000V 1 min	AC5000V 1 min	AC2500V 1 min
	Impulse withstand voltage (between coil and contact)		10 000V min. (1.2×50μs)		
	Operate time (at rated voltage on, at 20℃)		25ms max. (excluding contact bounce time)		
	Release time (at rated voltage off, at 20℃)		25ms max. (excluding contact bounce time)		
Mechanical capability	Vibration resistance	Malfunction	10 to 55 to 10Hz (double amplitude 1.5mm)	10 to 55 to 10Hz (double amplitude 1.0mm)	
		Destruction	10 to 55 to 10Hz (double amplitude 1.5mm)		
	Shock resistance	Malfunction	100m/s^2	80m/s^2	
		Destruction	500m/s^2		
Life	Mechanical endurance		500 000 times min. (at 180 times/min)	300 000 times min. (at 12 times/min)	
	Electrical endurance (at rated load)		10 000 times min. (at 20 times/min)	100 000 times min. (at 12 times/min)	10 000 times min. (at 6 times/min)
Conditions for operation	Ambient temperature		−20℃ to +60℃ (no freezing and condensing at low temperature)		−20℃ to +85℃ (no freezing and condensing at low temperature)
	Ambient humidity		5% to 85%RH	45% to 85%RH	
Mass			approx. 34g	approx. 48g	approx. 55g

● Notes: The above is the initial value.

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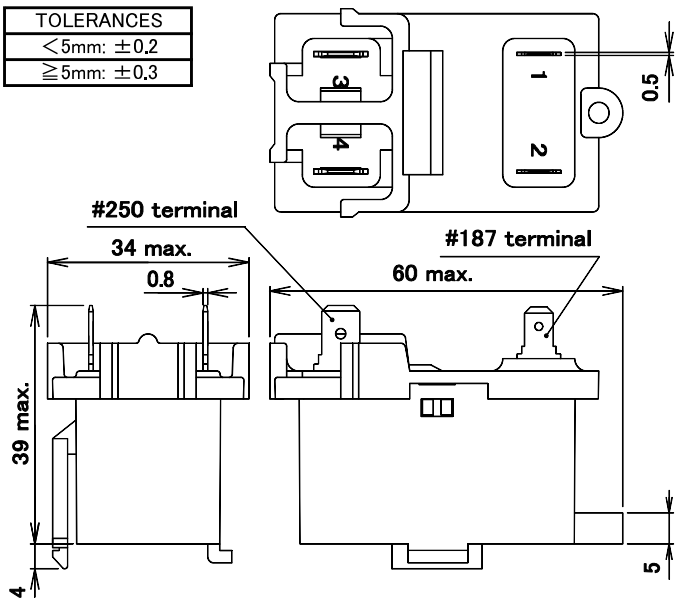
Dimensions

DK1 tab terminal type (directly attached)

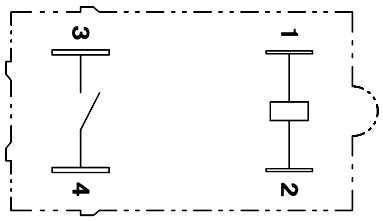
Unit: mm

TOLERANCES
＜5mm: ±0.2
≧5mm: ±0.3



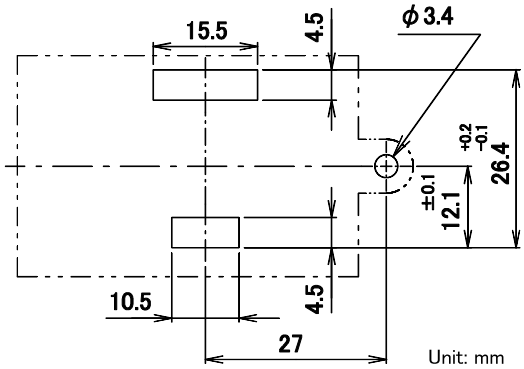
Schematics

DK1 tab terminal type (directly attached)



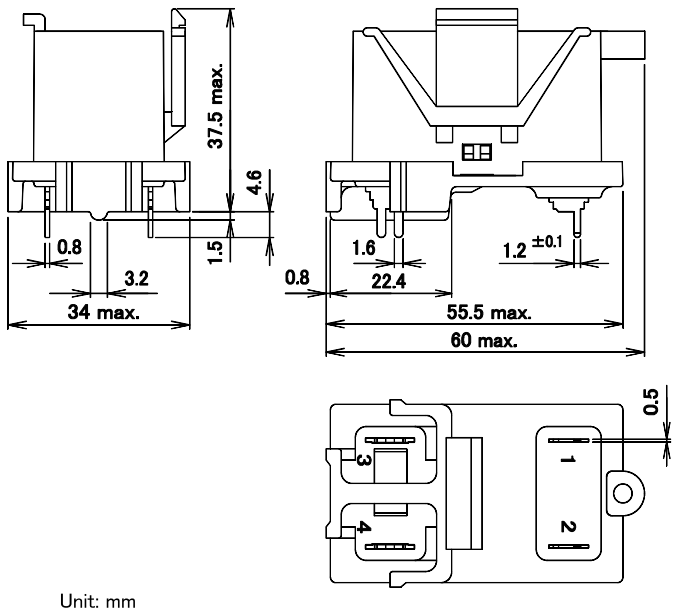
Mounting holes of panel or chassis (case) (tolerance ±0.2mm)
Recommended plate thickness 0.4 to 0.8mm

DK1 tab terminal type (directly attached)



Dimensions

DK1 PCB terminal type



Unit: mm

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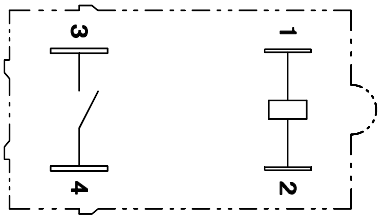
Schematics

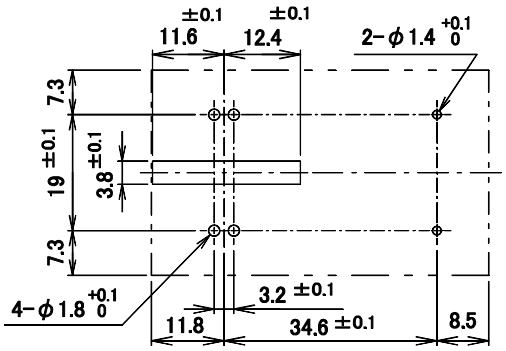
DK1 PCB terminal type



PCB mounting holes

DK1 PCB terminal type

Unit: mm



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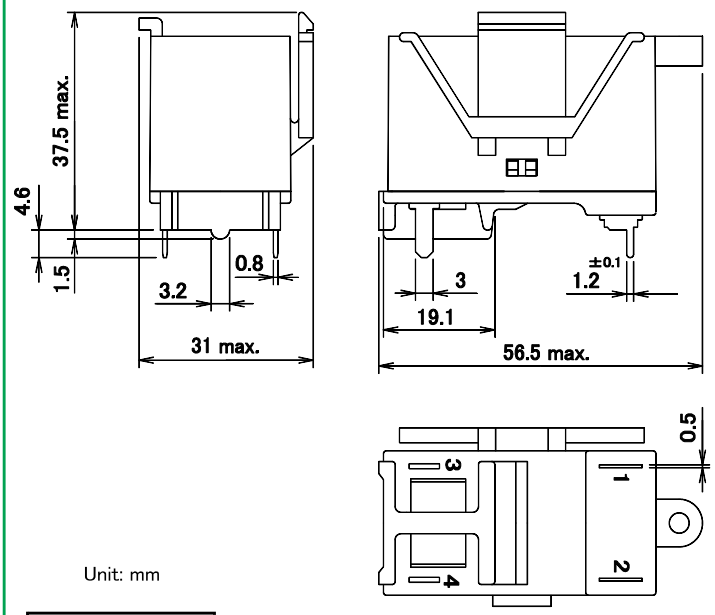
Dimensions

DKH1

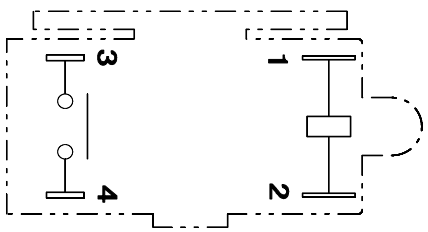


Unit: mm

TOLERANCES
＜5mm: ±0.2
≧5mm: ±0.3

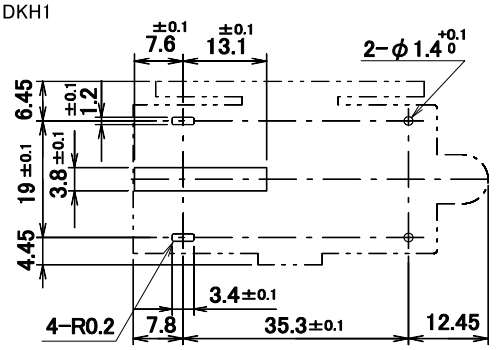
Schematics

DKH1



PCB mounting holes

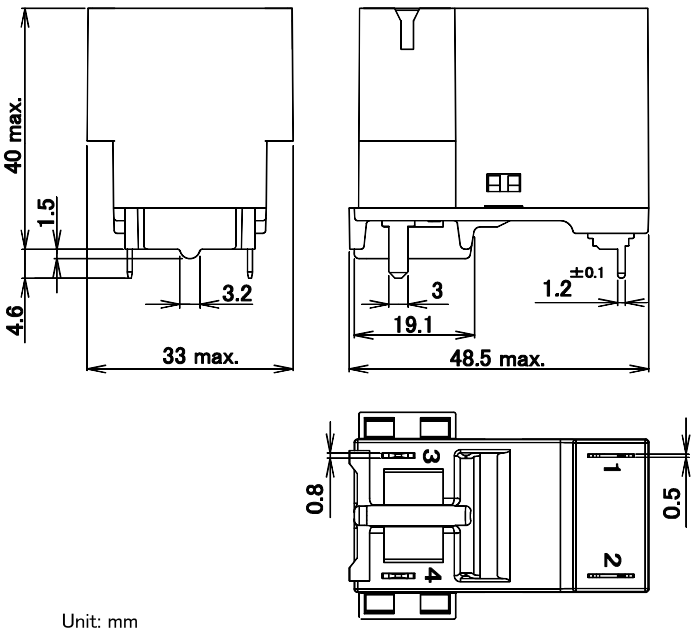
DKH1



Unit: mm

Dimensions

DKH1-MG

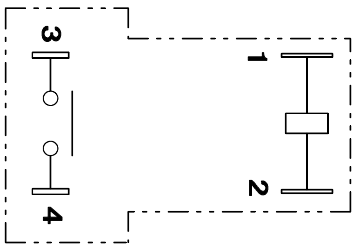


Unit: mm

TOLERANCES
＜5mm: ±0.2
≧5mm: ±0.3

Schematics

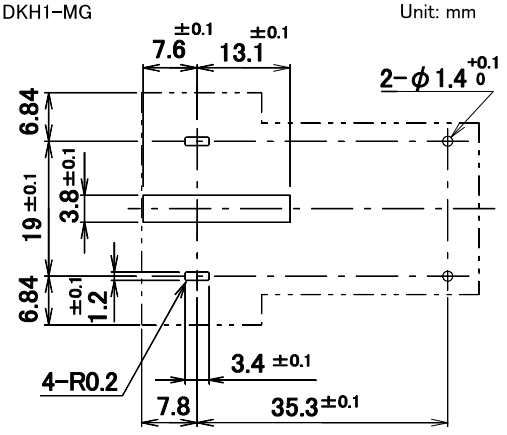
DKH1-MG



PCB mounting holes

DKH1-MG

Unit: mm



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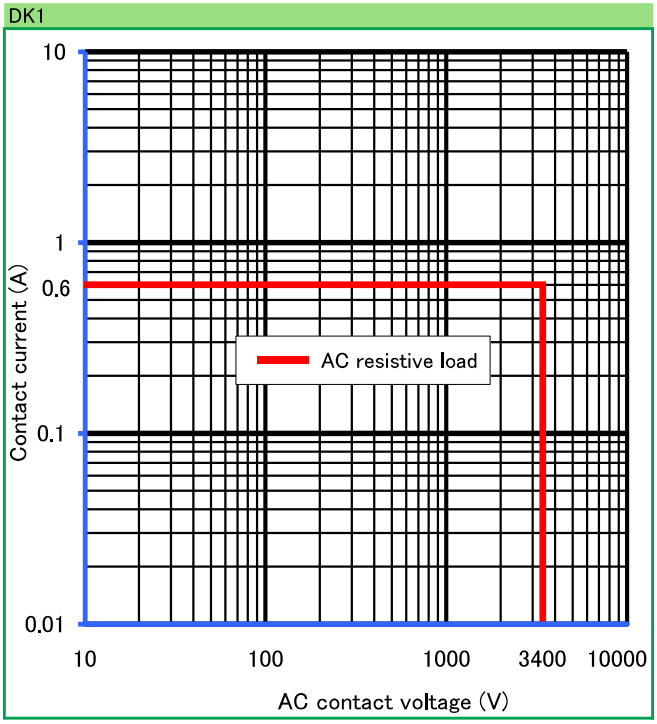
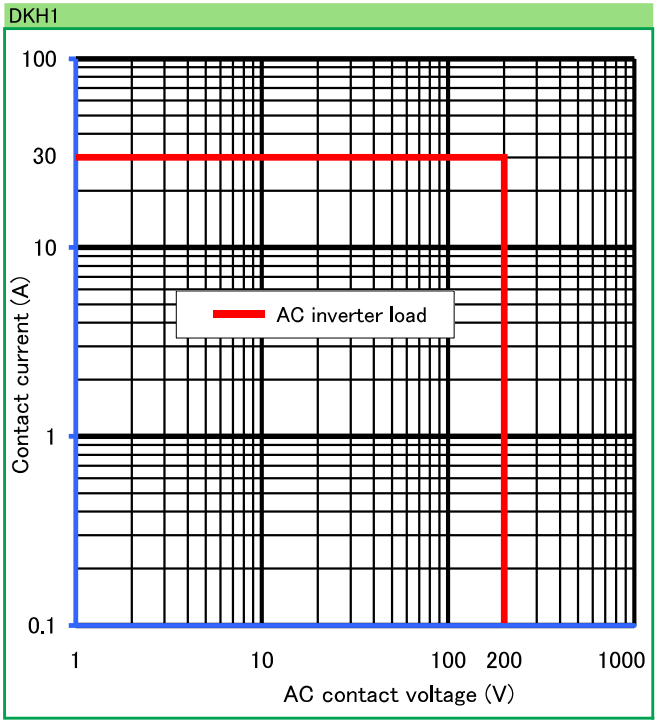
Reference data

■ Maximum switching capacity

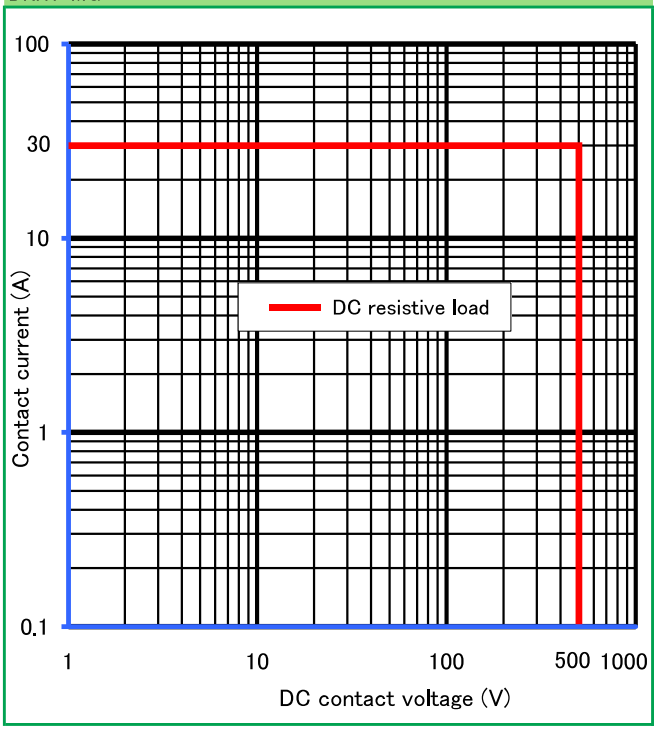
DK1



DKH1



DKH1-MG



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DEC Daiichi Electric Co., Ltd.

Head office 618-2, Miharada, Akagi-machi, Shibukawa-shi, Gunma, 379-1126, Japan
Phone +81-279-56-3151
Facsimile +81-279-56-3154
U R L https://www.j-dec.co.jp E-Mail: sales@j-dec.co.jp

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