

# QUIET RELAY

## 1 POLE—20 A (FOR AUTOMOTIVE APPLICATIONS)

### CS SERIES

#### ■ FEATURES

- Subminiature automotive relay with high reliability
  - Size 16.0 (W) × 22.2 (L) × 16.0 (H)
  - Weight approximately 11 g
- 1 form A (SPST-NO) or 1 form C (SPDT)
- Low-acoustic noise by air damper (quiet type)
- Wide operating temperature range
- Plastic sealed type backfilled with nitrogen



#### ■ ORDERING INFORMATION

[Example]  $\frac{CS}{(a)} - \frac{12}{(*) (b)} \frac{M}{(c)} \frac{N}{(d)} - \frac{K}{(e)}$

(a)	Series Name	CS Series
(b)	Nominal Voltage	Refer to the COIL DATA CHART
(c)	Contact Arrangement	Nil : 1 form C (SPDT) M : 1 form A (SPST-NO)
(d)	Sound Pressure Level	Nil : Quiet type N : Standard type T : Quiet type (for intermittent wiper controller)
(e)	Enclosure	K : Plastic sealed type

Actual marking omits the hyphen (-) of (\*)

## ■ SPECIFICATIONS

Item		Specifications	
Contact	Arrangement	1 form A (SPST-NO) or 1 form C (SPDT)	
	Material	Silver alloy	
	Resistance (initial)	Maximum 50 mΩ (at 5 A 12 VDC)	
	Rating	5A 16 VDC (at 25 A inrush, motor load)	
	Maximum Carrying Current	25 A (at 1 hour continuous duty)	
	Maximum Switching Current	20 A	
	Minimum Switching Load *1	100 mA 5 VDC	
Coil	Nominal Power (at 20°C)	0.45 W	
	Operate Power (at 20°C)	0.18 W	
	Operating Temperature	-40°C to + 85°C (no frost) (refer to the CHARACTERISTIC DATA)	
Time Value	Operate (at nominal voltage)	Maximum 10 ms (with diode)	
	Release (at nominal voltage)	Maximum 15 ms (with diode)	
Insulation	Resistance (at 500 VDC)	Minimum 1,000 MΩ	
	Dielectric Strength	between open contacts	AC 500 V 1 minute
		between coil and contacts	AC 500 V 1 minute
	Average Acoustic Noise Level	57 dB (distance 10 cm)	
Life	Mechanical	1 × 10 <sup>7</sup> operations minimum	
	Electrical	3 × 10 <sup>5</sup> operations minimum (rated load)	
Other	Vibration Resistance	Misoperation	10 to 55 Hz (double amplitude of 1.5 mm)
		Endurance	10 to 55 Hz (double amplitude of 1.5 mm)
	Shock Resistance	Misoperation	200 m/s <sup>2</sup> (11 ± 1 ms)
		Endurance	1,000 m/s <sup>2</sup> (6 ± 1 ms)
	Weight	Approximately 11 g	

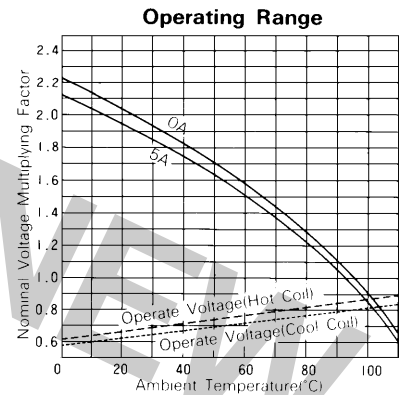
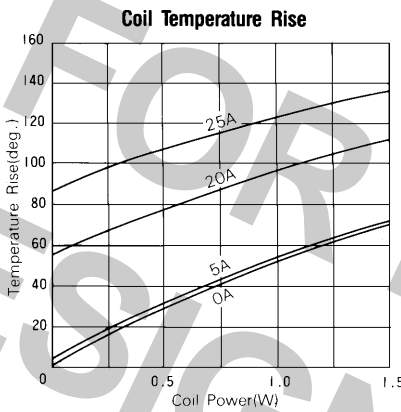
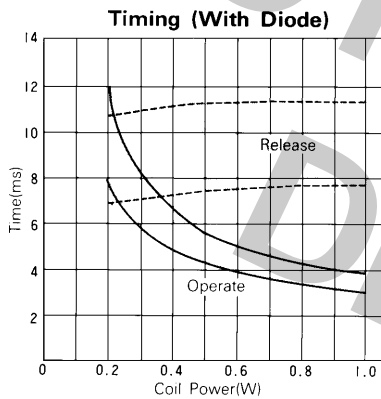
\*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

## COIL RATINGS

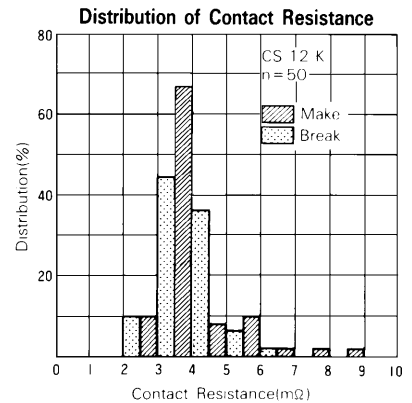
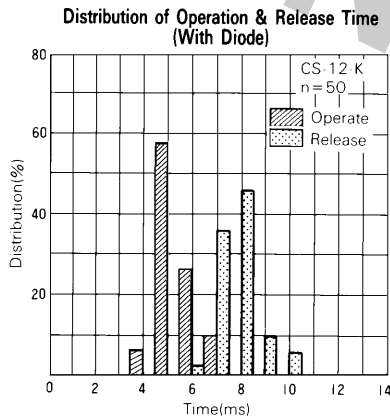
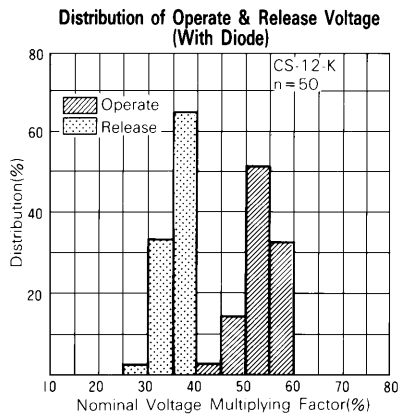
MODEL		Nominal voltage	Coil resistance ( $\pm 10\%$ )	Must operate voltage	Must release voltage	Nominal power
Quiet Type	Standard Type					
CS- 5 ( ) ( ) -K	CS- 5 ( ) ( ) N -K	5 VDC	56 $\Omega$	3.1 VDC	0.5 VDC	0.45 W
CS- 6 ( ) ( ) -K	CS- 6 ( ) ( ) N -K	6 VDC	80 $\Omega$	3.7 VDC	0.6 VDC	0.45 W
CS- 9 ( ) ( ) -K	CS- 9 ( ) ( ) N -K	9 VDC	180 $\Omega$	5.6 VDC	0.9 VDC	0.45 W
CS-10 ( ) ( ) -K	CS-10 ( ) ( ) N -K	10 VDC	222 $\Omega$	6.2 VDC	1.0 VDC	0.45 W
CS-12 ( ) ( ) -K	CS-12 ( ) ( ) N -K	12 VDC	320 $\Omega$	7.5 VDC	1.2 VDC	0.45 W
CS-18 ( ) ( ) -K	CS-18 ( ) ( ) N -K	18 VDC	720 $\Omega$	11.2 VDC	1.8 VDC	0.45 W
CS-24 ( ) ( ) -K	CS-24 ( ) ( ) N -K	24 VDC	1,280 $\Omega$	15.0 VDC	2.4 VDC	0.45 W

Note: All values in the table are measured at 20 °C.

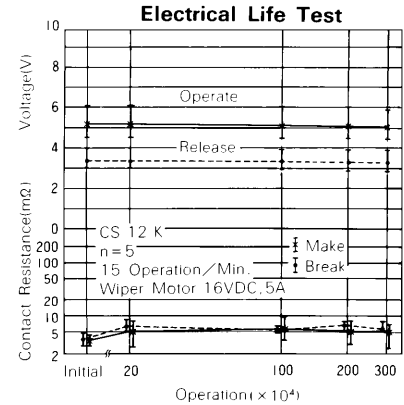
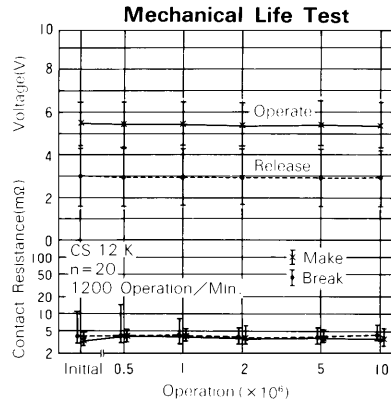
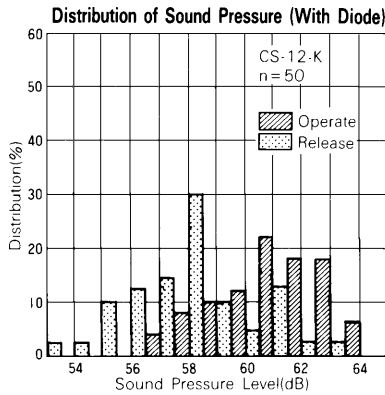
## CHARACTERISTIC DATA



## REFERENCE DATA



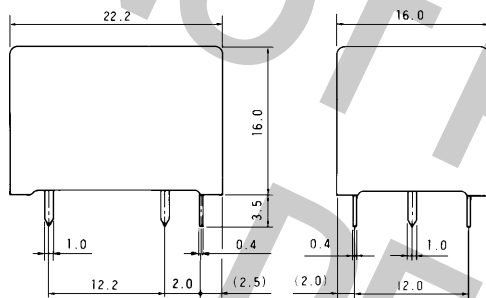
# CS SERIES



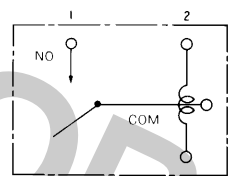
## ■ DIMENSIONS

### ● Dimensions

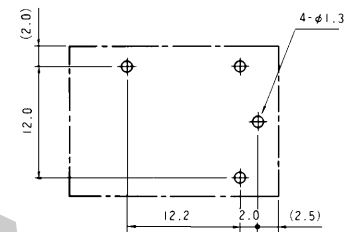
CS-M type



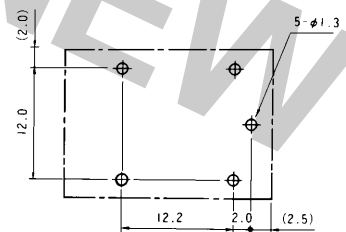
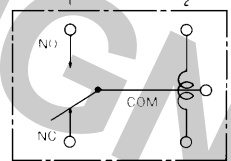
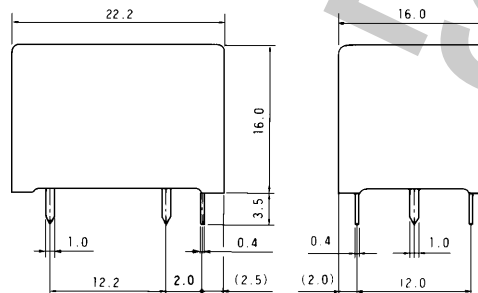
### ● Schematics (BOTTOM VIEW)



### ● PC board mounting hole layout (BOTTOM VIEW)



CS type



Unit: mm

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