KLT SERIES

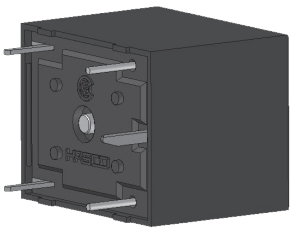
POWER RELAY

c UL us

File No.:E75887

File No.:R 50306227

RoHS Compliant



FEATURES

- Highly reliable, low cost
- Miniature size & large switch capacity up to 20A
- High dielectric strength type
- Fully Sealed

CONTACT RATINGS

Contact Arrangement	1A, 1B, 1C
Contact Resistance	≤100mΩ（1A 24VDC）
Contact Material	AgSnO
Contact Rating(Resistive)	3A 277VAC/28VDC; 6A 277VAC/28VDC; 10A 277VAC/28VDC; 12A 277VAC/28VDC; 15A 277VAC/28VDC; 20A 277VAC/28VDC
Max. Switching Voltage	277VAC/28VDC
Max. Switching Current	20A
Max. Switching Power	5540VA/560W
Mechanical Life	1×10^6 operations
Electrical Life	See more details at "safety approval ratings"

CHARACTERISTICS

Insulation Resistance		100MΩ (at 500VDC)
Dielectric Strength	Between coil & contacts	1500VAC 1min
	Between open contacts	750VAC 1min
Operate time (at nomi. volt.)		≤8ms
Release time (at nomi. volt.)		≤5ms
Humidity		45% ~ 85% RH
Operation temperature		-55°C~+105°C
UL Class F		Insulation System Class F
Shock Resistance	Functional	98m/s^2
	Destructive	980m/s^2
Vibration resistance		10Hz to 55Hz 1.5mm DA
Unit weight		Approx. 12g
Construction		Sealed Type, Dust Cover Type, Flux Tight Type

Notes:1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves.

ORDERING INFORMATION

KLT F 1C 12 DC12 - 1 - GF - XXXX

Model

F:Class F

Contact Arrangement:
1A=1 Form A
1B=1 Form B
1C=1 Form C

Contact Rating:
3=3A, 6=6A, 10=10A,
12=12A, 15=15A, 20=20A

Coil Voltage

1:Dust Cover Type 2:Flux Tight Type
Blank:Sealed Type

GF:Gold Flash

Customer Code

Notes:
1. PC board assembled with dust cover type and flux tight type relays can not be washed and/or coated.
2. Dust cover type and flux tight type relays can not be used in the environment with dust, or H_2S, SO_2, NO_2 or similar gaseous environment etc.

COIL DATA

at 25°C

3A,6A,10A,12A,15A

Nominal Voltage VDC	Operate Voltage (Max.) VDC	Release Voltage (Min.) VDC	*Max. Allowable Voltage VDC	Coil Resistance Ω±10%
3	2.25	0.3	3.9	25
5	3.75	0.5	6.5	70
6	4.50	0.6	7.8	100
9	6.75	0.9	11.7	220
12	9.00	1.2	15.6	400
18	13.5	1.8	23.4	900
24	18.0	2.4	31.2	1600
48	36.0	4.8	62.4	6400

20A

Nominal Voltage VDC	Operate Voltage (Max.) VDC	Release Voltage (Min.) VDC	*Max. Allowable Voltage VDC	Coil Resistance Ω±10%
3	2.25	0.3	3.9	20
5	3.75	0.5	6.5	55
6	4.50	0.6	7.8	80
9	6.75	0.9	11.7	180
12	9.00	1.2	15.6	320
18	13.5	1.8	23.4	720
24	18.0	2.4	31.2	1280
48	36.0	4.8	62.4	5120

Note:

"*Max Allowable Voltage": The relay coil can endure max allowable voltage for a short period time only.

COIL

Coil Power	3A-15A: 360mW 20A: 450mW

SAFETY APPROVAL RATINGS

UL&CUL	3A	3A 277VAC, G.P., 40°C, 6×10^3 OPS 3A 28VDC, G.P., 40°C, 6×10^3 OPS 3.6A 277VAC, Ballast, 40°C, 6×10^3 OPS
	6A	6A 277VAC, G.P., 40°C, 6×10^3 OPS 6A 28VDC, G.P., 40°C, 6×10^3 OPS 3.6A 277VAC, Ballast, 40°C, 6×10^3 OPS
	10A	10A 277VAC, G.P., 40°C, 6×10^3 OPS 10A 28VDC, G.P., 40°C, 6×10^3 OPS
	12A	12A 277VAC, G.P., 40°C, 6×10^3 OPS 12A 28VDC, G.P., 40°C, 6×10^3 OPS N.O./N.C.:10A/5A 28VDC, G.P., 40°C, 6×10^3 OPS 3.6A 277VAC, Ballast, 40°C, 6×10^3 OPS
	15A	15A 277VAC, G.P., 40°C, 6×10^3 OPS N.O.:15A 28VDC, G.P., 40°C, 6×10^3 OPS N.C.:12A 28VDC, G.P., 40°C, 6×10^3 OPS N.O./N.C.:10A/5A 28VDC, G.P., 40°C, 6×10^3 OPS 3.6A 277VAC, Ballast, 40°C, 6×10^3 OPS
	20A	20A 277VAC, G.P., 40°C, 6×10^3 OPS N.O.:20A 28VDC, G.P., 40°C, 6×10^3 OPS N.C.:12A 28VDC, G.P., 40°C, 6×10^3 OPS N.O./N.C.:10A/5A 28VDC, G.P., 40°C, 6×10^3 OPS 3.6A 277VAC, Ballast, 40°C, 6×10^3 OPS

TüV	(KLT20)N.O.:20A 277VAC, 25°C, 3×10^4 OPS N.O.:20A 125VAC, 25°C, 5×10^4 OPS (KLT20)N.O.:15A 125VAC, 85°C, 2×10^4 OPS N.O.:12A 250VAC, 105°C, 2×10^4 OPS (KLT20)N.O.:20A 28VDC, 85°C, 2×10^4 OPS N.C.:12A 277VAC, 25°C, 1×10^4 OPS (KLT20)N.C.:12A 28VDC, 85°C, 2×10^4 OPS N.O./N.C.:12A/10A 250VAC, 85°C, 1×10^4 OPS N.O./N.C.:12A/10A 28VDC, 85°C, 1×10^4 OPS

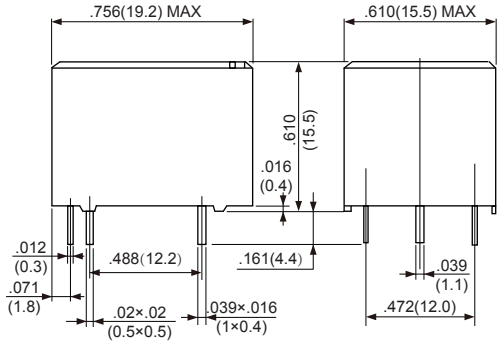
NOTES:

1. All values without specified temperature are at 25°C.
2. The above lists the typical loads only. Other loads may be available upon request.

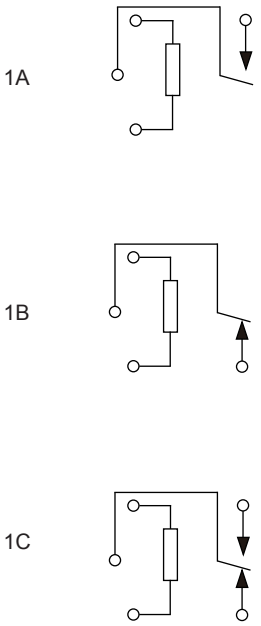
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT.

Unit: inch(mm)

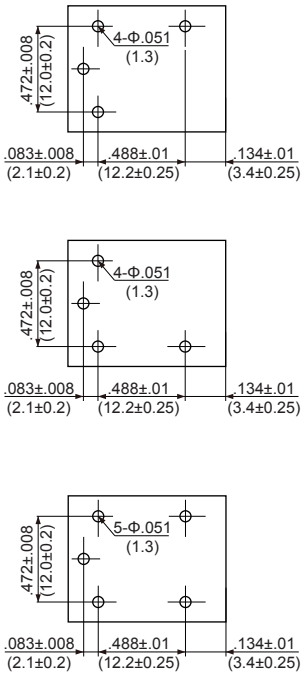
Outline Dimensions



Wiring Diagram (Bottom view)



PCB Layout (Bottom view)

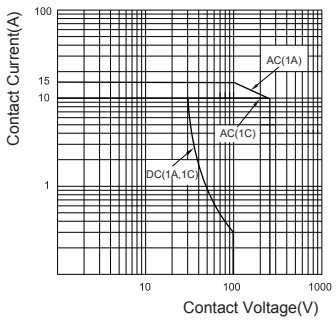


Unless otherwise specified tolerances are:		
≤1mm	＞1mm and ≤5mm	＞5mm
±0.2mm	±0.3mm	±0.4mm

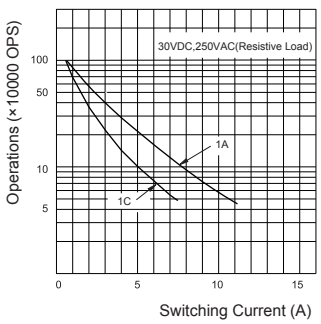
* The tolerance without indicating for PCB layout is always ±0.1mm.

CHARACTERISTIC CURVES

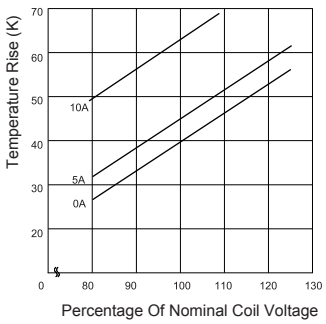
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



PACKAGING SPECIFICATION

TUBE	INNER CARTON	OUTER CARTON	OUTER CARTON SIZE
20PCS	1000PCS	2000PCS	L480mm*W245mm*H335mm

APPLICATION GUIDELINES

Automatic Soldering

* Flow solder is the optimum method for soldering.
* Adjust the level of solder so that it does not overflow onto the top of the PC board.
* Unless otherwise specified, solder under the following conditions depending on the type of relay.

Preheat time 20°C-100°C	Rising slope 20°C-120°C	Decreasing slope Peak-150°C	Welding temperature 255°C-265°C
90±5 seconds	＜3°C/s	＜4°C/s	3~5s

Hand Soldering

* Keep the tip of the soldering iron clean.

Solder Iron	30W or 60W
Iron Tip Temperature	Approx. 350°C 662°F
Solder Time	Within approx. 3 seconds

* Immediate air cooling is recommended to prevent deterioration of the relay and surrounding parts due to soldering heat.
* Although the sealed type relay can be cleaned, avoid immersing the relay into cold liquid (such as washing solvent) immediately after soldering. Doing so may deteriorate the sealing performance.

Discard the dropped product