

Power Relay PK2 HE Latching (THT – THR)

- High endurance performance up to 125°C
- Minimized coil power consumption
- Limiting continuous current 45A at 85°C
- Maximum switch on current 200A
- High shock and vibration resistance
- No change of switching state at breakdown of battery voltage
- Wave (THT) and reflow (THR/pin-in-paste) solderable versions
- For monostable version refer to Power Relay PK2 HE (THT – THR)



Typical applications

Clamp switch (power distribution boxes), quiescent current management.

Contact Data

Contact arrangement	1 form A, 1 NO
Rated voltage	12VDC
Maximum switching voltage	16VDC
Rated current ¹⁾	60A
Limiting continuous current ¹⁾	
23°C	60A
85°C	45A
105°C	35A
125°C	20A

Contact Data (continued)

Contact material	silver alloy
Min. contact load ²⁾	1A 5VDC
Initial voltage drop at 10A, typ./max.	30/300mV
Operate time	typ. 1.5ms
Release time	typ. 1.5ms
Mechanical endurance	>2x10 ⁶ ops.

Electrical Endurance 12VDC Coil

Load voltage/ coil voltage	Load type		Load current		On / off ratio	Electrical endurance ³⁾
			1 form A	NO		
14VDC	resistive	N/A	make	40A	0.12s/4.88s	>1x10 ⁵ ops.
			break	40A		
	capacitive	N/A	make	200A	0.12s/4.88s	>5x10 ⁴ ops.
			break	20A		
	inductive	L=0.5mH	make	60A	0.12s/4.88s	>1x10 ⁵ ops.
			break	35A		

All tests performed with cyclic temperature -40 to 85°C

1) Measured on 70x70x1.5mm epoxy PCB FR4 with 52cm² (double layer 105µm) copper area. Connected cable cross section 6mm². Boundary conditions: 180°C coil temperature; 130°C solder joint. Solder joint results above 130°C on request. The load circuit shall withstand current applied on 60A MAXI fuse. Tested for 100h according ISO62810-1.

2) See Definitions for automotive relays <https://relays.te.com/definitions/> and chapter Diagnostics of Relays in our Application Notes at <https://relays.te.com/appnotes/>

3) Be aware of using right polarity, see terminal assignment. Wrong polarity could reduce endurance. Endurance values according Weibull.

Power Relay PK2 HE Latching (THT – THR) (Continued)

Coil Data

Magnetic system	bistable (two coil system)			
Coil voltage range	23°C (set - reset) ⁴⁾			
Rated coil voltage	28/18VDC			
Polarity for set/reset energization	set	reset		
	-	+	-	+
	pin 1	pin 6	pin 2	pin 6

Coil versions, bistable 2 coils

Coil code	Rated voltage [VDC]	Set voltage [VDC]	Reset voltage [VDC]	Set/reset coil resistance ±10% [Ω]	Impulse length [ms]
004	12	6.9	6.9	20/19	10 – 100

All figures are given for coil without pre-energization, at ambient temperature +23°C.

Insulation Data

Initial dielectric strength	
between open contacts	500VAC _{rms}
between contact and coil	500VAC _{rms}

Other Data

EU RoHS/ELV compliance	compliant	
Ambient temperature	-40 to +125°C	
Cold storage	IEC 60068-2-1 (2008-01)	
	1000h; -40°C	
Dry heat	IEC 60068-2-2 (2008-05)	
	1000h; +125°C	
Rapid change of temperature (thermal shock),	IEC 60068-2-14 (2010-04)	
	Na	
	1000 cycles, -40°C /+125°C	
Damp heat cyclic,	IEC 60068-2-30 (2006-06)	
	Db, variant 1	
	6 cycles 25°C/55°C/93%RH	
Category of environmental protection	IEC 61810 (2015-02)	
	THT:	RT III
	THR:	RT II
Sealing test	IEC 60068-2-17 (1994-07)	
	THT:	Qc, method 2, 1min, 70°C
	THR:	n.a. - vented
Vibration resistance (functional)	IEC 60068-2-6 (2007-12)	
	sine pulse form	
	30 to 440Hz, >20g	
	No change of switching state >10µs	
Shock resistance (functional) half sine	IEC 60068-2-27 (2008-01)	
	open NO contact will not close >10µs	6ms > 30g (reset position)
	closed NO contact will not open >10µs	11ms > 100g (set position)
Solderability (aging 3: 4h/155°C) ⁵⁾ THT	IEC 60068-2-20 (2008-07)	
	Ta, method 1, hot dip 5s, 245°C ⁶⁾	
Solderability (aging 3: 4h/155°C) ⁵⁾ THR	IEC 60068-2-58 (2017-07)	
	Ta, method 1, hot dip 5s 245°C ⁶⁾	
Resistance to soldering heat THT	IEC 60068-2-20 (2008-07)	
	Tb, method 1A, hot dip 10s, 260°C with thermal screen	
Resistance to soldering heat THR	IEC 60068-2-58 (2017-07)	
	Tb, method 1A, hot dip 10s, 260°C preheating min 130°C	
Storage conditions ⁷⁾	according IEC 600688	
Terminal type	PCB:THT, THR	
Weight	approx. 11g (0.39oz)	
Packaging unit ⁸⁾	600 pcs.	

4) Overvoltage according to ISO 16750-2 functional status C. In case of a reset latch pulse U>18VDC contact may reclose, but will not remain closed (no latching function). The delay between driving impulses at cyclic energizing at T_{amb}=85°C must be at least 10s.

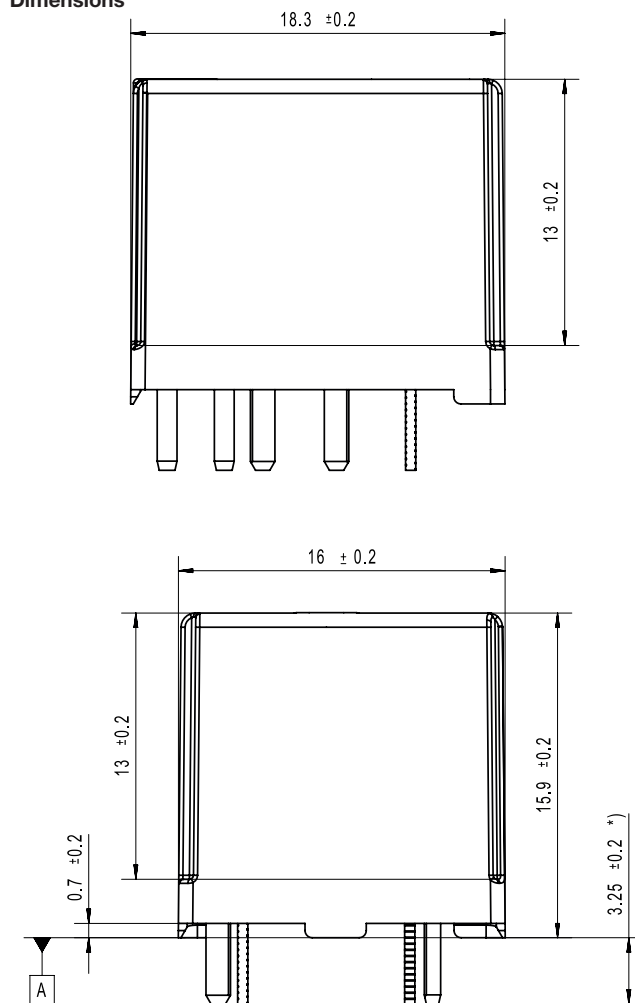
5) For leaded process (T_m = 183°C), for Pb-free process (T_m = 217°C).

6) Depends on the alloy composition, please check IEC

7) For general storage and processing recommendations please refer to our Application Notes and especially to Storage in the Definitions or at <https://relays.te.com/appnotes/>

8) Bistable relays are delivered in the reset position. Due to mechanical impacts while transportation, we advise to check the contact status after the incoming. Before entering the product into the reflow soldering process, please make sure that the relay is unlatched, in order to maintain its performance.

Dimensions



*) Additional tin tops max. 1mm

