HFD2 SUBMINIATURE DIP RELAY

c UL us
File No.:E133481

Features

- 2 Form C contact,Polarized relay
- High sensitivity 150mW
- Fits standard 16 pin IC socket
- High switching capacity 60W,125VA
- Epoxy sealed for automatic wave soldering and cleaning

CONTACT DATA

Contact Arrangement	2C
Initial Contact Resistance	50mΩ
Contact Material	Ag-AuAg8, AgPd60
Contact Rating (Res. Load)	2A 30VDC
	1A 125VAC
Max. switching power	60W, 125VA
Max. switching voltage	220VDC, 250VAC
Max. switching current	2A
Min. Applicable load	10mV 10μA
Electrical life	1 x 10^5OPS (2A 30VDC) 5 x 10^5OPS (1A 30VDC)
Mechanical life	1 x 10^8 OPS

CHARACTERISTICS

Initial Insulation Resistance		1000MΩ 500VDC
Dielectric Strength	Contacts to coil	1500Vrms, 1min(1coil) 1000Vrms, 1min(2coil)
	Contacts to contact	1000Vrms, 1min
Operate time (at nomi. Volt.)		4ms
Release time (at nomi. Volt.)		3ms
Set Time (latching)		3ms
Reset Time (latching)		3ms
Bounce Time		1.5ms
Ambient temperature		-40˚C to +85˚C
Humidity		5% to 85%R.H.
Vibration Resistance		196 m/s²(20g) 10 to 55Hz
Shock Resistance	Functional	490 m/s²(50g)
	Destructive	980 m/s²(100g)
Capacitance	Contact to contact	2.0p
	Contact set to contact	1.5p
	Contact to coil	5.0p
Max.Solder Temp. Time		270˚C 5s
Max.Solvent Temp. Time		80˚C 30s
Termination		DIP & PCB
Unit weight		Approx, 4.5g
Construction		Sealed

COIL

		Sensitive	standard
Coil power	Single side stable	150mW	200mW
	Latching 2 coil	150mW	200mW
	Latching 1 coil	75mW	100mW
Temperature Rise		Max. 65• C	
Coil Voltage		See coil data table	

COIL DATA

Single side stable standard(200mW) 20˚C

Order Number	Nominal Voltage VDC	Pick-up Voltage VDC (Max.)	Drop-out Voltage VDC (Min.)	Coil resistance Ω(±10%)	allowable Voltage VDC (Max.)
003-M	3	2.30	0.3	45	6
005-M	5	3.75	0.5	125	10
006-M	6	4.50	0.6	180	12
009-M	9	6.75	0.9	405	18
012-M	12	9.00	1.2	720	24
015-M	15	11.25	1.5	1125	30
024-M	24	18.0	2.4	2880	48
048-M	48	36.0	4.8	11520	96

Single side stable sensitive(150mW) 20˚C

Order Number	Nominal Voltage VDC	Pick-up Voltage VDC (Max.)	Drop-out Voltage VDC (Min.)	Coil resistance Ω(±10%)	allowable Voltage VDC (Max.)
003-S	3	2.4	0.3	60	7.0
005-S	5	4.0	0.5	167	11.5
006-S	6	4.8	0.6	240	13.8
009-S	9	7.2	0.9	540	20.8
012-S	12	9.6	1.2	960	27.7
015-S	15	12.0	1.5	1500	34.6
024-S	24	19.2	2.4	3840	55.4

COIL DATA

Latching (1 coil) standard(100mW) 20°C

Order Number	Nominal Voltage VDC	Set / Reset Voltage VDC(Max.)	Coil resistance Ω(•10%)	allowable Voltage VDC (Max.)
003-M-L1	3	2.25	90	8.4
005-M-L1	5	3.75	250	14
006-M-L1	6	4.5	360	17
009-M-L1	9	6.75	810	25
012-M-L1	12	9.0	1440	34
015-M-L1	15	11.25	2220	42
024-M-L1	24	18.0	4000	56

Latching (1 coil) sensitive(75mW) 20°C

Order Number	Nominal Voltage VDC	Set / Reset Voltage VDC(Max.)	Coil resistance Ω(±10%)	allowable Voltage VDC (Max.)
005-S-L1	5	4.0	330	16
006-S-L1	6	4.8	480	19
009-S-L1	9	7.2	1080	29
012-S-L1	12	9.6	1920	39
015-S-L1	15	12.0	3000	43
024-S-L1	24	19.2	7680	78

Latching (2 coil) standard(200mW) 20°C

Order Number	Nominal Voltage VDC	Set / Reset Voltage VDC(Max.)	Coil resistance Ω(±10%)	allowable Voltage VDC (Max.)
003-M-L2	3	2.25	45	6
005-M-L2	5	3.75	125	10
006-M-L2	6	4.5	180	12
009-M-L2	9	6.75	405	18
012-M-L2	12	9.0	720	24
015-M-L2	15	11.25	1125	30
024-M-L2	24	18.0	2040	48

Latching (2 coil) sensitive(150mW) 20°C

Order Number	Nominal Voltage VDC	Set / Reset Voltage VDC(Max.)	Coil resistance Ω(±10%)	allowable Voltage VDC (Max.)
005-S-L2	5	4.0	167	11.5
006-S-L2	6	4.8	240	13.8
009-S-L2	9	7.2	540	20.8
012-S-L2	12	9.6	960	27.7
015-S-L2	15	12.0	1500	34.6
024-S-L2	24	19.2	3840	55.4

Notes:When user's requirements can't be found in the above table,special order allowed.

TYPICAL CONTACT LIFE EXPECTANCY

Voltage	Power	Number of operations	
		Resistive Load	Inductive Load(cosø=0.7)
50mV	50uW	5×10^7	5×10^7
30VDC	20W	3×10^6	1×10^6
30VDC	30W	1×10^6	3×10^5
30VDC	60W	1×10^5	1.5×10^4
60VDC	20W	3×10^6	--
60VDC	30W	5×10^5	--
60VDC	60W	1×10^5	--
30VAC	40VA	3×10^6	1×10^6
30VAC	80VA	1×10^6	3×10^5
30VAC	120VA	1×10^5	1.5×10^4
60VAC	40VA	3×10^6	1×10^6
60VAC	80VA	1×10^6	3×10^5
60VAC	120VA	1×10^5	1.5×10^4
125VAC	40VA	3×10^6	1×10^6
125VAC	80VA	1×10^6	3×10^5
125VAC	125VA	1×10^5	1.5×10^4

ORDERING INFORMATION

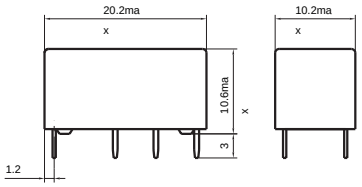
	HFD2 /	012	S	L2	D
Type					
Coil voltage	3, 5, 6, 9, 12, 15, 24, 48VDC(Standard Single only)				
Coil Power	S: sensitive	M: standard			
Sort	Nil:Single side stable	L1: Latching 1 coil	L2: Latching 2 coils		
Contact Material	Nil:AgPd60 / Ag-AuAg8	D: Ag-AuAg8 / Ag-AuAg8			

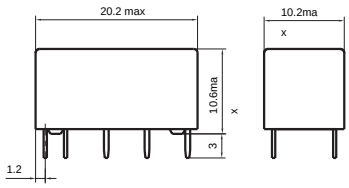
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Single side stable or latching(1 coil)

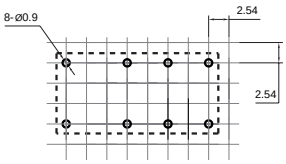
Latching(2 coils)

Outline Dimensions

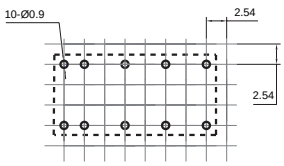




PCB layout

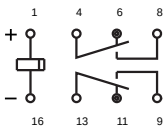


Matching 16 pin IC socket



Matching 16 pin IC socket

Wiring Diagram
(Bottom view)



For latching, diagram shows the "reset" position
Energize terminals 1 and 16 to "set"
Reverse energize terminals 1 and 16 to "reset"

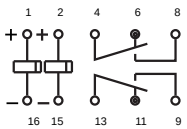
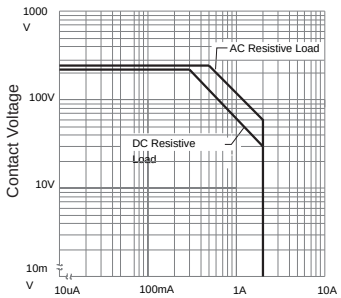


Diagram shows the "reset" position
Energize terminals 1 and 16 to "set"
Energize terminals 2 and 15 to "reset"

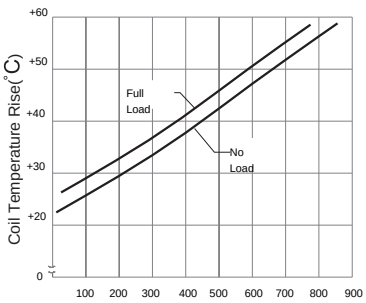
CHARACTERISTICS CURVE

MAXIMUM SWITCHING POWER



Contact Current

COIL TEMPERATURE RISE



Coil Power (mW)