

# DATA SHEET

SUNGMUN CODE : E12F7-14.5M60-20T54-F500

DESCRIPTION : Encoder



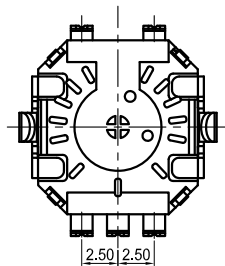
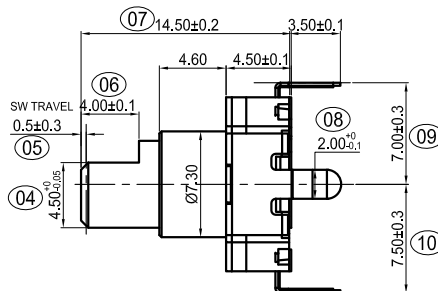
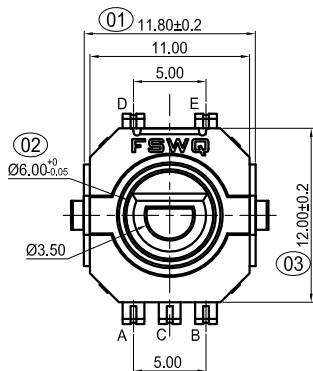
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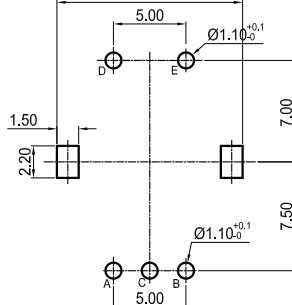
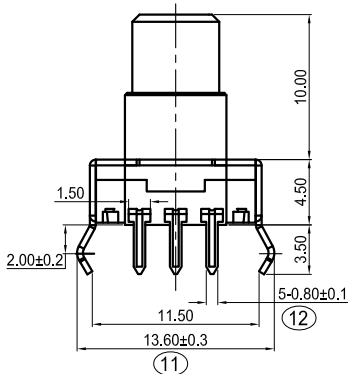
# F-SWITCH ELECTRONICS CO.,LTD.

名称 TITLE	ENCODER	料号 PART NO.	E12F7-14. 5M60-20T54-F500	图号 DRAWING NO.	FSE11-WI-DR-004
规格 SPEC	立式PCB型, 11.8*12*4.5mm 编码器, 安装高度14.5mm, 轴径6.0mm, 扭力60gf, 开关按力500gf, 20脉冲20定位, 寿命5万次.				

No.	Items	Standard	No.	Items	Standard	
1(1.2)	Operating Temperature Range	-40°C to +85°C	19(7.1)	Mechanical Life	50,000 cycles(30 t/min, Torque attenuation <30%)	
2(1.3)	Operating Relative Humidity	≤85% RH	20(7.2)	Electronics Life	50,000 cycles(30 t/min, Torque attenuation <30%)	
3(3)	Ratings	DC 12V 0.5mA	19(7.3)	Switch Mechanical Life	50,000 cycles(60 t/min, Torque attenuation <30%)	
4(4.1)	Contact Resistance	200mΩ Max(Initial status).	20(7.2)	Switch Electronics Life	50,000 cycles(60 t/min, Torque attenuation <30%)	
5(4.2)	Insulation Resistance	50MΩ Min.	21(8.1)	Cold Proof	-40±2°C 96h	
6(4.3)	Dielectric Voltage	AC50V, 60s	22(8.2)	Hot Proof	85±2°C 96h	
7(4.4)	Output signal format	C.W.	23(8.3)	Moisture Resistance	40±2°C, 90-95%RH 96h	
(5.2)		C,C,W.	24(8.4)	Temperature Cycling	-40~85°C, change 5 cycles	
8(4.4)	Phase-different	T1,T2,T3,T4 ≥ 4mS	25(8.5)	Salt Mist	5% NaCl 24h	
9(4.5)	Chattering	t1,t3 ≤ 3mS	26(8.6)	Vulcanization test	3% Na2s 3 minutes	
3	10(4.5) Bounce	t2 ≤ 2mS	Dimensions:			
11(5.1)	Detent points	20 detent points,each angle:20°±3°	1	11.8±0.2mm	12	5-0.8±0.1mm
12(5.3)	Rotational force	60±20gf.cm (Initial status)	2	Ø6.0 <sup>+0.05</sup> mm		
12(5.3)	Push force	500±150gf (Initial status)	3	12.0±0.2mm		
12(5.3)	Restoring force	80gf (Initial status)	4	4.5 <sup>+0.05</sup> mm		
13(5.4)	Axial lateral push Strength	25N, 10S.	5	0.5±0.3mm		
14(5.4)	Axial pull Strength	50N, 10S.	6	3.5±0.1mm		
4	15(5.5) Axial Swing Strength	3N, 60S, Axial Swing <0.3mm	7	14.5±0.2mm		
16(5.6)	Terminal Strength	3N, 10S.	8	2.0±0.1mm		
17(6.2)	Solder Heat Resistance	Wave Soldering	9	7.0±0.3mm		
		Manual Soldering	350°C Max, 3s Max	10	7.5±0.3mm	
18(6.1)	Solder Ability	260°C Max, 3S Min	11	13.6±0.3mm		



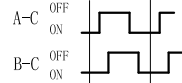
(Tolerance: ±0.1)  
(P.C.B thickness t=1.6~2.0)



Push Switch



CW ROTATION



20 pulse 20 click

### 1. 材质清单 Material list

项目 ITEM	名称 Name	材质 MATERIAL
1	转轴 Shaft	工程塑料(PC)
2	盖片 Cover	铁片 SPCC
3	定位片 Anchor Plate	不锈钢 Stainless Steel Strips
4	齿轮 Wheel gear	工程塑料(PA66)
5	接触片 Contact Spring	磷铜合金 Copper alloy
6	底座 Base	工程塑料(PA66)
7	端子 Terminal	磷铜合金 Copper alloy
8	弹片 Spring	不锈钢 Stainless Steel Strips
9	轴套	工程塑料(PA66)

VER.	内容 S.U.B.	修改 MODIFY	日期 DATE	公差 TOLERANCE		单位 UNIT	张数 SHEET	图幅 SIZE	图类 TYPE
10				L<5	±0.2	mm	1/1	A4	成品图
				L<10	±0.3	版本 REV.	设计 DSGD.	审核 CHKD.	核准 APPD.
				L<30	±0.5	A2			
				.X° ±2° X.° ±5°		比例 SCALE			
				角法 PROJ.		5:1			