GLF73927

Ultra-Efficient, Optimized I_QSmart™ Battery Protection IC

Preliminary Specification

DESCRIPTION

The GLF73927 family is an I_QSmart™ ultra-efficient IC, with accurate over charge/discharge voltage protection, over charge current protection and short circuit protection.

The over charge and discharge voltage protections are capable of keeping a rechargeable battery working within the desired safe operating condition. When the battery is charged above the overcharge voltage detection level (V_{OC}), the GLF73927 charging switches off after a preset delay time. As the battery voltage decreases lower than the over discharge detection voltage (V_{OD}), the GLF73927 discharging switch is turned off immediately. In the off state, GLF73927 consumes an ultra-low leakage current (I_{SD}) to save the battery power. In addition, when the load current is higher than the short circuit protection current level (I_{SC}), the GLF73927 is turned off and will maintain the off state to avoid any serious damage to system. The short circuit delay time can avoid any false trigger which might turn off the switch.

The GLF73927 provides a shipping mode to prevent smart devices which has a non-removable battery from discharging during the shipping period. When a charged battery cell is connected to the GLF73927, and GLF73927 remains in the off state, the smart devices consume an ultra-low leakage current (I_{SD}). Note that the only way to active the GLF73927 is applying a charger output V_{ON} voltage to VOUT pin.

The GLF73927 has 0 V battery minimum voltage charging function, when discharged to around 0 V, the battery can still be charged up.

FEATURES

- Over Charge Detection Voltage, V_{OC}
  - GLF73927A/C, V_{OC}: 4.30 V
  - GLF73927B, V_{OC}: 4.45 V
  - V_{OC} accuracy: ±1.2 %
  - Detects VBAT to release V_{OC}
- Over Discharge Detection Voltage, V_{OD}
  - GLF73927A/B, V_{OD}: 2.80 V
  - GLF73927C, V_{OD}: 2.50 V
  - Detects VBAT to release V_{OD}
- Over Charge Current Detection, I_{OC}

  GLF73927A, I_{OC}: 1.90 A

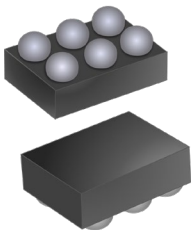
  GLF73927B, I_{OC}: 2.15 A

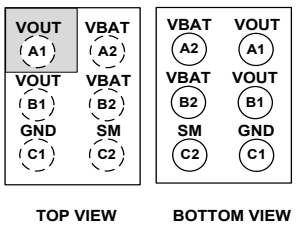
  GLF73927C, I_{OC}: 1.20 A
- Short Circuit Protection, I_{SC}: 3.0 A
- Activated by Applying V_{ON} to the VOUT Pin from Charger
- Shipping Mode Implementation
- Low R_{ON} : 32 mΩ Typ. at 3.6 V_{BAT}
- Low Quiescent Current, I_Q : 1.6 μA Typ at 3.6 V_{BAT}
- Shutdown Current:
  - I_{SD} = 6 nA Typ. at V_{BAT} < V_{OD}
  - I_{SD} = 8 nA Typ. at V_{BAT} = 3.6 V, Shipping Mode
  - I_{SD} = 10 nA Typ. at V_{BAT} = 4.2 V, Shipping Mode
- Latch-off at Over Charge Current, Over Discharge Voltage and Short Circuit Protection.
- 0 V Battery Charging

APPLICATIONS

- BLE Wireless Headset
- Wearables and Smart IoT Devices
- Digital Cameras

PACKAGE



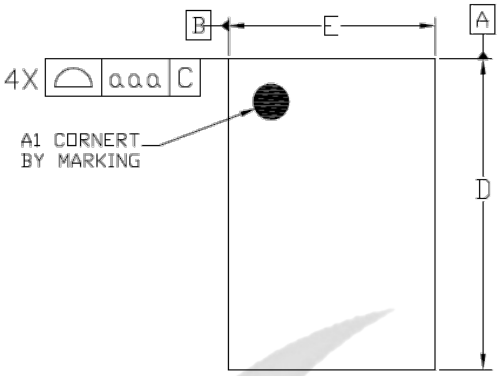


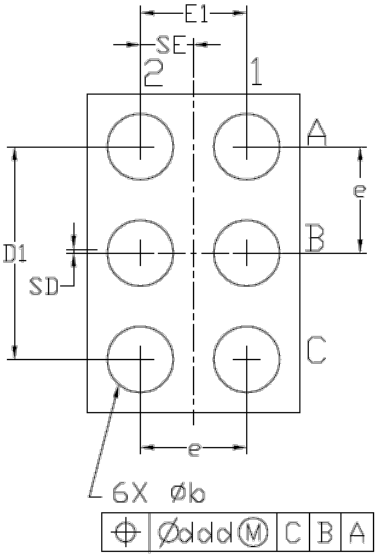
0.97 mm x 1.47 mm x 0.55 mm WLCSP

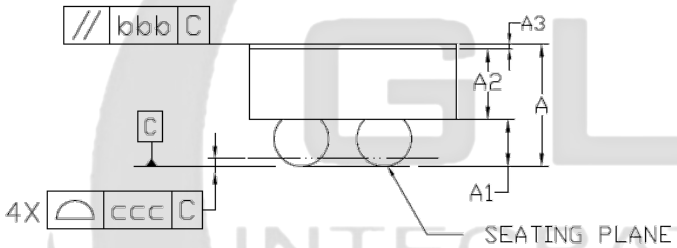
DEVICE INFORMATION

Part Number	Top Mark	R_{ON} (Typ.) V_{BAT}=3.6 V	Over Charge Detection V_{OC} (Typ.)	Over Discharge Detection V_{OD} (Typ.)	Over Charge Current I_{OC} (Typ.)	Short Circuit Current I_{SC} (Typ.)
GLF73927A-S37	EU	32 mΩ	4.30 V	2.80 V	1.90 A	3.0 A
GLF73927B-S37	FU		4.45 V	2.80 V	2.15 A	
GLF73927C-S37	GU		4.30 V	2.50 V	1.20 A	

PACKAGE OUTLINE

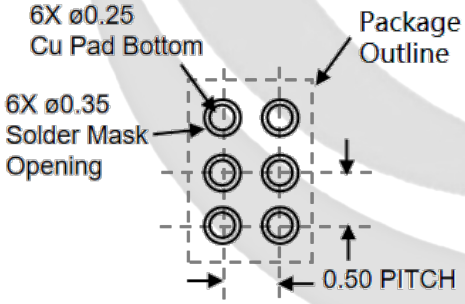






REF.	Dimensions Ref.		
	Min.	Nom.	Max.
A	0.500	0.550	0.600
A1	0.225	0.250	0.275
A2	0.250	0.275	0.300
A3	0.020	0.025	0.030
D	1.460	1.470	1.485
E	0.960	0.970	0.985
D1	0.950	1.000	1.050
E1	0.450	0.500	0.550
b	0.260	0.310	0.360
e	0.500 BSC		
SD	0.000 BSC		
SE	0.250 BSC		
Tol. of Form & Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

Recommended Footprint

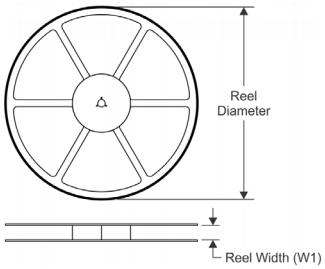


Notes

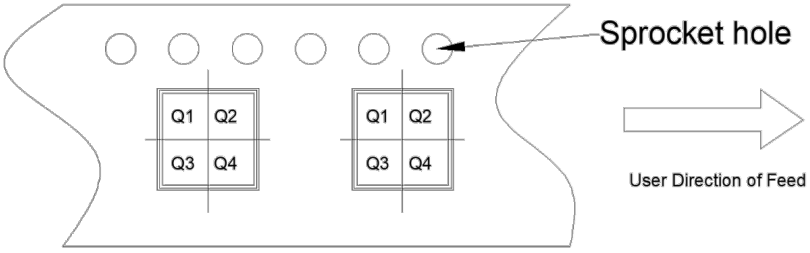
1. ALL DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES)
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

TAPE AND REEL INFORMATION

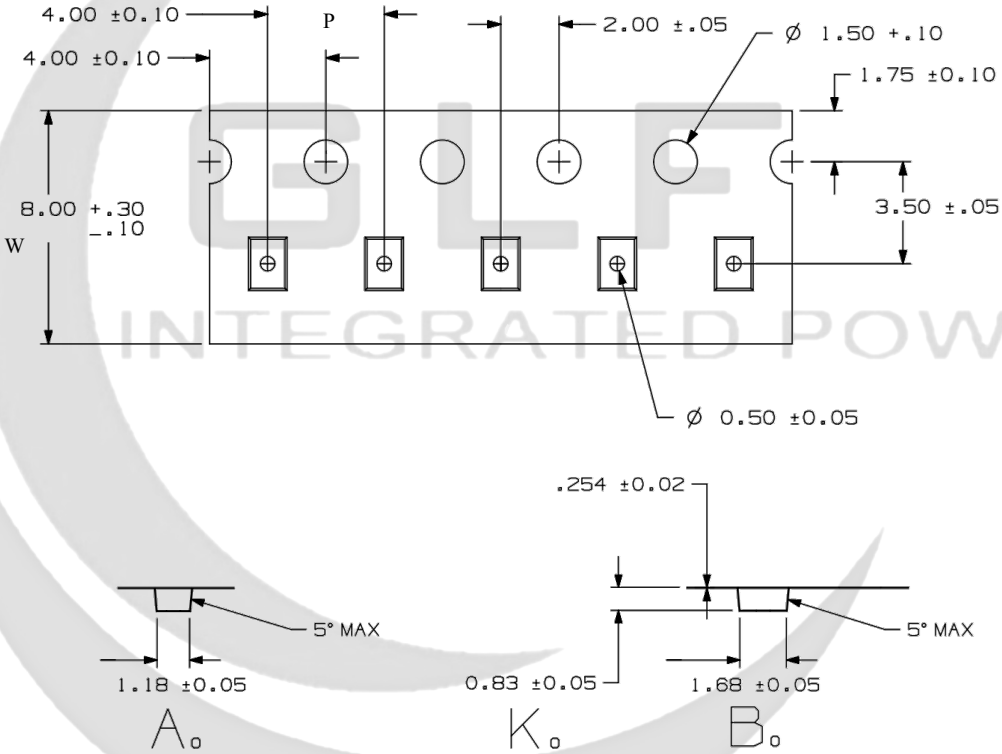
REEL DIMENSIONS



QUADRANT ASSIGNMENTS PIN 1 ORIENTATION TAPE



TAPE DIMENSIONS



Device	Package	Pins	SPQ	Reel Diameter (mm)	Reel Width W1	A0	B0	K0	P	W	Pin1
GLF73927A-S37	WLCSP	6	3000	180	9	1.18	1.68	0.83	4	8	Q1
GLF73927B-S37											
GLF73927C-S37											

Remark:

A0: Dimension designed to accommodate the component width

B0: Dimension designed to accommodate the component length

K0: Dimension designed to accommodate the component thickness

W: Overall width of the carrier tape

P: Pitch between successive cavity centers