GLF73610

Ultra-Efficient, Optimized I_QSmart™ Battery Protection IC with Full Protections

Product Specification

DESCRIPTION

The GLF73610 is a family of I_QSmart™ ultra-efficient, full battery protection ICs with an accurate over charge/discharge voltage, shipping mode, over charge/discharge current, and short circuit protection for lithium-Ion/Polymer battery safety.

The over charge and discharge voltage protections keep a rechargeable battery working within the desired safe operating condition. When the battery is charged past the over voltage detection level, the GLF73610 charging switch opens in a preset delay time. As the battery voltage decreases below the over discharge detection voltage level, the GLF73610 discharging switch is turned off immediately to cut off the battery power rail, consuming an ultra-low leakage current (I_{SD}) to save the battery. In addition, when the load current reaches the I_{SC} short circuit protection level, the GLF73610 is turned off and will maintain the off state to avoid any serious damage to system. The short circuit delay time avoids any false trigger which might open the switch.

The GLF73610 provides a shipping mode pin to prevent smart devices with a non-removable battery from discharging during the shipping period. When a charged battery cell is connected the GLF73610 remains in the off state and consumes an ultra-low leakage current (I_{SD}) until the V_{ON} voltage is applied to VOUT pin. Note that the GLF73610 is activated only by a V_{ON} voltage from a charger output.

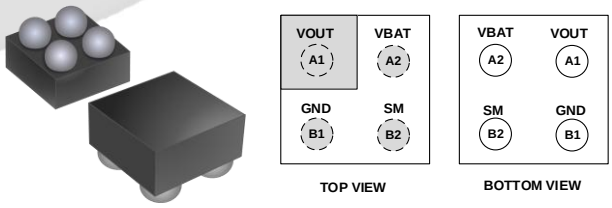
FEATURES

- Over Charge Detection Voltage, V_{OC}
  - Monitor VOUT to release V_{OC}
  - V_{OC} high accuracy: ± 0.6 %
- V_{OD}, Over Discharge Detection: 2.80 V_{OUT}
- I_{OC}, Over Charge Current Detection: 330 mA
- I_{OD}, Over Discharge Current Detection: 76 mA
- Short Circuit Protection
- Activated by Applying V_{ON} to the VOUT Pin
- Shipping Mode Implementation
- Low R_{ON}: 62 mΩ Typ. at 3.7 V_{BAT}
- I_Q = 1.48 µA Typ at 3.7 V_{BAT}
- Shutdown Current
  - I_{SD} = 6 nA Typ. at V_{BAT} < V_{OD}
  - I_{SD} = 8 nA Typ. at V_{BAT} = 3.7 V, Shipping Mode
  - I_{SD} = 10 nA Typ. at V_{BAT} = 4.2 V, Shipping Mode
- Latch-off at Over Discharge Detection and Short Circuit Protection. Apply V_{ON} to VOUT pin to turn on
- 0 V Battery Minimum Voltage for Charging
- Patent Pending Circuit Architecture
- HBM: 8 kV, CDM: 2 kV
- 0.97 mm x 0.97 mm x 0.55 mm Chip Scale Package 4 Bumps, 0.5 mm Pitch

APPLICATIONS

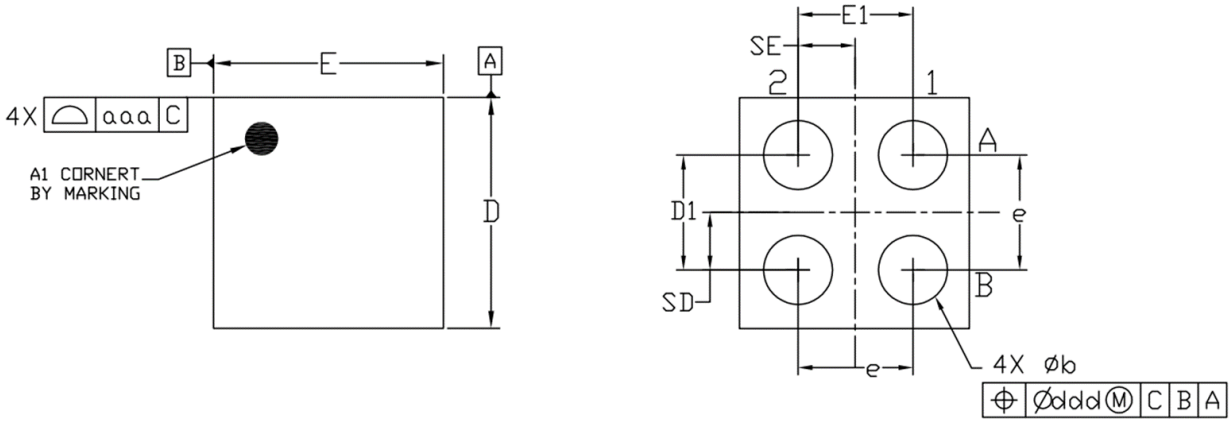
- BLE Wireless Earphone
- Hearing Aid
- Wearables and Smart IoT Devices

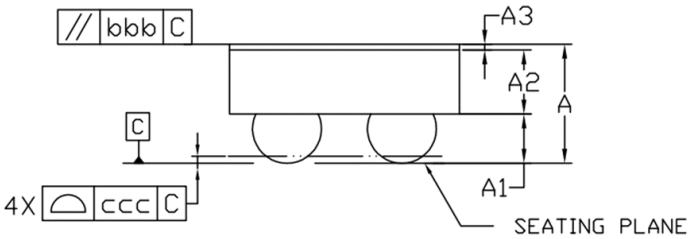
PACKAGE



0.97 mm x 0.97 mm x 0.55 mm WLCSP

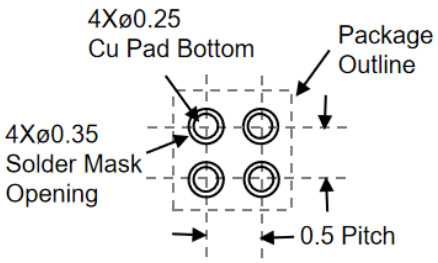
PACKAGE OUTLINE





Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.500	0.550	0.600
A1	0.225	0.250	0.275
A2	0.255	0.275	0.300
A3	0.020	0.025	0.030
D	0.960	0.970	0.985
E	0.960	0.970	0.985
D1	0.450	0.500	0.550
E1	0.450	0.500	0.550
b	0.260	0.310	0.360
e	0.500 BSC		
SD	0.250 BSC		
SE	0.250 BSC		
Tol. of Form&Position			
aaa	0.10		
bbb	0.10		
ccc	0.05		
ddd	0.05		

Recommended Footprint



PACKAGING INFORMATION

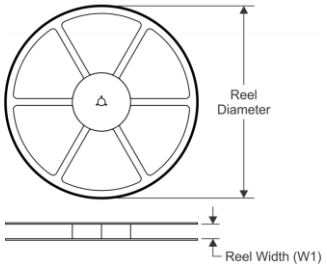
Part Number	Package	Pins	Pitch	Top Mark	Moisture Sensitivity Level	Environmental Information
GLF73610-DE23C	0.97 mm x 0.97 mm x 0.55 mm WLCSP	4	0.5mm	FD	MSL1	ROHS+HF
GLF73610-CE23C				BY		
GLF73610-GE23C				FG		
GLF73610-HE23C				FH		

Notes

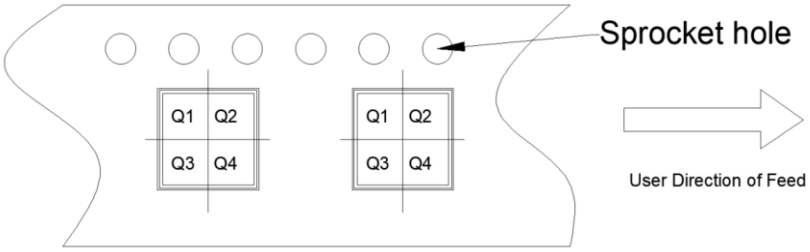
1. ALL DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES)
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.
3. A3: BACKSIDE LAMINATION

TAPE AND REEL INFORMATION

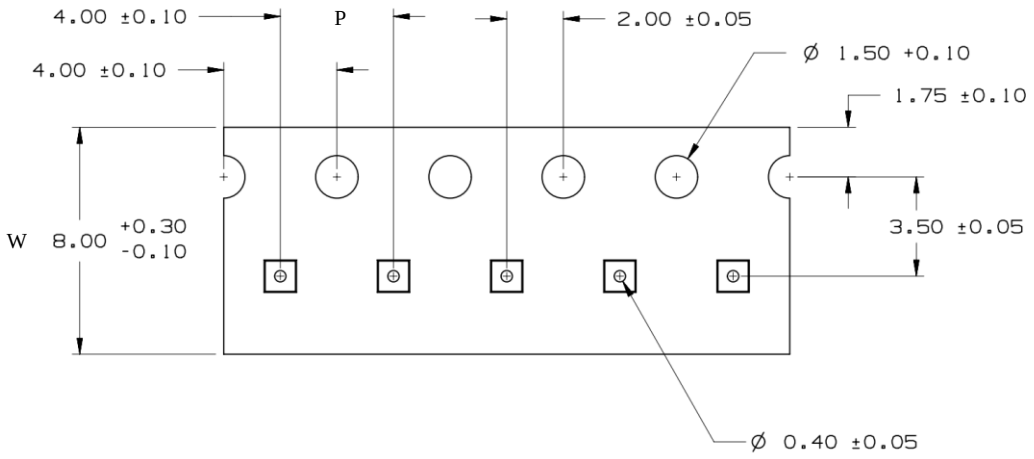
REEL DIMENSIONS

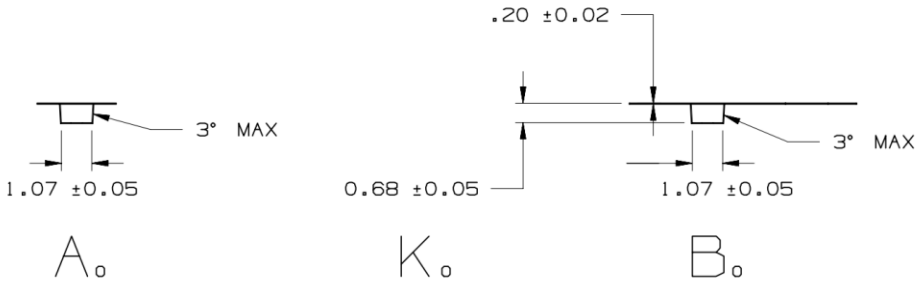


QUADRANT ASSIGNMENTS PIN 1 ORIENTATION TAPE



TAPE DIMENSIONS





Device	Package	Pins	SPQ	Reel Diameter (mm)	Reel Width W1	A0	B0	K0	P	W	Pin1
GLF73610	WLCSP	4	3000	180	9	1.07	1.07	0.68	4	8	Q1

Remark:

A0: Dimension designed to accommodate the component width

B0: Dimension designed to accommodate the component length

C0: Dimension designed to accommodate the component thickness

W: Overall width of the carrier tape

P: Pitch between successive cavity centers