GLF73611

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

Preliminary Specification

DESCRIPTION

The GLF73611 is a family of I_QSmart™ ultra-efficient ICs, with full battery protections which are accurate overcharge and overdischarge voltage protection, overcharge and overdischarge current protection and short circuit protection.

The overcharge and discharge voltage protections are the functions to keep rechargeable battery working within the desired safe operating condition. When the battery is charged above the over voltage detection level, the GLF73611 charging switches off in a preset delay time. As the battery voltage decreases lower than the overdischarge detection voltage, the GLF73611 discharging switch is turned off immediately. In the off state, GLF73611 consumes an ultra-low leakage current (I_{SD}) to save battery power. In addition, when the load current is higher than the I_{SC} short circuit protection current level, the GLF73611 is turned off and will maintain the off state to avoid any serious damage to the system. The short circuit delay time can avoid any false trigger which might turn on the switch.

The GLF76311 provides a shipping mode to prevent the device which has non-removable battery keep discharging during the shipping period. When a charged battery cell is connected to the GLF73611, and GLF73611 remains in the off state, the smart devices consume an ultra-low leakage current (I_{SD}). Note that the only way to activate the GLF73611 is applying a charger output V_{ON} voltage to VOUT pin.

The GLF73611 also has the 0 V battery charge inhibition function. The battery is not allowed to charge when the battery voltage is lower than the 0 V battery charge inhibition voltage (V_{BCI}).

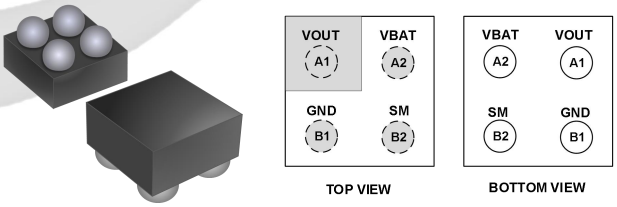
FEATURES

- Overcharge Detection Voltage, V_{OC}
  - GLF73611A detects VOUT to release V_{OC}
  - GLF73611B detects VBAT to release V_{OC}
- Overdischarge Detection, V_{OD}
  - GLF73611A detects 2.90 V_{OUT}
  - GLF73611B detects 2.80 V_{BAT}
- Overcharge Current Detection, I_{OC} : 330 mA
- Overdischarge Current Detection, I_{OD} : 215 mA
- Short Circuit Protection
- Activated by Applying V_{ON} to the VOUT Pin from Charger
- Shipping Mode Implementation
- Low R_{ON} : 60 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} = 15 nA Typ. at V_{BAT} < V_{OD}
  - I_{SD} = 21 nA Typ. at V_{BAT} = 3.6 V, Shipping Mode
  - I_{SD} = 26 nA Typ. at V_{BAT} = 4.2 V, Shipping Mode
- Latch-off at Overdischarge Detection and Short Circuit Protection.
- 0 V Battery Charge Inhibition
- Patented Circuit Architecture

APPLICATIONS

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

PACKAGE

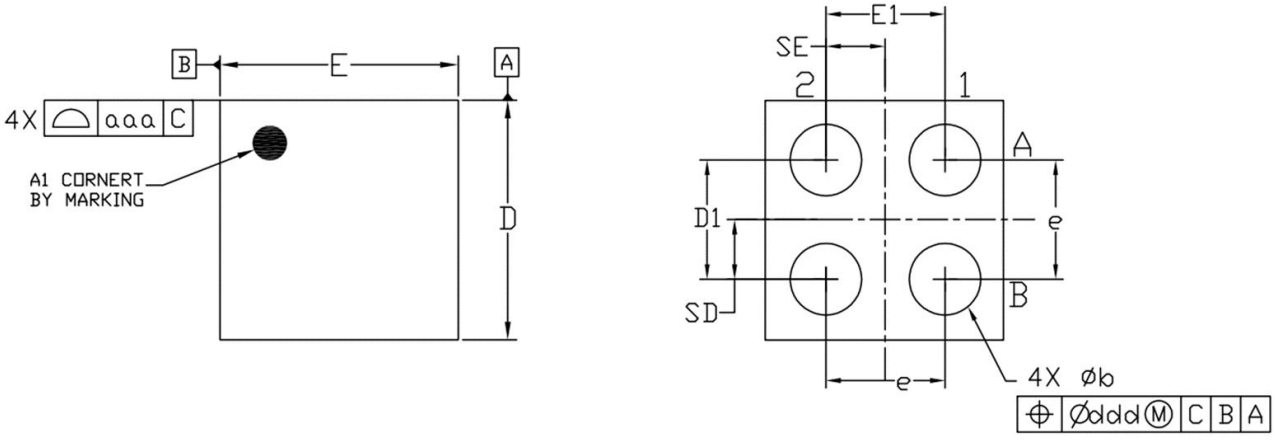


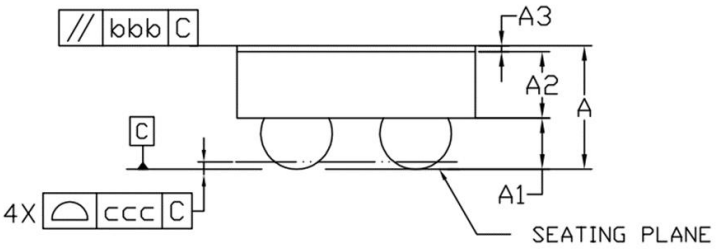
0.97 mm x 0.97 mm x 0.55 mm WLCSP

DEVICE INFORMATION

Part Number	Top Mark	R_{ON} (Typ.) at 3.6 V V_{BAT}	Overcharge Detection V_{OC}	Overdischarge Detection V_{OD}	Overcharge Current I_{OC}	Overdischarge Current I_{OD}	Short Circuit Current I_{SC}
GLF73611A-S2G7	EI	60 mΩ	4.475 V	2.90 V	330 mA	215 mA	500 mA
GLF73611B-S2G7	FI			2.80 V			

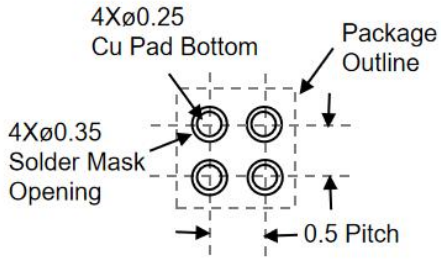
PACKAGE OUTLINE





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

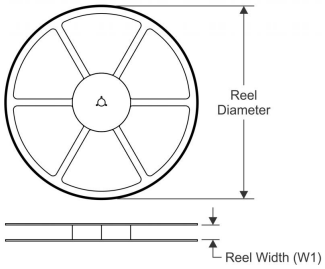


Notes

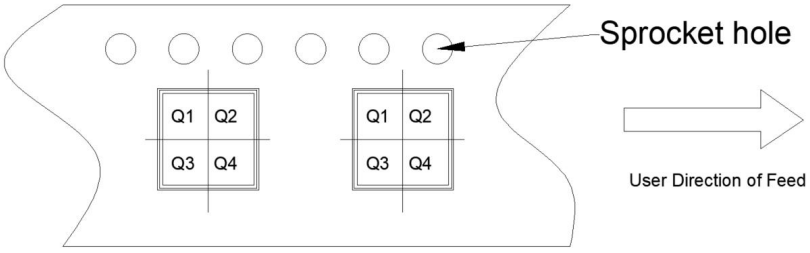
1. ALL DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES)
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.
3. A3: BACKSIDE LAMINATION

TAPE AND REEL INFORMATION

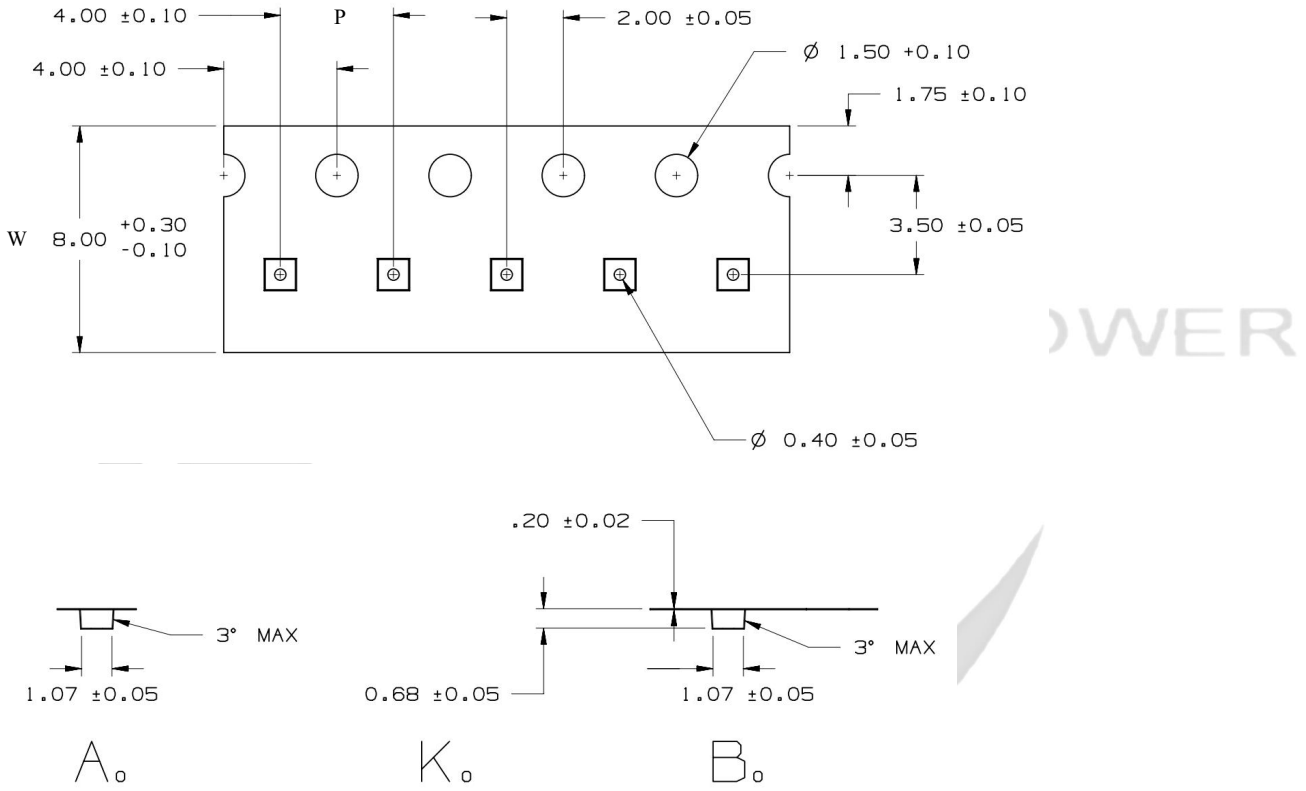
REEL DIMENSIONS



QUADRANT ASSIGNMENTS PIN 1 ORIENTATION TAPE



TAPE DIMENSIONS



A_o K_o B_o

Device	Package	Pins	SPQ	Reel Diameter (mm)	Reel Width W1	A0	B0	K0	P	W	Pin1
GLF73611A-S2G7	WLCSP	4	3000	180	9	1.07	1.07	0.68	4	8	Q1
GLF73611B-S2G7	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