GLF73612T

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

Preliminary Specification

DESCRIPTION

The GLF73612T is a family of I_QSmart™ ultra-efficient ICs, with full battery protections which are accurate over charge/discharge voltage protection, over charge/discharge 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 over voltage detection level, the GLF73612T charging switches off in a preset delay time. As the battery voltage decreases lower than the over discharge detection voltage, the GLF73612T discharging switch is turned off immediately. In the off state, GLF73612T consumes an ultra-low leakage current (I_{SD}) to save the battery power. In addition, when the load current is higher than the I_{SC} short circuit protection current level, the GLF73612T 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 on the switch.

The GLF73612T 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 GLF73612T, and GLF73612T remains in the off state, the smart devices consume an ultra-low leakage current (I_{SD}). Note that the only way to active the GLF73612T is applying a charger output V_{ON} voltage to VOUT pin.

The GLF73612T also has 0 V battery charge inhibition function. When the battery voltage is lower than 0 V battery charging inhibited Voltage (V_{BCI}), the battery is not allowed to charge.

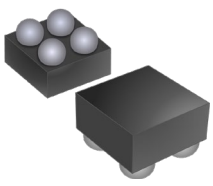
FEATURES

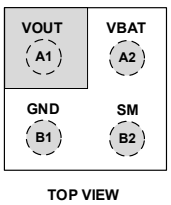
- Over Charge Detection Voltage, V_{OC}
  - GLF73612T detects VOUT to release V_{OC}
  - V_{OC} high accuracy: 4.575 V ±1 %
- Over Discharge Detection, V_{OD}: 2.9 V
  - GLF73612T detects VOUT to release V_{OD}
- Over Charge Current Detection, I_{OC} : 320 mA
- Over Discharge Current Detection, I_{OD} : 465 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 Over Discharge Detection and Short Circuit Protection.
- 0 V Battery Charge Inhibition
- Patented Circuit Architecture

APPLICATIONS

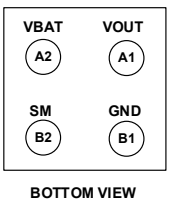
- BLE Wireless Earphone
- Hearing Aid
- Wearables and Smart IoT Devices

PACKAGE





TOP VIEW



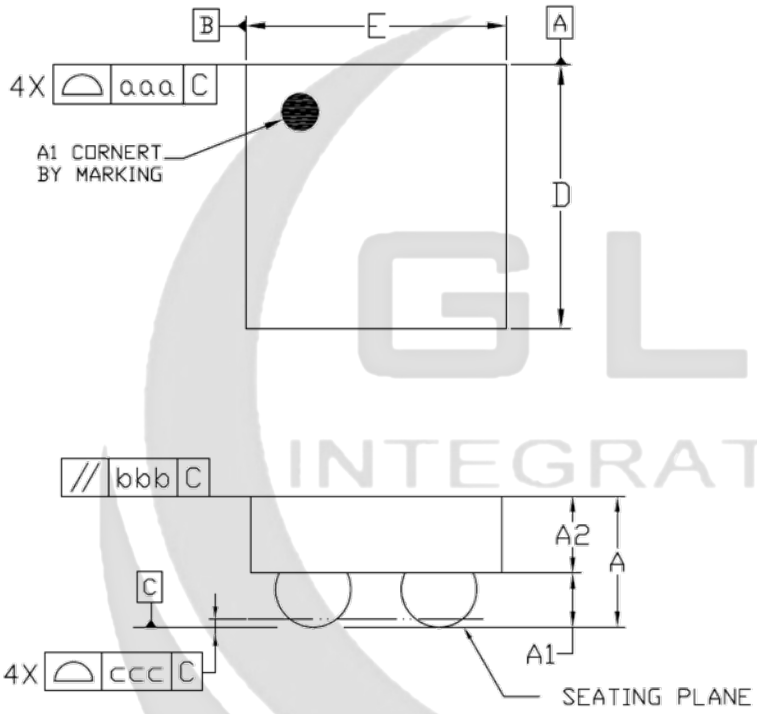
BOTTOM VIEW

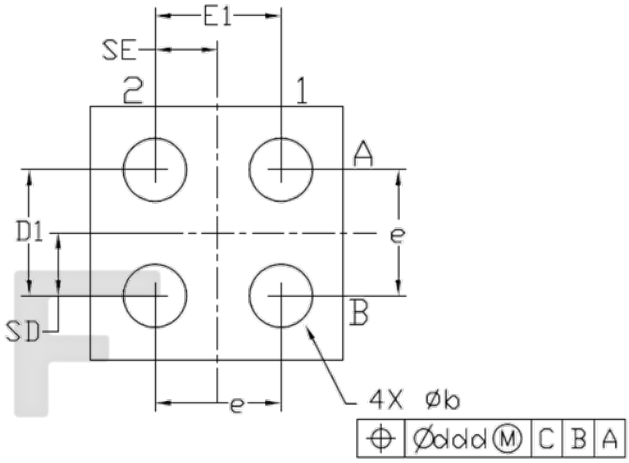
0.97 mm x 0.97 mm x 0.35 mm Thin WLCSP

DEVICE INFORMATION

Part Number	RON (Typ.) VBAT=3.6 V	Over Charge Detection VOC	Over Discharge Detection VOD	Over Charge Current IOC	Over Discharge Current IOD	Short Circuit Current ISC
GLF73612T-S2G7	60 mΩ	4.575 V	2.90 V	320 mA	465 mA	1.25 A

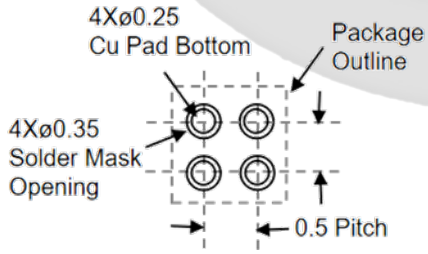
PACKAGE OUTLINE





Dimensional Ref.			
REF.	Min.	Nom.	Max.
A	0.300	0.350	0.400
A1	0.075	0.100	0.125
A2	0.225	0.250	0.275
D	0.955	0.970	0.985
E	0.955	0.970	0.985
D1	0.450	0.500	0.550
E1	0.450	0.500	0.550
b	0.200	0.250	0.300
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

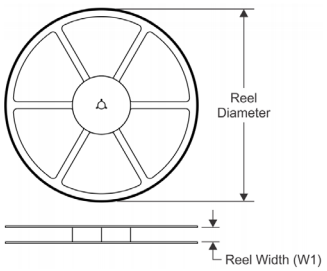


Notes

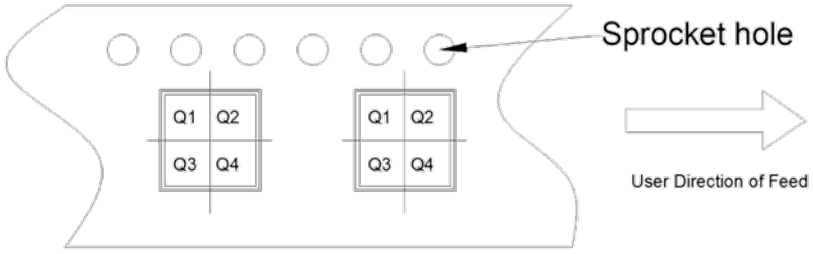
1. ALL DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES)
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.

TAPE AND REEL INFORMATION

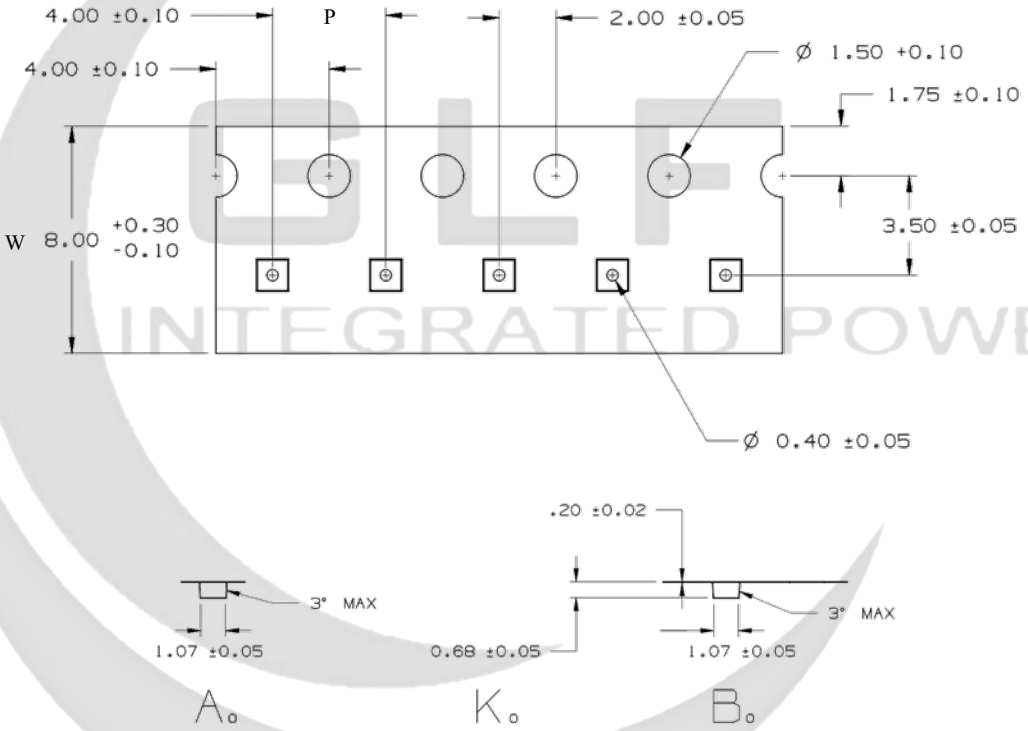
REEL DIMENSIONS



QUADRANT ASSIGNMENTS PIN 1 ORIENTATION TAPE



TAPE DIMENSIONS



Device	Package	Pins	SPQ	Reel Diameter (mm)	Reel Width W1	A0	B0	K0	P	W	Pin1
GLF73612T-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

K0: Dimension designed to accommodate the component thickness

W: Overall width of the carrier tape

P: Pitch between successive cavity centers