Sentinel LDK

SENTINEL HL BOARD FORM FACTOR – TECHNICAL SPECIFICATION GUIDE

Revision History

Part number 007-012421-002, Revision A, 2209-1

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Introduction

Description

Sentinel HL keys protect software against piracy and illegal copying. Access to and execution of the protected software is permitted only when the protected software communicates with the Sentinel HL key. A secure communications channel is established for each communication session between the highly secure, impenetrable AES 128-bit encryption engine on the Sentinel HL key and the application. The secure communication channel between the Sentinel HL key and the application offers powerful resistance to “man-in-the-middle” and brute force attacks. A secure, non external storage device stores licenses, passwords, strings, and application dependent data in its own internal protected read/write memory.

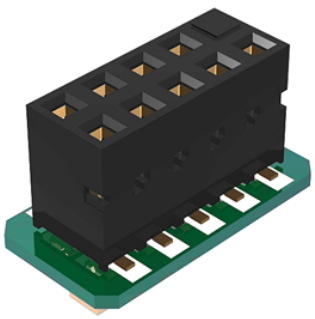
The Sentinel HL Max key is available using the Sentinel HL Board form factor. The Sentinel HL Board is embedded within your device, further enhancing security. This technical specifications guide describes the physical characteristics of the Sentinel HL Board form factor.

The Sentinel HL Board is compatible with Sentinel LDK v.7.1 and later.

Features

- High performance, low power SmartCard chip
- Connector: Socket, Pitch 2.54mm, 5 x 2Row
- Operation Ranges: from 3.0V to 5.5V
- Full-speed USB 2.0 interface, embedded pull-up resistor
- ESD Protection to 6000V of USB interface pin
- Hardware AES Engine
- Secure Tunnel
- Unique serial number for each chip
- RoHS & Lead Free compliant

Sentinel HL Board

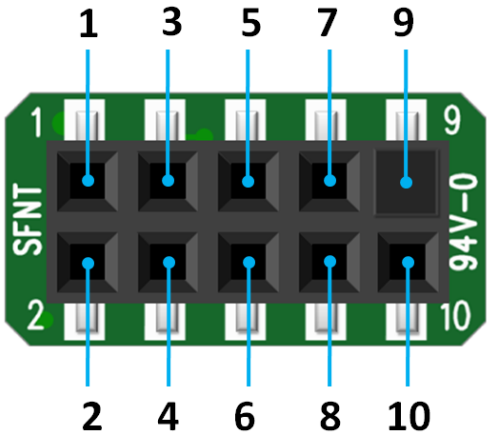


Security

- Dedicated hardware for protection against SPA/DPA/SEMA/DEMA attacks
- Advanced protection against physical attack, including active shield
- Environmental protection systems(voltage, frequency, temperature, light monitors …)
- Secure memory management/access protection (supervisor mode)

Characteristics

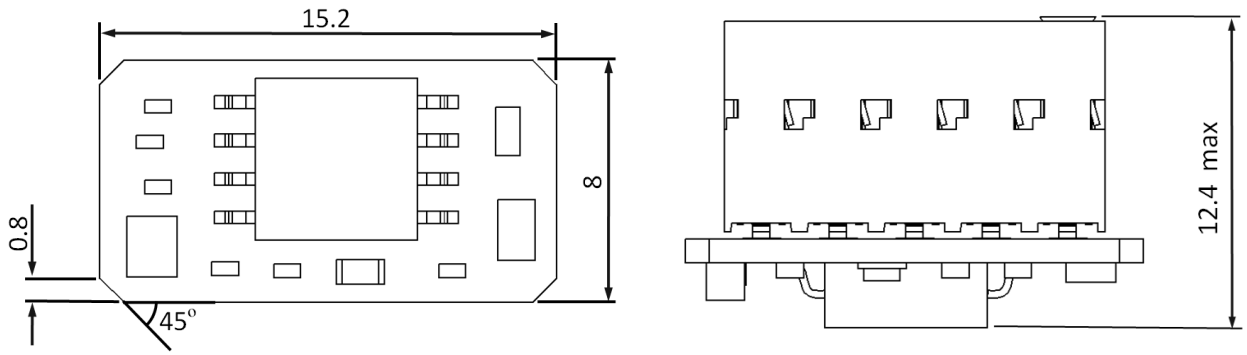
USB Interface Configuration

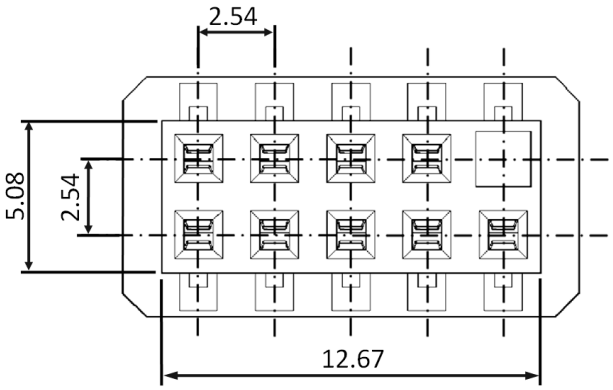


Contacts No.	Pin Name	Contacts No.	Pin Name
1	VBUS	2	NC
3	USB_Data-	4	NC
5	USB_ Data+	6	NC
7	GND	8	NC
9	Keyed	10	NC

Dimensions

(Unit = mm)





Maximum Ratings

Table 1: Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	V_{BUS}	-0.3	7.5	V
Input Voltage	V_{IN}	Vss-0.3	V_{BUS}+0.3	V
Operating Temperature	T_A	-25	+85	°C
EEPROM Endurance for Write/Erase Cycles	E_{EEPROM}		1 Million	Cycles
EEPROM Data Retention Virgin	$V_{DataRetention}$		10	Years
Electrostatic Discharge (HBM)	ESD		*2(Clock pin) *4(LED pin) *6(USB pin)	kV
Latch-up			+/- 200	mA

*The Clock pin, LED pin and USB pin are the pins of smart card chip on this board. These pins represent the most ESD-sensitive part in this board.

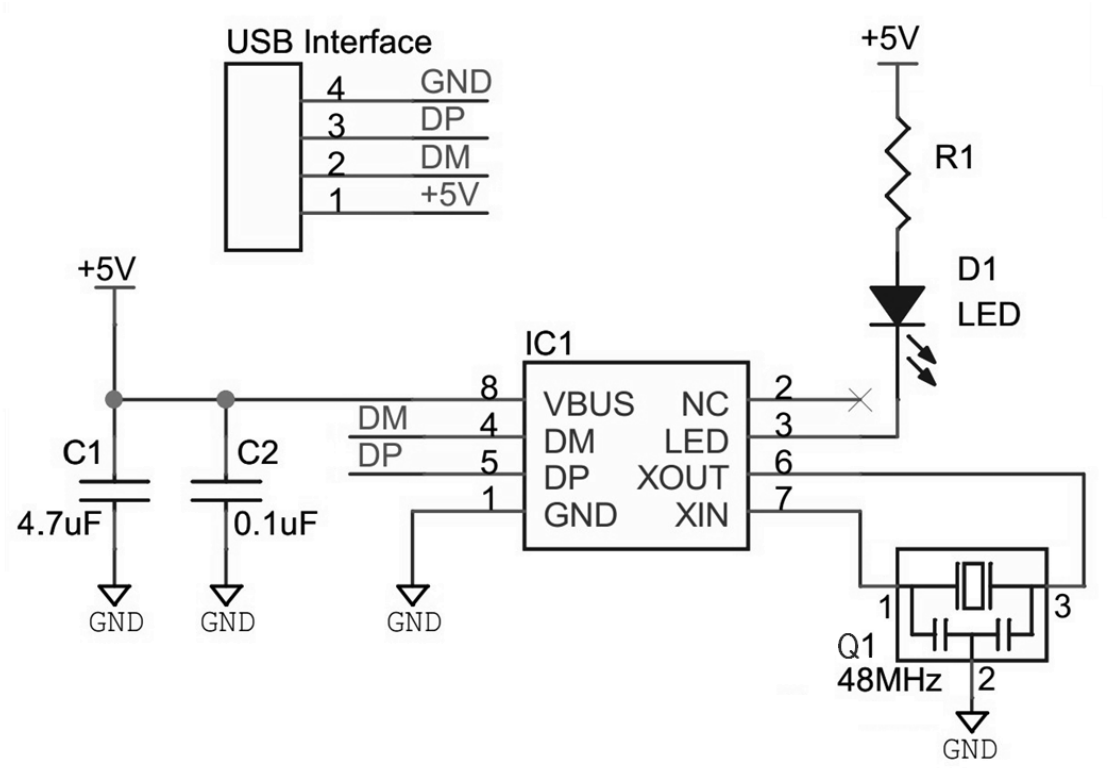
AC/DC Characteristics

Table 2: AC/DC Characteristics (Condition: VBUS=4.5V to 5.5V; T=–25°C to +85°C)

Symbol	Parameter	Min.	Typ.	Max.	Units
V_{BUS}	Supply Voltage	3.0	—	5.5	V
f_{CLK}	CPU Frequency (internal)	28	33	38.5	MHz
$I_{Run\ Mode}$	Supply Current in Run Mode			17	mA
$I_{Standby}$	Supply Current in Standby Mode			0.4	mA

Reference Design

Reference Schematic



ESD Caution

ESD (electrostatic discharge) sensitive device.

Charged devices and circuit boards can discharge without detection. Although this product contains ESD circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.