

FEATURES

- Full speed USB 2.0 HID interface
- Field-upgradable bootloader with anti-rollback, Post-Quantum Cryptography (PQC) firmware authentication LMS signature.
- Compliant with EU CRA (Cyber Resilience Act) requirements.
- 8 x 20 keyboard scan
- 1 PWM backlight brightness control
- 5 keyboard lock-status LEDs plus BLEN backlight enable
- Up to 16 generic LED drive pins
- Fn, FnLock and NumLock Impacted key support
- KeyLock for undetachable washable design
- Support macro keys like "Ctrl+Alt+Del"
- Advanced ghost key detection algorithm to maximize the key combination without additional diodes
- Built-in oscillator and digital circuit. No external crystal is needed
- QFN48 pin package: 6x6x0.75mm (LxWxH)
- LQFP48 pin package: 7x7x1.6mm (LxWxH)
- Power consumption: 5.9 mA (operation), 540 uA (suspend)
- Operation voltage range: 5V mode (4.0 to 5.5V), 3.3V mode (3.0 to 3.6V)
- Industrial temperature range: -40°C to +85°C
- Custom versions available for high volume application

APPLICATION

- Desktop/Laptop PCs
- Industrial Keyboard
- Point-of-sale (POS) terminals
- Instruments

ORDERING INFORMATION

SK5301-LT QFN 48-pin, 0.4mm pitch,
(6x6x0.75mm), Pb-Free, RoHS Complaint

SK5301-LP LQFP 48-pin, 0.5mm pitch,
(7x7x1.6mm), Pb-Free, RoHS Complaint

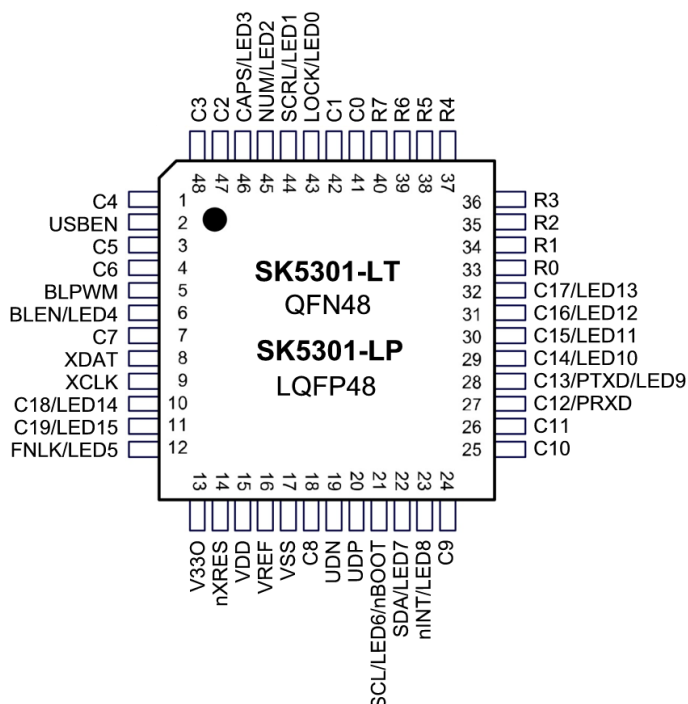
DESCRIPTION

The SK5301 is a full speed USB keyboard encoder ASIC with 1 PWM backlight brightness control, BLEN backlight enable, and 5 keyboard lock-status LEDs. It supports multimedia, custom defined function and macro keys. It's the best choice for customized keyboard design for desktop PCs / laptop PC / industrial keyboard / Point-of-sale (POS) terminals / Instrument.

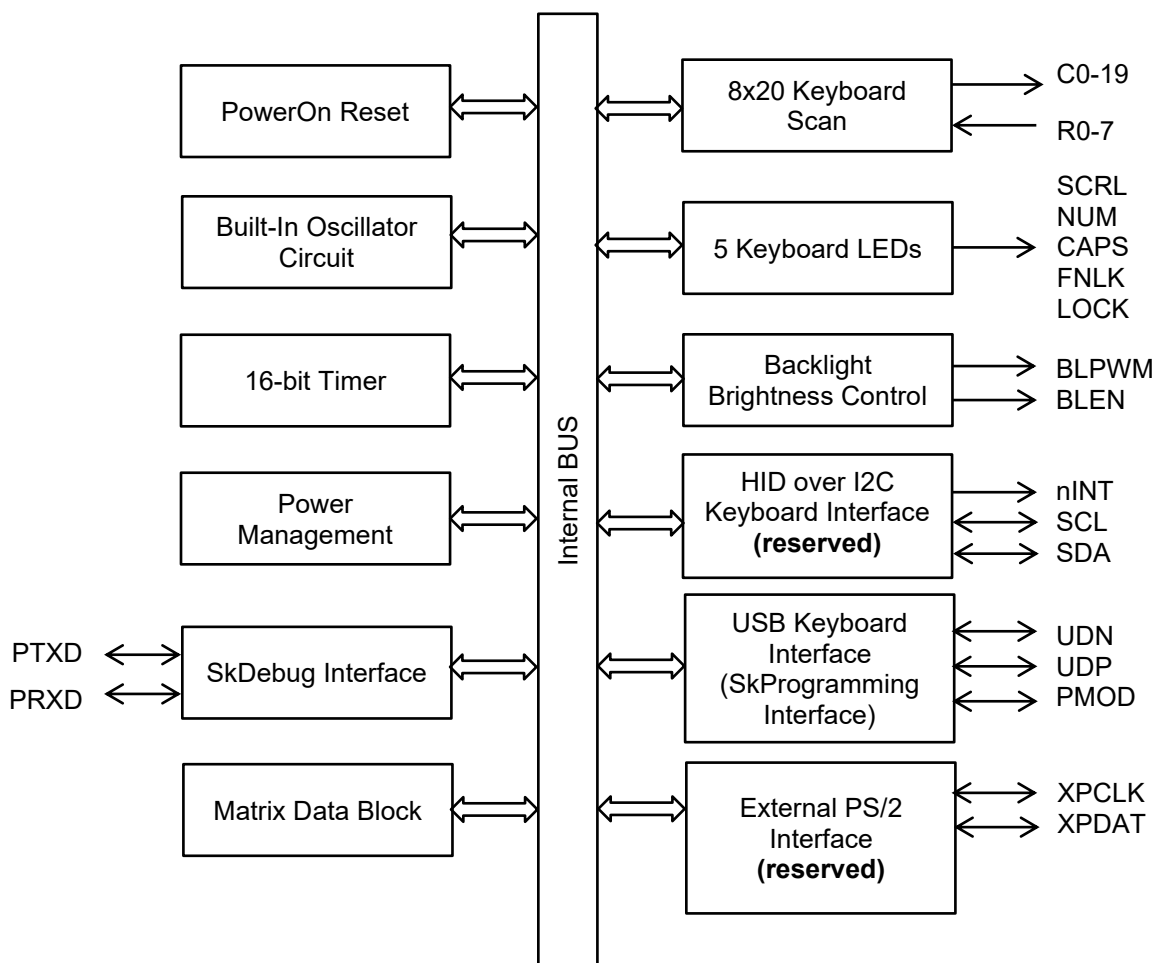
The SK5301's bootloader enables keyboard manufacturers to add any new features after the product release. The firmware upgrade process meets EU CRA requirements.

The SK5301 scans and encodes an 8-row by 20-column matrix. The key press events are translated into keyboard reports. The encoder gets matrix information from on-chip matrix tables.

PIN ASSIGNMENTS



FUNCTION BLOCK DIAGRAM



PIN DEFINITION

SK5301-LT / SK5301-LP Pin Definition

Pin No	Type	Name	Description
1	IO	C4	Column line 4 for scan matrix with internal pull-up resistor
2	IO	USBEN	Floating: USB interface; other states: reserved for other interfaces
3 – 4	IO / I	C5, C6	Column lines 5, 6 for scan matrix with internal pull-up resistor
5	O	BLPWM	Backlight control PWM
6	O	BLEN/LED4	Backlight control LDO enable / LED4
7	IO	C7	Column line 7 for scan matrix with internal pull-up resistor
8	IO	XDAT	Reserved for external PS/2 mouse data line
9	IO	XCLK	Reserved for external PS/2 mouse clock line
10 – 11	IO	C18/LED14, C19/LED15	Column lines 18, 19 for scan matrix with internal pull-up resistor / LED14, 15
12	IO	FNLK/LED5	Fn lock LED / LED5
13	P	V33O	USB power capacitor
14	I	nXRES	Reset pin, low active
15	P	VDD	Power supply
16	P	VREF	Reference power supply
17	P	VSS	Ground connection
18	IO	C8	Column line 8 for scan matrix with internal pull-up resistor
19	IO	UDN	USB D- line / SK internal programming pin
20	IO	UDP	USB D+ line / SK internal programming pin
21	IO	SCL/LED6/PMOD	Reserved I2C slave data line / LED6 / SK internal programming pin PMOD
22	IO	SDA/LED7	Reserved I2C slave clock line / LED7
23	IO	nINT/LED8	Reserved I2C slave interrupt line / LED8
24 – 26	IO	C9 – C11	Column lines 9 to 11 for scan matrix with internal pull-up resistor
27	IO	C12/PRXD	Column line 12 for scan matrix with internal pull-up resistor / SK internal debug pin
28	IO	C13/PTXD/LED9	Column line 13 for scan matrix with internal pull-up resistor / SK internal debug pin / LED9
29 – 32	IO	C14 – C17	Column lines 14 to 17 for scan matrix with internal pull-up resistor / LED10 to LED13
33 – 40	IO	R0 – R7	Row lines 0 to 7 for scan matrix
41 – 42	IO	C0, C1	Column lines 0, 1 for scan matrix with internal pull-up resistor
43	IO	LOCK/LED0	Lock LED / LED0
44	IO	SCRL / LED1	Scroll lock LED / LED1
45	IO	NUM / LED2	Num lock LED / LED2
46	IO	CAPS / LED3	Caps lock LED / LED3
47 – 48	IO	C2, C3	Column lines 2, 3 for scan matrix with internal pull-up resistor

LEGEND I = Input, O = Output, IO = Input/Output, P = Power, NA = Not used

FUNCTION BLOCK DESCRIPTION

The SK5301 consists functionally of several major sections (see the block diagram on the previous page). These include power on reset, oscillator circuit, 10-bit timer, power management, SkDebug interface, SkProgramming interface, watchdog timer, keyboard scan, keyboard LEDs, backlight brightness control, matrix data block, bootloader, USB keyboard interface. All sections communicate with each other and operate concurrently.

Keyboard Interface

The SK5301 scans a keyboard organized as an 8 row by 20 column matrix for a maximum of 160 keys. Smaller size matrixes can be accommodated by leaving unused pins open. The IC provides internal pull-ups for the

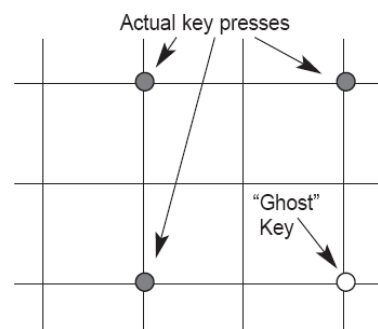
column input pins. When active, the encoder selects each row line (R0-R7); for each row selected, it reads the column lines (C0-C19). A key closure is detected as zero in the corresponding position of the matrix.

Each key found pressed is de-bounced for a period of 24 ms. Once the key is verified, the corresponding key code(s) are loaded into the transmit buffer.

In any scanned contact switch matrix, whenever three keys defining a rectangle on the switch matrix are pressed at the same time, a fourth key positioned on the fourth corner of the rectangle is sensed as being pressed. This is known as the “ghost” or “phantom” key problem.

Although the problem cannot be totally eliminated without using external hardware, there are methods to neutralize its negative effects for most practical applications. Keys that are intended to be used in combinations should be placed in the same row or column of the matrix, whenever possible. Shift keys (Shift, Alt, Ctrl, Window, Fn) should not reside in the same row (or column) as any other keys. The SK5301 has built-in mechanisms to detect and reject “ghost” keys.

The SK5301 shared special functions with column pins to balance the compact design and rich features. The SK5301 provides 8x20 matrix scan at default.



Keyboard LEDs

The SK5301 supports 16 key-controlled LED drive pins. A func type key with sfunc GpoLowX, GpoHighX, GpoToggleX defines the key-controlled LED drive pin behavior. Those LEDs are shared with standard keyboard LEDs feature or Sprintek defined features. FlexEditor's SFunc tab can reassign a feature to a different LED. For example, NumLock is assigned to LED2 at default; but can be reassigned to LED8 via FlexEditor.

Here is the default assignment in SK5301 v1.00.

LED	SK5301 Signal	Shared Feature(s)	Default Special-Flag Use
LED0	LOCK	Lock LED output	KB Lock, Clean Lock
LED1	SCRL	Scroll Lock LED output	Scroll Lock
LED2	NUM	Num Lock LED output	Num Lock
LED3	CAPS	Caps Lock LED output	Caps Lock
LED4	BLEN	Backlight enable control	Backlight Enable
LED5	FNLK	Fn Lock LED output	Fn Lock
LED6	SCL(reserved)		
LED7	SDA(reserved)		
LED8	nINT(reserved)		
LED9	C13	Matrix column C13	
LED10	C14	Matrix column C14	
LED11	C15	Matrix column C15	
LED12	C16	Matrix column C16	
LED13	C17	Matrix column C17	
LED14	C18	Matrix column C18	
LED15	C19	Matrix column C19	

USB Interface

The SK5301 follows USB.org's *Universal Serial Bus Specification 2.0* and *Device Class Definition for HID 1.11* as a full speed HID composite device. The SK5301 has two function endpoints for bootable keyboard, and consumer and system keys.

Power Management

When the SK5301 works in USB mode, it supports selective suspend and remote wake up to get maximum power saving.

Backlight Brightness Control

The 8-bit PWM output controls the brightness of backlight circuit. The parameters such as frequency, pulse width, auto-off time are programmable.

Power On Reset Circuit

The SK5301 has built-in power on reset circuit with simple external RC components.

Oscillator Circuit

The SK5301 has built-in oscillator circuit and no external crystal or resonator is needed. It's automatically calibrated for USB communication.

10-bit Timer

The 10-bit timer provides timing control for USB communication, keyboard scan and sleep timer wakeup.

SK Internal Debug Interface and Programming Interface

The SkDebug interface is reserved for Sprintek to debug new firmware. **PTXD and PRXD pins are recommended to be connected to a 0.1 inch pitch 5-pin header in the schematic.** The header needn't be populated in the final assembly. 0.05-inch-pitch 5-pin header is preferred if 0.1-inch-pitch 5-pin header is too big for your design.

The SkProgramming interface is reserved for Sprintek to program new version firmware. **A switch is recommended to be connected between PMOD and GND.** See reference schematic.

Watchdog Timer

The SK5301 utilizes a 1.25-seconds watchdog timer to ensure robust firmware design.

Matrix Setting and Live Setting Data Block

The SK5301 provides an on-chip data block to store keyboard matrix, scan code mapping table and etc. The matrix data block can be changed in the field. Custom matrix data block can be done via FlexSuite customization software or Sprintek customization service.

Live setting stores last backlight brightness settings. When the SK5301 gets powered up, it will start from the last saved backlight brightness settings.

BootLoader

The SK5301 deploys a bootloader to update the newer version firmware via USB bus. The bootloader supports the following features to meet EU Cyber Resilience Act (CRA) requirements:

Version anti-rollback – prevent the system from accidentally loading old version firmware

LMS signature authentication check – utilize post-Quantum cryptography (PQC) firmware authentication algorithm to give maximum system protection.

FlexSuite software tool – fresh designed tooset to provide the flexibility without sacrificing security.

KEYBOARD MATRIX DESIGN

Keyboard Matrix

The SK5301 supports 8X20 keyboard matrix table. It supports Fn, FnLock, NumLock impacted key definitions, macro key definition and function key definition. Customers can map any key to any key matrix location. The FlexSuite software toolset can be used to edit, program, and test the designed matrix file, can be downloaded from <http://sprintek.com/support/Downloads.aspx>.

Tool Name	Description
FlexEditor	Edit the matrix file
FlexSign	Sign the matrix file. Integrated with FlexEditor.
FlexProgrammer	Program matrix setting file; upgrade firmware code.
FlexTester	Test keyboard module.

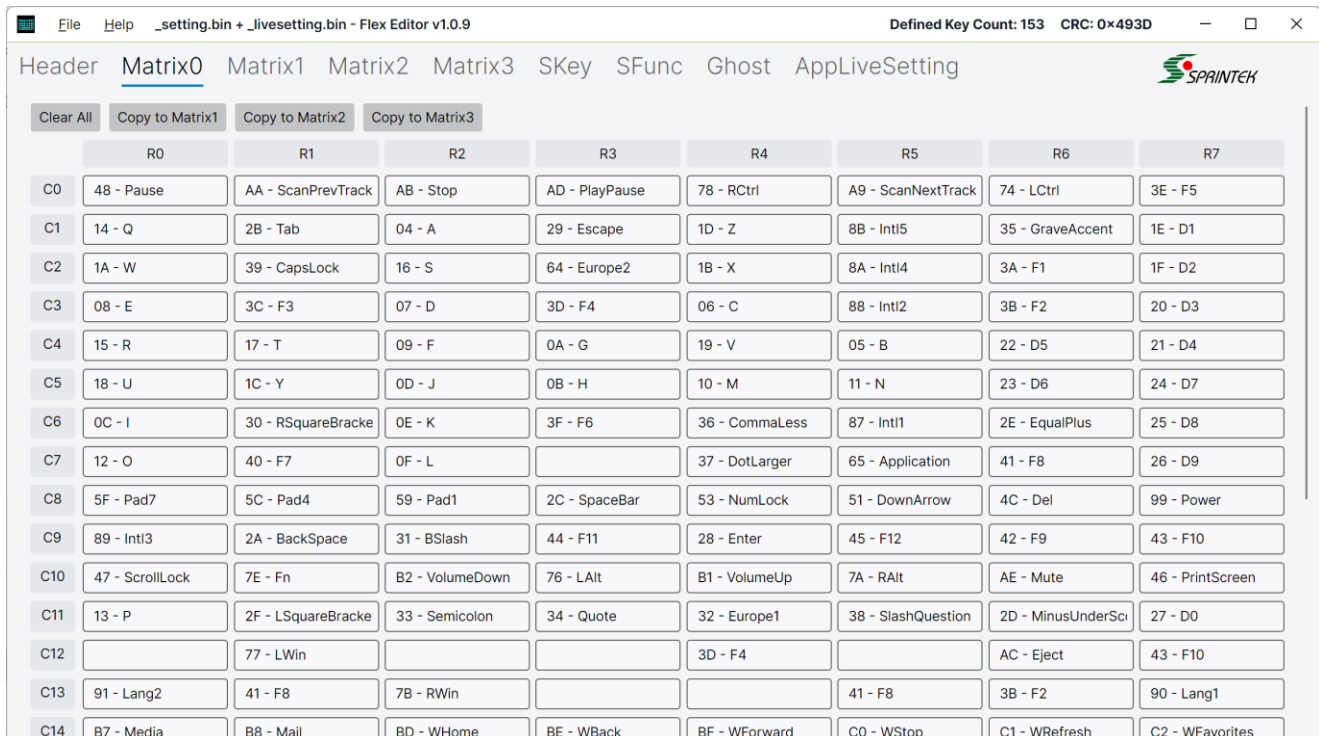
Design Keyboard Matrix

Please refer to Microsoft Windows Platform Design Notes “Keyboard Scan Code Specification” to get more information.

Create Keyboard Matrix

The FlexEditor program enables the user to create keyboard matrix including macro key definition and function key definition, then save them in binary format. The FlexEditor allows the user to assign a logical key to any position in the 8 x 20 matrix. Once a matrix has been created, it is saved in a binary file. The file can be downloaded to the SK5301 flash data block via FlexProgrammer software. The FlexEditor alone can be downloaded from <http://sprintek.com/support/Downloads.aspx> or part of FlexSuite toolset download. Here is the screen snapshot of FlexEditor software.

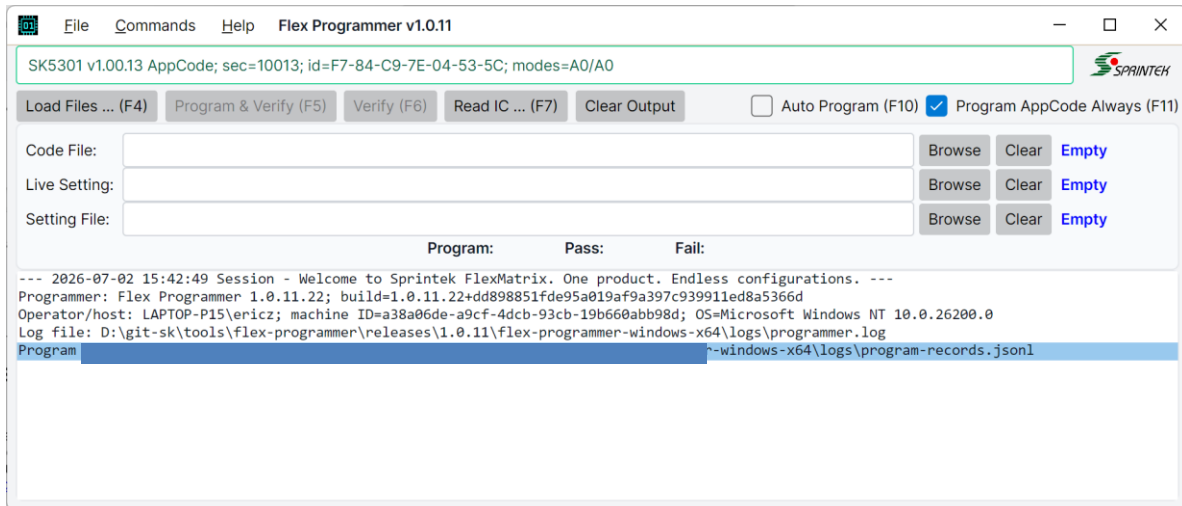
After you finish the editing of the binary file, you may release the raw binary file to a signed flex file which prevents any changes from your original release.



Screen snapshot of FlexEditor

Download Keyboard Matrix

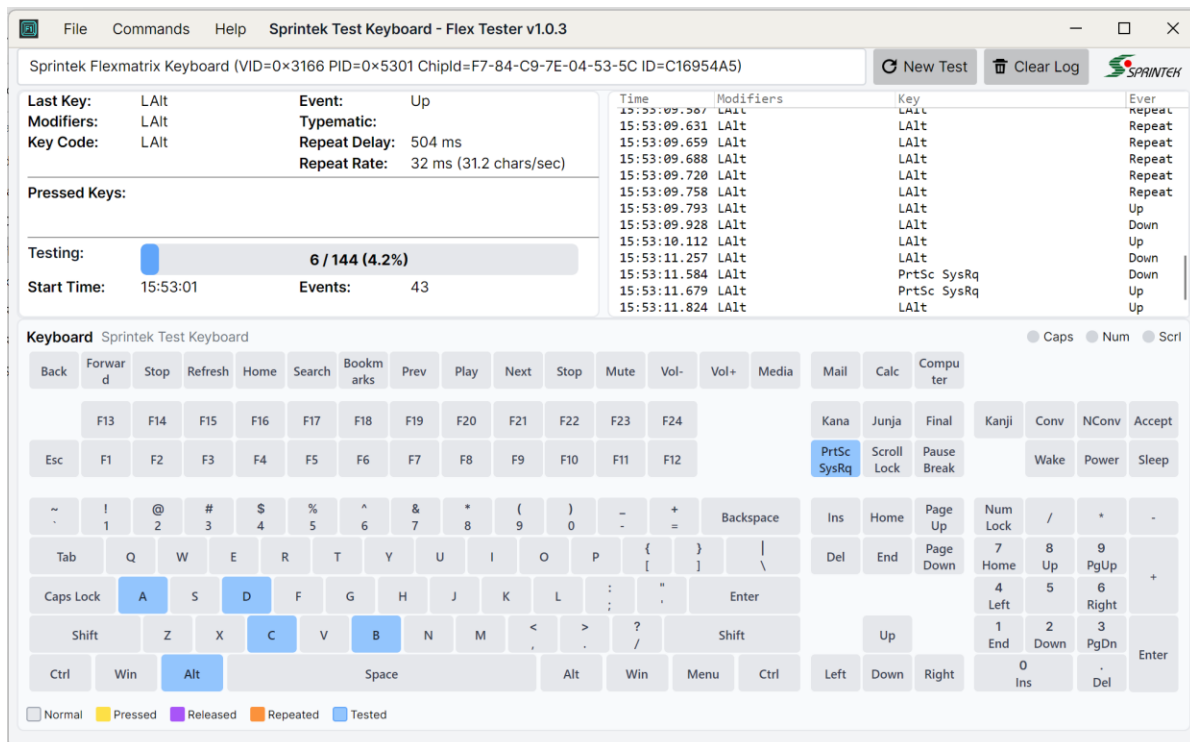
The FlexProgrammer program enables the user to download matrix binary file to the SK5301, upload matrix data from the SK5301's flash data block to a binary file. The FlexProgrammer alone can be downloaded from <http://sprintek.com/support/Downloads.aspx> or part of FlexSuite toolset download. Here is the screen snapshot of FlexProgrammer software.



Screen snapshot of FlexProgrammer – Matrix Data Upgrade

Test Keyboard Matrix

The FlexTester program enables the user to verify your keyboard design. The FlexTester can be downloaded from <http://sprintek.com/support/Downloads.aspx> or part of FlexSuite toolset download. Here is the screen snapshot of FlexTester software.



Screen snapshot of FlexTester

Code Upgrade

The SK5301's bootloader to support field code upgrade. This feature enables users to enjoy new features of your design. 3 files can be upgraded via the FlexProgrammer: code file, matrix setting data, livesetting data.

DEFAULT KEYBOARD MATRIX

The following table shows the default keyboard matrix on chip. Please fill out this table and send it to Sprintek for customized design.

Default Matrix Setting Data

The table below lists the default Matrix0 key assignment. SK5301 exposes C0-C19 column pins. The setting structure reserves additional placeholders C20-C23 for future expansion, but those placeholder entries are not SK5301 column pins.

Matrix1, Matrix2, and Matrix3 are reserved by default; their entries are null in the default setting data.

	R0	R1	R2	R3	R4	R5	R6	R7
C0	Pause	PrevTrack	Stop	Play/Pause	Ctrl-R	NextTrack	Ctrl-L	F5
C1	Q	Tab	A	Esc	Z	K131 JP-L	~`	!@
C2	W	Caps Lock	S	K45 UK	X	K132 JP-M	F1	@2
C3	E	F3	D	F4	C	K133 JP-R	F2	#3
C4	R	T	F	G	V	B	%5	\$4
C5	U	Y	J	H	M	N	^6	&7
C6	I	}}	K	F6	< ,	K56 JP-Ro	+ =	*8
C7	O	F7	L		> .	Apps	F8	(9
C8	N7	N4	N1	Space	Num Lock	Down	Delete	Power
C9	K14 JP-Yen	Back Space	K29	F11	Enter	F12	F9	F10
C10	Scroll Lock	Fn	VolDn	Alt-L	VolUp	Alt-R	Mute	PrtSc
C11	P	{[	;;	"	K42 UK#~	?/	_ -	)0
C12		Win-L			F4		Eject	F10
C13	K150 KR-L	F8	Win-R			F8	F2	K151 KR-R
C14	Media	Email	WHome	WBack	WForward	WStop	WRefresh	WFavorites
C15	My Computer	Calculator	Up	Down	Left	Right	WExplorer	Shift-R
C16	Wake Up	Shift-L	Shift-R	WSearch	F4	F5	F1	M0 Select
C17	N+	K107 BR	NEnter	Up	KbLock	Left	Home	End
C18	N9	N6	N3	N.	N*	N-	PgUp	PgDn
C19	N8	N5	N2	N0	N/	Right	Insert	Sleep

HID USAGE TABLE

Here lists special keys' HID usage code. All other keys are normal keys listed in usage page 7 in document "HID Usage Tables 1.2" from <https://usb.org/>.

Key	Usage Page	Usage
Power	01	81
Sleep	01	82
Wake Up	01	83
NextTrack	0C	B5
PrevTrack	0C	B6
Stop	0C	B7

Key	Usage Page	Usage
K14 JP-Yen	07	89
K29	07	31
K42 UK#~	07	32
K45 UK	07	64
K56 JP-Ro	07	87
K107 BR	07	85

Eject	0C	B8
Play/Pause	0C	CD
Mute	0C	E2
VolUp	0C	E9
VolDn	0C	EA
Media	0C	183
Email	0C	18A
Calculator	0C	192
My Computer	0C	194
WExplorer	0C	196
WSearch	0C	221
WHome	0C	223
WBack	0C	224
WForward	0C	225
WStop	0C	226
WRefresh	0C	227
WFavorites	0C	22A

K131 JP-L	07	8B
K132 JP-M	07	8A
K133 JP-R	07	88
K150 KR-L	07	91
K151 KR-R	07	90

SCAN CODE TABLE

SKEY is the Sprintek key number.

AT-101 is the key reference number on the standard AT-101 keyboard layout, shown in the diagram below

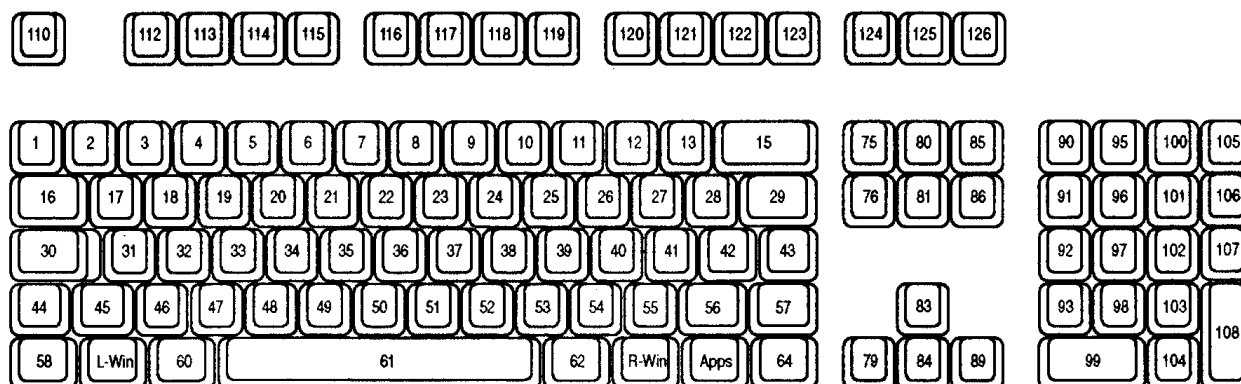
USB page is the Universal Serial Bus (USB) Human Interface Device (HID) usage page for the key. Most keys are on the keyboard page, page 0x07. For information about USB codes, see the USB HID specifications, published by the USB-IF (<http://www.usb.org/>).

USB usage is the USB HID usage ID for the key on the specified USB HID page.

PS/2 codes are the make (key press) and break (key release) codes for PS/2 scan sets 1, 2, and 3; U/A means unassigned. Note that some keys, by default, do not generate break codes, even if the break codes are shown in this table.

Enhanced AT-101 Keyboard Physical Layout

The following figure shows the standard AT-101 keyboard with Windows keys. The numbers on keys are the position number.



SKey and Scan Code Table

SKEY (Dec)	Program Code	Description	AT- 101 (Dec)	USB Page (Hex)	USB Usage (Hex)	Set 1 Make (Hex)	Set 1 Break (Hex)	Set 2 Make (Hex)	Set 2 Break (Hex)	Set 3 Make (Hex)	Set 3 Break (Hex)
0	No Key	No Event	N/A	07	00	None	None	None	None	None	None
1	RollOver	Keyboard ErrorRollOver	N/A	07	01	FF	None	00	None	None	None
2	PostFail	Keyboard POSTFail	N/A	07	02	FC	None	FC	None	None	None
3	Undefined	Keyboard ErrorUndefined	N/A	07	03	U/A	U/A	U/A	U/A	U/A	U/A
4	A	Keyboard a and A	31	07	04	1E	9E	1C	F0 1C	1C	F0 1C
5	B	Keyboard b and B	50	07	05	30	B0	32	F0 32	32	F0 32
6	C	Keyboard c and C	48	07	06	2E	AE	21	F0 21	21	F0 21
7	D	Keyboard d and D	33	07	07	20	A0	23	F0 23	23	F0 23
8	E	Keyboard e and E	19	07	08	12	92	24	F0 24	24	F0 24
9	F	Keyboard f and F	34	07	09	21	A1	2B	F0 2B	2B	F0 2B
10	G	Keyboard g and G	35	07	0A	22	A2	34	F0 34	34	F0 34
11	H	Keyboard h and H	36	07	0B	23	A3	33	F0 33	33	F0 33
12	I	Keyboard i and I	24	07	0C	17	97	43	F0 43	43	F0 43
13	J	Keyboard j and J	37	07	0D	24	A4	3B	F0 3B	3B	F0 3B
14	K	Keyboard k and K	38	07	0E	25	A5	42	F0 42	42	F0 42
15	L	Keyboard l and L	39	07	0F	26	A6	4B	F0 4B	4B	F0 4B
16	M	Keyboard m and M	52	07	10	32	B2	3A	F0 3A	3A	F0 3A
17	N	Keyboard n and N	51	07	11	31	B1	31	F0 31	31	F0 31
18	O	Keyboard o and O	25	07	12	18	98	44	F0 44	44	F0 44
19	P	Keyboard p and P	26	07	13	19	99	4D	F0 4D	4D	F0 4D
20	Q	Keyboard q and Q	17	07	14	10	90	15	F0 15	15	F0 15
21	R	Keyboard r and R	20	07	15	13	93	2D	F0 2D	2D	F0 2D
22	S	Keyboard s and S	32	07	16	1F	9F	1B	F0 1B	1B	F0 1B
23	T	Keyboard t and T	21	07	17	14	94	2C	F0 2C	2C	F0 2C
24	U	Keyboard u and U	23	07	18	16	96	3C	F0 3C	3C	F0 3C
25	V	Keyboard v and V	49	07	19	2F	AF	2A	F0 2A	2A	F0 2A
26	W	Keyboard w and W	18	07	1A	11	91	1D	F0 1D	1D	F0 1D
27	X	Keyboard x and X	47	07	1B	2D	AD	22	F0 22	22	F0 22
28	Y	Keyboard y and Y	22	07	1C	15	95	35	F0 35	35	F0 35
29	Z	Keyboard z and Z	46	07	1D	2C	AC	1A	F0 1A	1A	F0 1A
30	1	Keyboard 1 and !	2	07	1E	02	82	16	F0 16	16	F0 16
31	2	Keyboard 2 and @	3	07	1F	03	83	1E	F0 1E	1E	F0 1E
32	3	Keyboard 3 and #	4	07	20	04	84	26	F0 26	26	F0 26
33	4	Keyboard 4 and \$	5	07	21	05	85	25	F0 25	25	F0 25
34	5	Keyboard 5 and %	6	07	22	06	86	2E	F0 2E	2E	F0 2E
35	6	Keyboard 6 and ^	7	07	23	07	87	36	F0 36	36	F0 36
36	7	Keyboard 7 and &	8	07	24	08	88	3D	F0 3D	3D	F0 3D

SKey and Scan Code Table – Continued

SKEY (Dec)	Program Code	Description	AT- 101 (Dec)	USB Page (Hex)	USB Usage (Hex)	Set 1 Make (Hex)	Set 1 Break (Hex)	Set 2 Make (Hex)	Set 2 Break (Hex)	Set 3 Make (Hex)	Set 3 Break (Hex)
37	8	Keyboard 8 and *	9	07	25	09	89	3E	F0 3E	3E	F0 3E
38	9	Keyboard 9 and (	10	07	26	0A	8A	46	F0 46	46	F0 46
39	0	Keyboard 0 and)	11	07	27	0B	8B	45	F0 45	45	F0 45
40	Enter	Keyboard Return(ENTER)	43	07	28	1C	9C	5A	F0 5A	5A	F0 5A
41	Escape	Keyboard ESCAPE	110	07	29	01	81	76	F0 76	08	F0 08
42	Backspace	Keyboard Backspace	15	07	2A	0E	8E	66	F0 66	66	F0 66
43	Tab	Keyboard Tab	16	07	2B	0F	8F	0D	F0 0D	0D	F0 0D
44	SpaceBar	Keyboard Spacebar	61	07	2C	39	B9	29	F0 29	29	F0 29
45	- /	Keyboard - and (underscore)	12	07	2D	0C	8C	4E	F0 4E	4E	F0 4E
46	=/+	Keyboard = and +	13	07	2E	0D	8D	55	F0 55	55	F0 55
47	[/{	Keyboard [and {	27	07	2F	1A	9A	54	F0 54	54	F0 54
48	] /}	Keyboard] and }	28	07	30	1B	9B	5B	F0 5B	5B	F0 5B
49	\ /	Keyboard \ and	29	07	31	2B	AB	5D	F0 5D	5C	F0 5C
50	k42	Keyboard Non-US# and ~	42	07	32	2B	AB	5D	F0 5D	53	F0 53
51	;'	Keyboard ' and ;	40	07	33	27	A7	4C	F0 4C	4C	F0 4C
52	` /~	Keyboard ` and ~	41	07	34	28	A8	52	F0 52	52	F0 52
53	~ /_	Keyboard ~ and _	1	07	35	29	A9	0E	F0 0E	0E	F0 0E
54	, /<	Keyboard , and <	53	07	36	33	B3	41	F0 41	41	F0 41
55	. />	Keyboard . and >	54	07	37	34	B4	49	F0 49	49	F0 49
56	/ /?	Keyboard / and ?	55	07	38	35	B5	4A	F0 4A	4A	F0 4A
57	CapsLock	Keyboard CapsLock	30	07	39	3A	BA	58	F0 58	14	F0 14
58	F1	Keyboard F1	112	07	3A	3B	BB	05	F0 05	07	F0 07
59	F2	Keyboard F2	113	07	3B	3C	BC	06	F0 06	0F	F0 0F
60	F3	Keyboard F3	114	07	3C	3D	BD	04	F0 04	17	F0 17
61	F4	Keyboard F4	115	07	3D	3E	BE	0C	F0 0C	1F	F0 1F
62	F5	Keyboard F5	116	07	3E	3F	BF	03	F0 03	27	F0 27
63	F6	Keyboard F6	117	07	3F	40	C0	0B	F0 0B	2F	F0 2F
64	F7	Keyboard F7	118	07	40	41	C1	83	F0 83	37	F0 37
65	F8	Keyboard F8	119	07	41	42	C2	0A	F0 0A	3F	F0 3F
66	F9	Keyboard F9	120	07	42	43	C3	01	F0 01	47	F0 47
67	F10	Keyboard F10	121	07	43	44	C4	09	F0 09	4F	F0 4F
68	F11	Keyboard F11	122	07	44	57	D7	78	F0 78	56	F0 56
69	F12	Keyboard F12	123	07	45	58	D8	07	F0 07	5E	F0 5E
70	PrintScreen	Keyboard PrintScreen	124	07	46	E0 37	E0 B7	E0 7C	E0 F0 7C	57	F0 57
71	ScrollLock	Keyboard ScrollLock	125	07	47	46	C6	7E	F0 7E	5F	F0 5F
72	Pause	Keyboard Pause	126	07	48	E1 1D 45 E1 9D C5	None	E1 14 77 E1 F0 14 F0 77	None	62	F0 62

SKey and Scan Code Table – Continued

SKEY (Dec)	Program Code	Description	AT- 101 (Dec)	USB Page (Hex)	USB Usage (Hex)	Set 1 Make (Hex)	Set 1 Break (Hex)	Set 2 Make (Hex)	Set 2 Break (Hex)	Set 3 Make (Hex)	Set 3 Break (Hex)
73	Insert	Keyboard Insert	75	07	49	E0 52	E0 D2	E0 70	E0 F0 70	67	F0 67
74	Home	Keyboard Home	80	07	4A	E0 47	E0 C7	E0 6C	E0 F0 6C	6E	F0 6E
75	PageUp	Keyboard PageUp	85	07	4B	E0 49	E0 C9	E0 7D	E0 F0 7D	6F	F0 6F
76	Delete	Keyboard Delete Forward	76	07	4C	E0 53	E0 D3	E0 71	E0 F0 71	64	F0 64
77	End	Keyboard End	81	07	4D	E0 4F	E0 CF	E0 69	E0 F0 69	65	F0 65
78	PageDown	Keyboard PageDown	86	07	4E	E0 51	E0 D1	E0 7A	E0 F0 7A	6D	F0 6D
79	RightArrow	Keyboard RightArrow	89	07	4F	E0 4D	E0 CD	E0 74	E0 F0 74	6A	F0 6A
80	LeftArrow	Keyboard LeftArrow	79	07	50	E0 4B	E0 CB	E0 6B	E0 F0 6B	61	F0 61
81	DownArrow	Keyboard DownArrow	84	07	51	E0 50	E0 D0	E0 72	E0 F0 72	60	F0 60
82	UpArrow	Keyboard UpArrow	83	07	52	E0 48	E0 C8	E0 75	E0 F0 75	63	F0 63
83	NumLock	Keypad NumLock	90	07	53	45	C5	77	F0 77	76	F0 76
84	N/	Keypad /	95	07	54	E0 35	E0 B5	E0 4A	E0 F0 4A	77	F0 77
85	N*	Keypad *	100	07	55	37	B7	7C	F0 7C	7E	F0 7E
86	N-	Keypad -	105	07	56	4A	CA	7B	F0 7B	84	F0 84
87	N+	Keypad +	106	07	57	4E	CE	79	F0 79	7C	F0 7C
88	NEnter	Keypad ENTER	108	07	58	E0 1C	E0 9C	E0 5A	E0 F0 5A	79	F0 79
89	N1	Keypad 1 and End	93	07	59	4F	CF	69	F0 69	69	F0 69
90	N2	Keypad 2 and Down Arrow	98	07	5A	50	D0	72	F0 72	72	F0 72
91	N3	Keypad 3 and PageDn	103	07	5B	51	D1	7A	F0 7A	7A	F0 7A
92	N4	Keypad 4 and Left Arrow	92	07	5C	4B	CB	6B	F0 6B	6B	F0 6B
93	N5	Keypad 5	97	07	5D	4C	CC	73	F0 73	73	F0 73
94	N6	Keypad 6 and Right Arrow	102	07	5E	4D	CD	74	F0 74	74	F0 74
95	N7	Keypad 7 and Home	91	07	5F	47	C7	6C	F0 6C	6C	F0 6C
96	N8	Keypad 8 and Up Arrow	96	07	60	48	C8	75	F0 75	75	F0 75
97	N9	Keypad 9 and PageUp	101	07	61	49	C9	7D	F0 7D	7D	F0 7D
98	N0	Keypad 0 and Insert	99	07	62	52	D2	70	F0 70	70	F0 70
99	N.	Keypad . and Delete	104	07	63	53	D3	71	F0 71	71	F0 71
100	K45	Keyboard Non-US\ and	45	07	64	56	D6	61	F0 61	13	F0 13
101	Application	Keyboard Application	129	07	65	E0 5D	E0 DD	E0 2F	E0 F0 2F	8D	F0 8D
102	KbPower	Keyboard Power	U/A	07	66	E0 5E	E0 DE	E0 37	E0 F0 37	U/A	U/A
103	N=	Keypad =	U/A	07	67	59	D9	0F	F0 0F	U/A	U/A
104	F13	Keyboard F13	U/A	07	68	64	E4	08	F0 08	08	F0 08
105	F14	Keyboard F14	U/A	07	69	65	E5	10	F0 10	10	F0 10
106	F15	Keyboard F15	U/A	07	6A	66	E6	18	F0 18	18	F0 18
107	F16	Keyboard F16	U/A	07	6B	67	E7	20	F0 20	20	F0 20

SKey and Scan Code Table – Continued

SKEY (Dec)	Program Code	Description	AT- 101 (Dec)	USB Page (Hex)	USB Usage (Hex)	Set 1 Make (Hex)	Set 1 Break (Hex)	Set 2 Make (Hex)	Set 2 Break (Hex)	Set 3 Make (Hex)	Set 3 Break (Hex)
108	F17	Keyboard F17	U/A	07	6C	68	E8	28	F0 28	28	F0 28
109	F18	Keyboard F18	U/A	07	6D	69	E9	30	F0 30	30	F0 30
110	F19	Keyboard F19	U/A	07	6E	6A	EA	38	F0 38	38	F0 38
111	F20	Keyboard F20	U/A	07	6F	6B	EB	40	F0 40	40	F0 40
112	F21	Keyboard F21	U/A	07	70	6C	EC	48	F0 48	48	F0 48
113	F22	Keyboard F22	U/A	07	71	6D	ED	50	F0 50	50	F0 50
114	F23	Keyboard F23	U/A	07	72	6E	EE	57	F0 57	57	F0 57
115	F24	Keyboard F24	U/A	07	73	76	F6	5F	F0 5F	5F	F0 5F
116	L Ctrl	Keyboard LeftControl	58	07	E0	1D	9D	14	F0 14	11	F0 11
117	L Shift	Keyboard LeftShift	44	07	E1	2A	AA	12	F0 12	12	F0 12
118	L Alt	Keyboard LeftAlt	60	07	E2	38	B8	11	F0 11	19	F0 19
119	L Win	Keyboard Left GUI	127	07	E3	E0 5B	E0 DB	E0 1F	E0 F0 1F	8B	F0 8B
120	R Ctrl	Keyboard RightControl	64	07	E4	E0 1D	E0 9D	E0 14	E0 F0 14	58	F0 58
121	R Shift	Keyboard RightShift	57	07	E5	36	B6	59	F0 59	59	F0 59
122	R Alt	Keyboard RightAlt	62	07	E6	E0 38	E0 B8	E0 11	E0 F0 11	39	F0 39
123	R Win	Keyboard Right GUI	128	07	E7	E0 5C	E0 DC	E0 27	E0 F0 27	8C	F0 8C
124	KbLock	Sfunc Kb Lock Toggle	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
125	ExpS2Lock	Sfunc External PS/2 Lock Toggle	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
126	Fn	Sfunc Fn Key	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
127	FnLock	Sfunc Fn Lock	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
128	MatrixSelM0	Sfunc Matrix select M1	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
129	MatrixSelM1	Sfunc Matrix select M0	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
130	BacklitToggle	Sfunc Backlight Toggle	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
131	BacklitCycleInc	Sfunc Backlight Cycle Increase	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
132	SfuncRsrv0	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
133	Comma	Keypad , (Brazilian Keypad.)	107	07	85	7E	FE	6D	F0 6D	7B	F0 7B
134	EqualSign	Keypad Equal Sign	U/A	07	86	U/A	U/A	U/A	U/A	U/A	U/A
135	Int'l1	Keyboard Int'l 1 (Ro)	56	07	87	73	F3	51	F0 51	51	F0 51
136	Int'l2	Keyboard Int'l 2 (Katakana/Hiragana)	133	07	88	70	F0	13	F0 13	87	F0 87
137	Int'l3	Keyboard Int'l 3 (Yen)	14	07	89	7D	FD	6A	F0 6A	5D	F0 5D
138	Int'l4	Keyboard Int'l 4 (Henkan)	132	07	8A	79	F9	64	F0 64	86	F0 86
139	Int'l5	Keyboard Int'l 5 (Muhenkan)	131	07	8B	7B	FB	67	F0 67	85	F0 85
140	Int'l6	Keyboard Int'l 6 (PC9800 Keypad.)	U/A	07	8C	5C	DC	27	F0 27	U/A	U/A
141	Int'l7	Keyboard Int'l 7	U/A	07	8D	U/A	U/A	U/A	U/A	U/A	U/A
142	Int'l8	Keyboard Int'l 8	U/A	07	8E	U/A	U/A	U/A	U/A	U/A	U/A

SKey and Scan Code Table – Continued

SKEY (Dec)	Program Code	Description	AT- 101 (Dec)	USB Page (Hex)	USB Usage (Hex)	Set 1 Make (Hex)	Set 1 Break (Hex)	Set 2 Make (Hex)	Set 2 Break (Hex)	Set 3 Make (Hex)	Set 3 Break (Hex)
143	Int'l 9	Keyboard Int'l 9	U/A	07	8F	U/A	U/A	U/A	U/A	U/A	U/A
144	Lang1	Keyboard LANG 1 (Hangeul/English)	U/A	07	90	F2	None	F2	None	F2	None
145	Lang2	Keyboard LANG 2 (Hanja)	U/A	07	91	F1	None	F1	None	F1	None
146	Lang3	Keyboard LANG 3 (Katakana)	U/A	07	92	78	F8	63	F0 63	U/A	U/A
147	Lang4	Keyboard LANG 4 (Hiragana)	U/A	07	93	77	F7	62	F0 62	U/A	U/A
148	Lang5	Keyboard LANG 5 (Zenkaku/Hankaku)	U/A	07	94	76	F6	5F	F0 5F	06	F0 06
149	Lang6	Keyboard LANG 6	U/A	07	95	U/A	U/A	U/A	U/A	U/A	U/A
150	Lang7	Keyboard LANG 7	U/A	07	96	U/A	U/A	U/A	U/A	U/A	U/A
151	Lang8	Keyboard LANG 8	U/A	07	97	U/A	U/A	U/A	U/A	U/A	U/A
152	Lang9	Keyboard LANG 9	U/A	07	98	U/A	U/A	U/A	U/A	U/A	U/A
153	Power	System Power	U/A	01	81	E0 5E	E0 DE	E0 37	E0 F0 37	U/A	U/A
154	Sleep	System Sleep	U/A	01	82	E0 5F	E0 DF	E0 3F	E0 F0 3F	U/A	U/A
155	WakeUp	System Wake Up	U/A	01	83	E0 63	E0 E3	E0 5E	E0 F0 5E	U/A	U/A
156	Restart	System Restart	U/A	01	8F	U/A	U/A	U/A	U/A	U/A	U/A
157	DoNotDisturb	System DoNotDisturb	U/A	01	9B	U/A	U/A	U/A	U/A	U/A	U/A
158	Hibernate	System Hibernate	U/A	01	A8	N/A	N/A	N/A	N/A	N/A	N/A
159	MicrophoneMute	System MicrophoneMute	U/A	01	A9	N/A	N/A	N/A	N/A	N/A	N/A
160	WirelessRadio	System WirelessRadioButton	U/A	01	C6	U/A	U/A	U/A	U/A	U/A	U/A
161	DispRotationLock	System Display rotation lock	U/A	01	C9	U/A	U/A	U/A	U/A	U/A	U/A
162	DispToggle	System Display toggle	U/A	01	B5	U/A	U/A	U/A	U/A	U/A	U/A
163	SystemRsrv0	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
164	SystemRsrv1	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
165	SystemRsrv2	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
166	SystemRsrv3	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
167	DispBrightInc	Display brightness increase	U/A	0C	006F	U/A	U/A	U/A	U/A	U/A	U/A
168	DispBrightDec	Display brightness decrease	U/A	0C	0070	U/A	U/A	U/A	U/A	U/A	U/A
169	NextTrack	Scan Next Track	U/A	0C	00B5	E0 19	E0 99	E0 4D	E0 F0 4D	U/A	U/A
170	PrevTrack	Scan Previous Track	U/A	0C	00B6	E0 10	E0 90	E0 15	E0 F0 15	U/A	U/A
171	Stop	Stop	U/A	0C	00B7	E0 24	E0 A4	E0 3B	E0 F0 3B	U/A	U/A
172	Eject	Eject	U/A	0C	00E8	E0 2F	E0 AF	E0 2A	E0 F0 2A	U/A	U/A
173	Play/Pause	Play/Pause	U/A	0C	00CD	E0 22	E0 A2	E0 34	E0 F0 34	U/A	U/A

SKey and Scan Code Table – Continued

SKEY (Dec)	Program Code	Description	AT- 101 (Dec)	USB Page (Hex)	USB Usage (Hex)	Set 1 Make (Hex)	Set 1 Break (Hex)	Set 2 Make (Hex)	Set 2 Break (Hex)	Set 3 Make (Hex)	Set 3 Break (Hex)
174	Mute	AC Mute	U/A	0C	00E2	E0 20	E0 A0	E0 23	E0 F0 23	U/A	U/A
175	BassBoost	Bass Boost	U/A	0C	00E5	U/A	U/A	U/A	U/A	U/A	U/A
176	Loudness	Loudness	U/A	0C	00E7	U/A	U/A	U/A	U/A	U/A	U/A
177	VolumeUp	Volume Up	U/A	0C	00E9	E0 30	30 B0	E0 32	E0 F0 32	U/A	U/A
178	VolumeDown	Volume Down	U/A	0C	00EA	E0 2E	E0 AE	E0 21	E0 F0 21	U/A	U/A
179	BassUp	Bass Up	U/A	0C	0152	U/A	U/A	U/A	U/A	U/A	U/A
180	BassDown	Bass Down	U/A	0C	0153	U/A	U/A	U/A	U/A	U/A	U/A
181	TrebleUp	Treble Up	U/A	0C	0154	U/A	U/A	U/A	U/A	U/A	U/A
182	TrebleDown	Treble Down	U/A	0C	0155	U/A	U/A	U/A	U/A	U/A	U/A
183	Media	AL Consumer Control Config	U/A	0C	0183	E0 6D	E0 ED	E0 50	E0 F0 50	U/A	U/A
184	Mail	AL Email Reader	U/A	0C	018A	E0 6C	E0 EC	E0 48	E0 F0 48	U/A	U/A
185	Calculator	AL Calculator	U/A	0C	0192	E0 21	E0 A1	E0 2B	E0 F0 2B	U/A	U/A
186	MyComputer	AL Local Machine Browser	U/A	0C	0194	E0 6B	E0 EB	E0 40	E0 F0 40	U/A	U/A
187	WEExplorer	AL Internet Browser	U/A	0C	0196	U/A	U/A	U/A	U/A	U/A	U/A
188	WSearch	AC Search	U/A	0C	0221	E0 65	E0 E5	E0 10	E0 F0 10	U/A	U/A
189	WHome	AC Home	U/A	0C	0223	E0 32	E0 B2	E0 3A	E0 F0 3A	U/A	U/A
190	WBack	AC Back	U/A	0C	0224	E0 6A	E0 EA	E0 38	E0 F0 38	U/A	U/A
191	WForward	AC Forward	U/A	0C	0225	E0 69	E0 E9	E0 30	E0 F0 30	U/A	U/A
192	WStop	AC Stop	U/A	0C	0226	E0 68	E0 E8	E0 28	E0 F0 28	U/A	U/A
193	WRefresh	AC Refresh	U/A	0C	0227	E0 67	E0 E7	E0 20	E0 F0 20	U/A	U/A
194	WFavorites	AC Bookmarks	U/A	0C	022A	E0 66	E0 E6	E0 18	E0 F0 18	U/A	U/A
195	ConsumerRsrv0	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
196	ConsumerRsrv0	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
197	ConsumerRsrv0	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
198	ConsumerRsrv0	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
199	HookSwitch	Telephone Hook Switch	U/A	0B	20	U/A	U/A	U/A	U/A	U/A	U/A
200	Flash	Telephone Flash	U/A	0B	21	U/A	U/A	U/A	U/A	U/A	U/A
188	Redial	Telephone Redial	U/A	0B	24	U/A	U/A	U/A	U/A	U/A	U/A
189	PhoneMute	Telephone Phone Mute	U/A	0B	2F	U/A	U/A	U/A	U/A	U/A	U/A
190	Send	Telephone Send	U/A	0B	31	U/A	U/A	U/A	U/A	U/A	U/A
191	VoiceMail	Telephone VoiceMail	U/A	0B	70	U/A	U/A	U/A	U/A	U/A	U/A
192	TelephonyRsrv0	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
193	TelephonyRsrv1	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
194	TelephonyRsrv2	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
208	TelephonyRsrv3	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
209	Rsrv0	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A

SKey and Scan Code Table – Continued

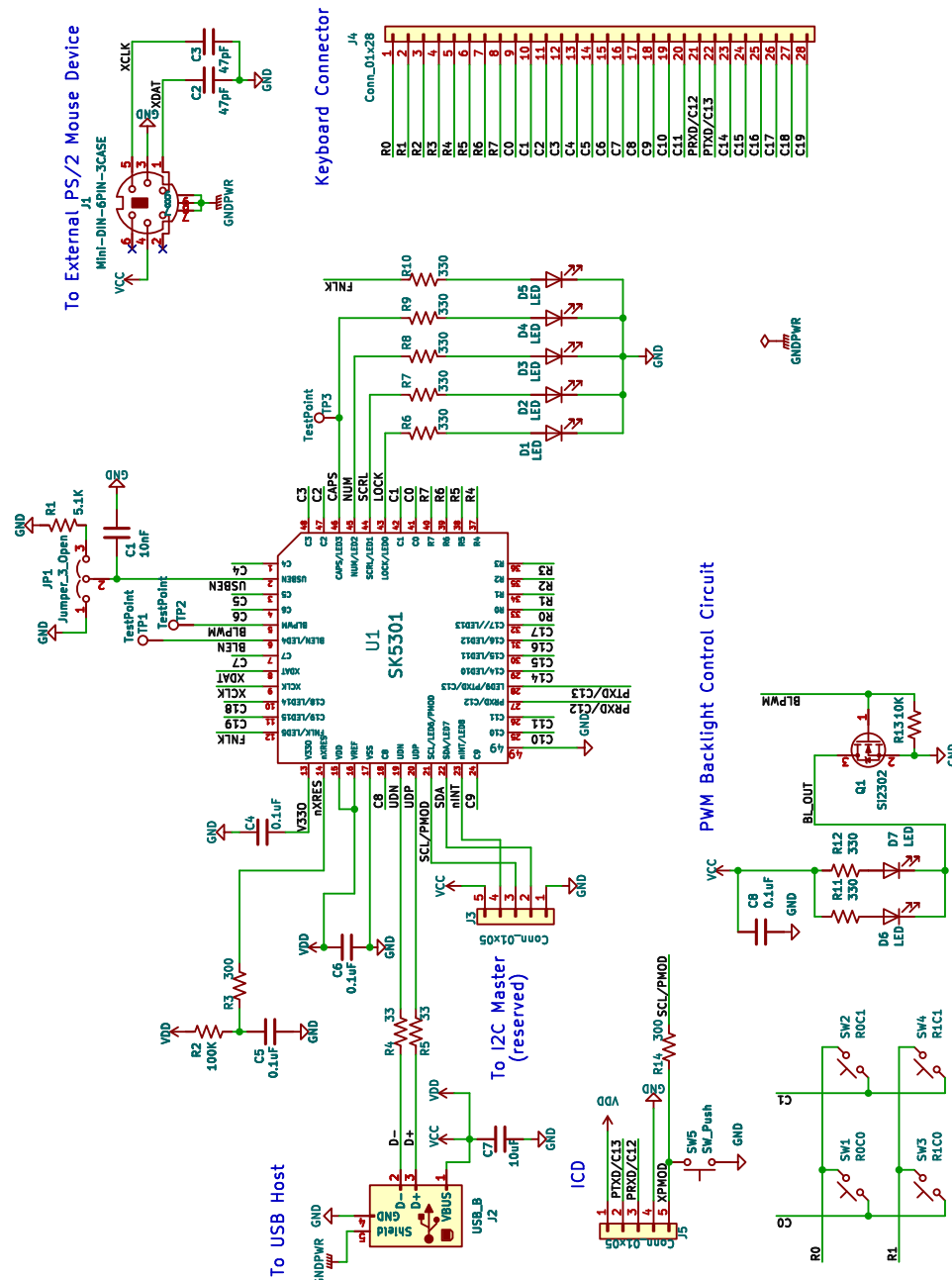
SKEY (Dec)	Program Code	Description	AT- 101 (Dec)	USB Page (Hex)	USB Usage (Hex)	Set 1 Make (Hex)	Set 1 Break (Hex)	Set 2 Make (Hex)	Set 2 Break (Hex)	Set 3 Make (Hex)	Set 3 Break (Hex)
210	Rsrv1	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
211	Rsrv2	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
212	Rsrv3	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
213	Rsrv4	Reserved	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
214	CUST 0	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
215	CUST 1	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
216	CUST 2	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
217	CUST 3	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
218	CUST 4	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
219	CUST 5	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
220	CUST 6	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
221	CUST 7	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
222	CUST 8	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
223	CUST 9	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
224	CUST 10	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
225	CUST 11	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
226	CUST 12	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
227	CUST 13	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
228	CUST 14	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
229	CUST 15	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
230	CUST 16	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
231	CUST 17	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
232	CUST 18	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
233	CUST 19	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
234	CUST 20	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
235	CUST 21	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
236	CUST 22	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
237	CUST 23	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
238	CUST 24	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
239	CUST 25	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
240	CUST 26	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
241	CUST 27	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
242	CUST 28	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
243	CUST 29	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
244	CUST 30	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
245	CUST 31	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A

SKey and Scan Code Table – Continued

SKEY (Dec)	Program Code	Description	AT- 101 (Dec)	USB Page (Hex)	USB Usage (Hex)	Set 1 Make (Hex)	Set 1 Break (Hex)	Set 2 Make (Hex)	Set 2 Break (Hex)	Set 3 Make (Hex)	Set 3 Break (Hex)
246	CUST_32	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
247	CUST_33	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
248	CUST_34	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
249	CUST_35	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
250	CUST_36	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
251	CUST_37	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
252	CUST_38	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
253	CUST_39	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
254	CUST_40	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A
255	CUST_41	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A	U/A

SCHEMATIC OF REFERENCE DESIGN

SK5301 Schematic



ELECTRONICS SPECIFICATION

Absolute Maximum Ratings

Symbol	Description	Min	Typ	Max	Units	Notes
TSTG	Storage Temperature	-55	25	+150	°C	
VDD	Supply Voltage on Relative to VSS	-0.3	-	+6.0	V	
VIO	DC Input Voltage	VSS-0.3	-	VDD+0.3	V	
IMTO	Maximum Current into all pins in total	-70	-	+70	mA	

Operating Temperature

Symbol	Description	Min	Typ	Max	Units	Notes
TOP	Operating Temperature	-40	-	+85	°C	

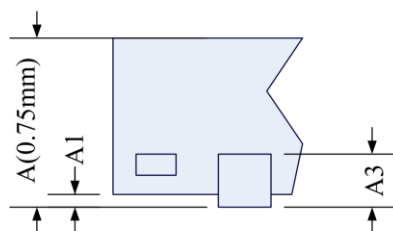
DC Electrical Characteristics

Symbol	Description	Min	Typ	Max	Units	Notes
VDD	Supply Voltage	3	-	5.5	V	5V mode: 4.0V to 5.5V 3.3V mode: 3V to 3.6V
IDD	Supply Current when IC is in operation mode		5.90		mA	
ISD	Supply Current when IC is in USB suspend mode		540		uA	
RPU	Keyboard Pull-up Resistor	-	20	-	kΩ	5V VCC
		-	22	-	kΩ	3.3V VCC

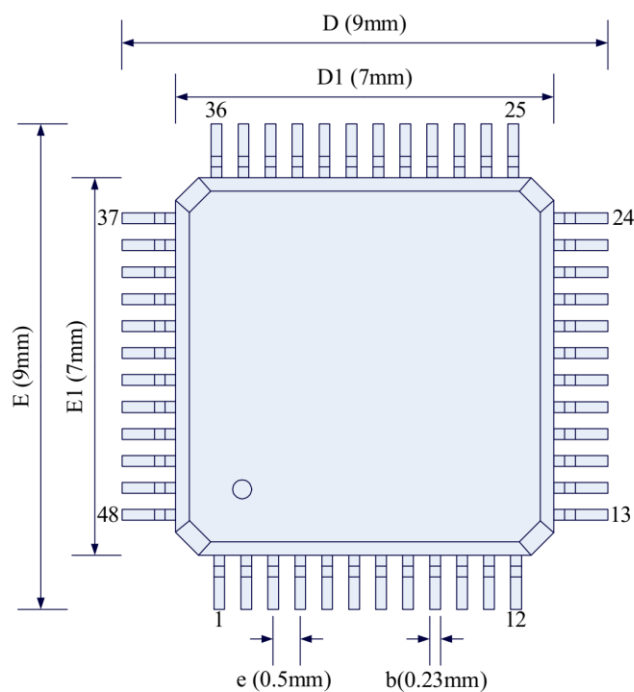
GPIO Electrical Characteristics

Symbol	Description	Min	Typ	Max	Units	Notes
VIL	Input Low Level	-	-	1.32	V	
VIH	Input High Level	1.60	-	-	V	

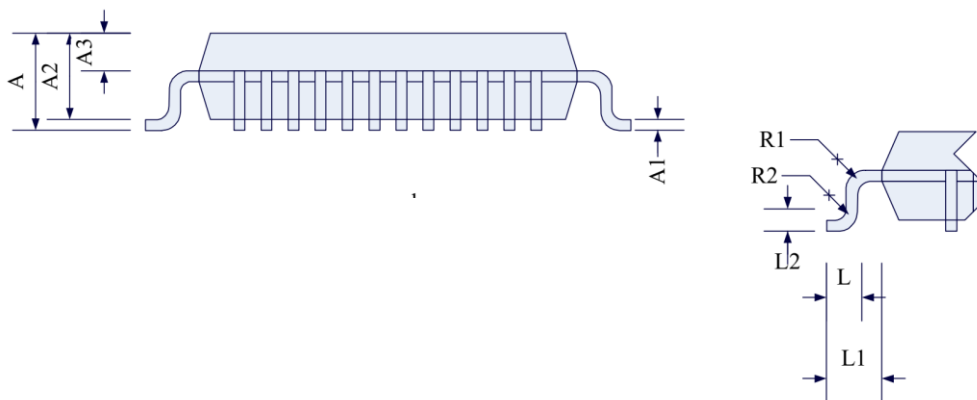
SK5301-LT Drawing

**SK5301-LT 48-pin QFN (6x6x0.75mm)**

SK5301-LP Drawing



Symbol	Dimensions in mm		
	Min.	Nom.	Max.
A	-	-	1.60
A1	0.05	-	0.15
A2	1.35	1.4	1.45
A3	0.59	0.64	0.69
b	0.18	0.23	0.27
D	8.80	9.00	9.20
E	8.80	9.00	9.20
e	0.45	0.50	0.55
D1	6.90	7.00	7.10
E1	6.90	7.00	7.10
L	0.45	0.60	0.75
L1	1.00REF		
L2	0.25BSC		
R1	0.08	-	-
R2	0.08	-	0.20

**SK5301-LP 48-pin LQFP (7x7x1.6mm)**

SALE AND SERVICE INFORMATION

To obtain information about Sprintek Corporation or keyboard encoder sales and technical support, reference the following information.

Sprintek Corporation

4969 Corral St.

Simi Valley, CA 93063, USA

Web Site: <http://www.sprintek.com>

REVISION HISTORY

Revision	Issue Date	Description
1.00	July 13, 2026	Initial release