



Ultimate KeyCoder® SH1101 Evaluation Kit EVK-SH1101

User-Programmable Keyboard Encoder

HID & SYSTEM MANAGEMENT PRODUCTS, KEYCODER® FAMILY

PRELIMINARY

OVERVIEW

This is the data sheet for the EVK-SH1101, which is the evaluation kit for the Ultimate KeyCoder® SH1101.

This data sheet should be read in conjunction with the data sheet for the part itself, SH1101-DS.

The Ultimate KeyCoder® SH1101 is a keyboard encoder with a user-programmable keyboard matrix, and an interface that automatically detects a USB or PS/2 port and communicates with either. Because the IC can be programmed to scan virtually any keyboard, it combines the features of many encoders in one part.

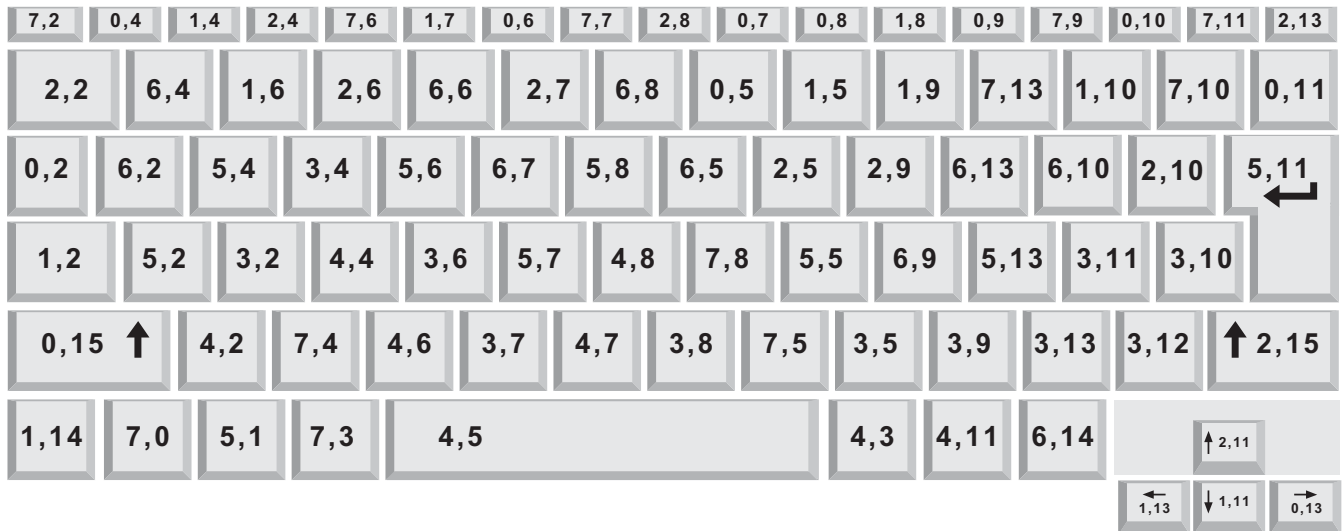
CONTENTS OF THE EVALUATION KIT

1. Populated evaluation board - see the bill of materials (BOM) section for details
2. Fujitsu FKB7654 keyboard
3. Standard USB cable
4. USB-to-PS/2 converter cable
5. Ultimate KeyCoder® Designer program on media
6. Upgrader (matrix file uploader) program on media
7. Evaluation kit data sheet (this document)
8. SH1101 data sheet, document number SH1101-DS

USING THE EVALUATION KIT

1. Run the Ultimate KeyCoder® Designer program to create a binary matrix file to upload to the EEPROM. This program is documented in its own help file.
2. Run the Upgrader program to upload the binary matrix file to the EEPROM. This program is documented in its own readme.txt file and in the SH1101 data sheet. The evaluation board must be connected to the host system's USB port for upload. Jumper JP2 on the evaluation board must be closed to enable writing to the EEPROM.
3. Once the binary matrix file is stored in the EEPROM, the keyboard assembly can be used. The keyboard assembly can be connected to a host system's USB port or PS/2 port.

FUJITSU FKB7654 KEYBOARD KEY LAYOUT

FUJITSU FKB7654 KEYBOARD PHYSICAL KEY-TO-MATRIX MAPPING (ROW, COLUMN)




STANDARD MATRIX FOR THE FKB7654 KEYBOARD

This table shows the standard 8-row by 16-column matrix for the Fujitsu FKB7654 keyboard, including the different key actions that occur when Num Lock (NL) is set or the Function (Fn) key is down.

The codes in this matrix are the same used by the SH1101 matrix creator program.

Columns		C00	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15
		Row0	Row1	Row2	Row3	Row4	Row5	Row6	Row7	Row8	Row9	Row10	Row11	Row12	Row13	Row14	Row15
Row0						F1	8 N8	F6	F9	F10	F12	PAUSE	BACKSPACE		ARWR		LSHIFT
NL						F2	9 N9	3	F5	F11	0 N*	=/+	ARWDN		END		
Fn						F3	1 N5	4	6	F8	O N6] [/	PAGE DOWN ARWUP		ARWL	LCTRL	
Row1						E	/ <	F	V	N	/ >	VI	PAGE UP		HOME		
NL						RALT D	SPACE	C	B	H	N.		' /		DELETE		
Fn						W	K	R	G	Y			APPLICATION ENTER				
Row2						2	U	5	T	7	L	[/					
NL						Q	N2			N7							
Fn						LALT X	N4	F4	F7	J	N3	' / ~	INSERT				
Row3							M			N1	SCROL LOCK		PRINT SCREEN				
NL							N0				NUM LOCK						
Fn																	

CREATING THE FKB7654 MATRIX FILE: TABLE 1

These pages show the matrix for the Fujitsu FKB7654 keyboard entered in the Ultimate KeyCoder®Designer program.

These are only examples. The look of the program may vary from the screens shown here.

Ultimate KeyCoder Designer
X

In this section you have to enter the desired matrixes. Make sure all text box are selected (blue color) for the changes to take affect. After entering all tables press the Create Files button to create all files and exit the program.

TABLE1 FUNCTION up NUMLOCK not set
TABLE2 FUNCTION up NUMLOCK set
TABLE3 FUNCTION pressed NUMLOCK not set
TABLE4 FUNCTION pressed NUMLOCK set

R0	No Key	TAB	No Key	F1	8	F6	F9	F10	F12	PAUSE	BACKSP	No Key	ARWR	No Key	LSHIFT
R1	No Key	CAPS LC	No Key	F2	9	3	F5	F11	0	=/+	ARWDN	No Key	ARWL	LCTRL	No Key
R2	No Key	1	No Key	F3	I	4	6	F8	O]/'	ARWUP	No Key	DELETE	No Key	RSHIFT
R3	No Key	S	No Key	E	,<	F	V	N	,>	M	"	RWIN	/?	No Key	No Key
R4	No Key	Z	RALT	D	SPACE	C	B	H	No Key	No Key	APPLICA	No Key	No Key	No Key	No Key
R5	No Key	LWIN	A	No Key	W	K	R	G	Y	No Key	ENTER	No Key	,.	No Key	No Key
R6	No Key	Q	No Key	Z	U	5	T	7	L	[{	No Key	No Key	P	RCTRL	No Key
R7	FUNCTION	No Key	ESC	LALT	X	M	F4	F7	J	SCROLL	,~	INSERT	No Key	-/_	No Key

C0
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15

Refer to help for standard key entries

Help
Custom Key
Save Keyboard as.....
Open Keyboard
Copy table to all tables
Create Files Exit Program

Ultimate KeyCoder Designer
X

In this section you have to enter the desired matrices. Make sure all text box are selected (blue color) for the changes to take affect. After entering all tables press the Create Files button to create all files and exit the program.

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TABLE2 FUNCTION up NUMLOCK set

TABLE3 FUNCTION pressed NUMLOCK not set

TABLE4 FUNCTION pressed NUMLOCK set

R0	No Key	No Key	TAB	No Key	F1	N8	F6	F9	F10	F12	PAUSE	BACKSP	No Key	ARWR	No Key	LSHIFT
R1	No Key	No Key	CAPS LC	No Key	F2	N9	3	F5	F11	N*	=+	ARWDN	No Key	ARWL	LCtrl	No Key
R2	No Key	No Key	1	No Key	F3	N5	4	6	F8	N6	J/	ARWLP	No Key	DELETE	No Key	RSHIFT
R3	No Key	No Key	S	No Key	E	,<	F	V	N	N.	^	^	RWMN	N/	No Key	No Key
R4	No Key	No Key	Z	RALT	D	SPACE	C	B	H	No Key	No Key	APPLICA	No Key	No Key	No Key	No Key
R5	No Key	LWIN	A	No Key	W	N2	R	G	Y	No Key	No Key	ENTER	No Key	N+	No Key	No Key
R6	No Key	No Key	Q	No Key	2	N4	5	T	N7	N3	{	No Key	No Key	N-	RCtrl	No Key
R7	FUNCTION	No Key	ESC	LALT	X	N0	F4	F7	N1	SCROL	^~	INSERT	No Key	-_	No Key	No Key

C0
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15

Refer to help for standard key entries

Help
Custom Key

Save Keyboard as.....

Open Keyboard
Copy table to all tables
Create Files
Exit Program



Ultimate KeyCoder Designer

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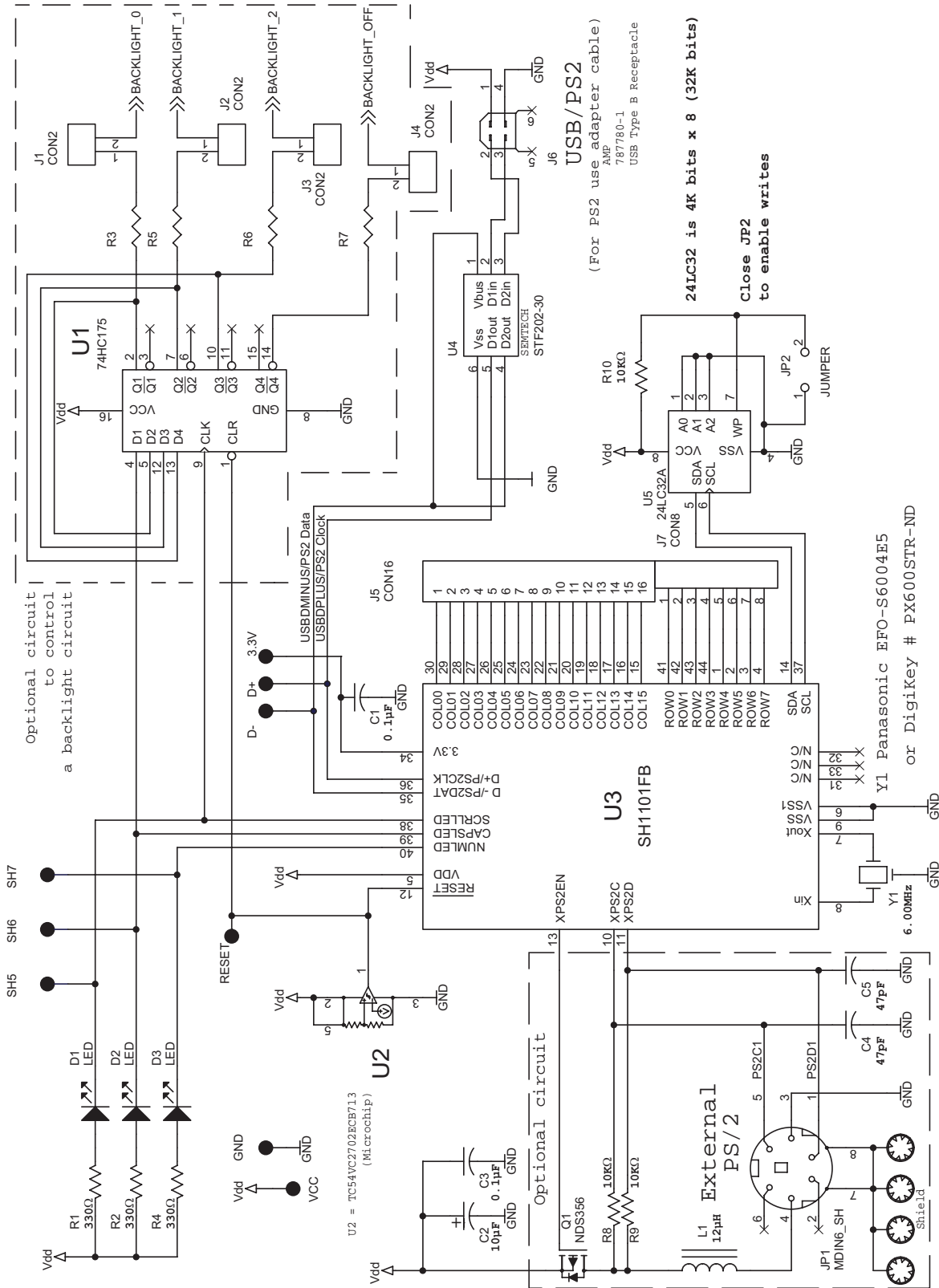
R0	No Key	No Key	TAB	No Key	F1	N8	F6	F9	F10	F12	PAUSE	BACKSP	No Key	END	No Key	LSHIFT
R1	No Key	No Key	CAPS LC	No Key	F2	N9	3	F5	F11	N*	#	PAGE DC	No Key	HOME	CTRL	No Key
R2	No Key	No Key	1	No Key	F3	N5	4	6	F8	N6	})	PAGE UP	No Key	SYSRQ	No Key	RSHIFT
R3	No Key	No Key	S	No Key	E	/<	F	V	N	N.	M	/'	RWIN	N/	No Key	No Key
R4	No Key	No Key	Z	RALT	D	SPACE	C	B	H	No Key	No Key	APPLICA	No Key	No Key	No Key	No Key
R5	No Key	No Key	A	No Key	W	N2	R	G	Y	No Key	No Key	ENTER	No Key	N+	No Key	No Key
R6	No Key	No Key	Q	No Key	2	N4	5	T	N7	N3	{	No Key	No Key	N-	CTRL	No Key
R7	FUNCTION	No Key	ESC	LALT	X	N0	F4	F7	N1	NUMLOCK	/-	PRINT SC	No Key	-/_	No Key	No Key

C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15

Refer to help for standard key entries



SUGGESTED INTERFACING FOR THE ULTIMATE KEYCODER® SH1101FB





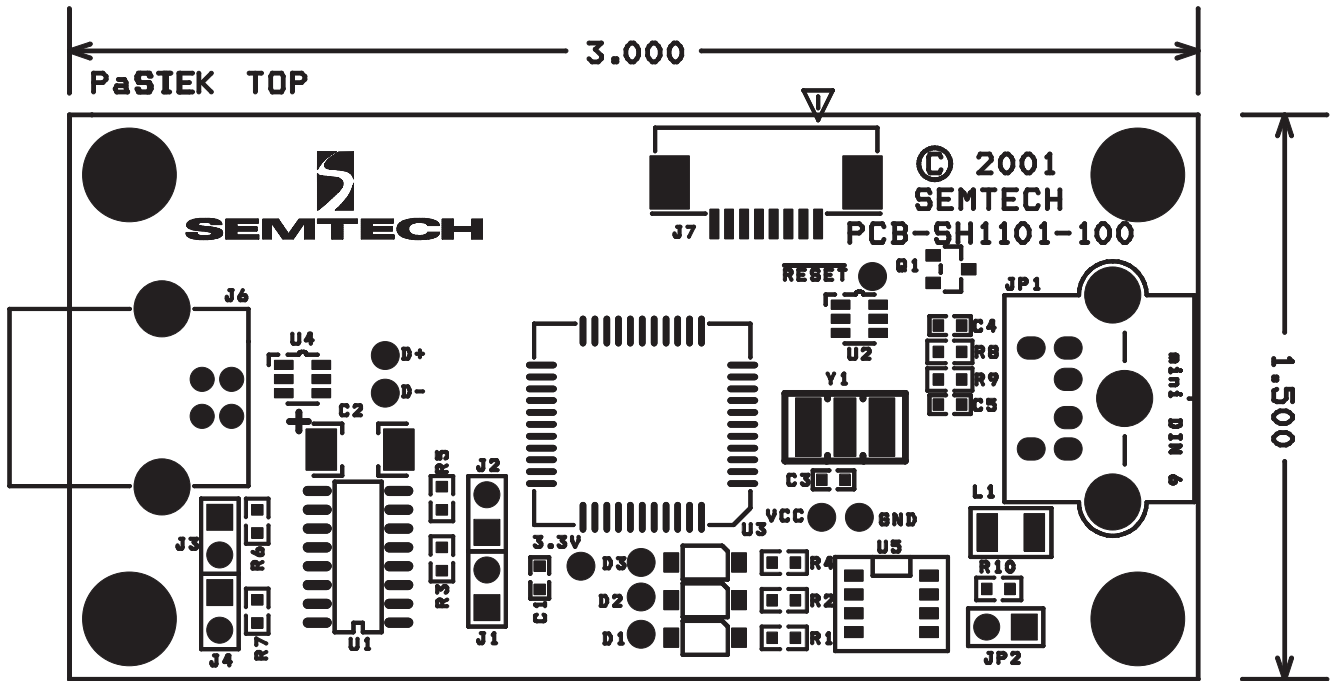
ULTIMATE KEYCODER® SCHEMATIC BILL OF MATERIALS

SH1101FB BOM

Reference	Quantity	Manufacturer	Part#	Value	Description
Board					
PCB	1	Semtech	PCB-SH1101-100		Ultimate KeyCoder® evaluation board
Cables					
CBL1	1	Lynn Products			USB to PS/2 adapter cable
CBL2	1	Semtech			USB cable, A to B, 6 feet
Keyboard					
KYBD	1	Fujitsu	FKB7654-5001		Laptop-style keyboard
Capacitors					
C1, C3	2	Generic	C0603-104-Z25	0.1µF	SMT 0603, 5% Z5U
C2	1	Generic	CC-106-T20	10µF	20V tantalum capacitor
C4, C5	2	Generic	C0805-470-X50	47pF	Ceramic chip capacitor 0805
Connectors					
J5	1	AMP	1-487952-6		16-pin FFC/FPC connector, SMT 1mm with lock, bottom contact
J6	1	AMP	787780-1		USB type B R/A receptacle assy. thru hole
J7	1	AMP	487952-8		8-pin FFC/FPC connector, SMT 1mm with lock, bottom contact
JP1	1	AMP	749231-1		Mini-DIN-6 receptacle, thru hole, right angle
JP2	1		929647-02-36-2		Cut to length, 2 pins straight header
ICs					
U2	1	Microchip	TC54VC4302ECB	4.3V	Voltage detector CMOS 4.3V SOT23
U3	1	Semtech	SH1101FB		Ultimate KeyCoder® IC
U4	1	Semtech	STF202-30		USB upstream filter and TVS
U5	1	Microchip	24LC32A/SN	32K	EEPROM LV 32K SO8
Inductor					
L1	1	Panasonic	ELJ-FA120KF2	12µH	Inductor SMT 1210(3225)
LEDs					
D1, D2, D3	3	Panasonic	LN1261CAL		Ultra bright red SMT LED
Resistors					
R1, R2, R4	3	Generic	R0805-152-TF-5	1.5KΩ	5% thick film resistor SMT 0805
R8, R9, R10	3	Generic	R0805-103-TF-5	10KΩ	5% thick film resistor SMT 0805
R11	1	Generic	R1206-562-TF-5	5.6KΩ	5% thick film resistor SMT 1206
Resonator					
Y1	1	Digi-Key	PX600SCT-ND	6.00MHz	6.00MHz ceramic resonator SMT with built-in load capacitors
Transistor					
Q1	1	Fairchild	NDS356P		MOSFET P-channel -20V 0.3Ω SOT23

Note: Auxiliary components are not shown.

EVALUATION BOARD FOR THE ULTIMATE KEYCODER® SH1101FB





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