EV458

USB Keyboard Encode

1. General Description

The EV458 microcontroller is dedicated to an USB Keyboard encoder , specially designed for IBM PC AT and all compatible machines. The EV458 controls all scan codes , three LEDs status scan timing and communications between the keyboard and pc. It is easy to implement a high performance low cost keyboard with the minimal external components.

2. Features

※ Universal Serial Bus Specification Version 1.1

※ USB Device Class Definition for Human Interface Device(HID),Firmware specification Version 1.1

※ Low cost eliminate need external components

※ Run at 6MHz Frequency

※ Phantom key detects.

※ Support HID Usage ID for USB

※ Support PC USB Keyboard

※ Support USB Sleep Mode

※ Low power CMOS device technology

※ Internal pull-up resistor

※ Tri-state outputs for easy board application.

※ Support Windows 95 98 ME 2000 Xp Vistas Keys

※ Support multi-media or other special application keyboard encoder.

※It can support the USB standard request as well as HID class request version 1.1 .

VID:0749

PID:1000

3. Applications

※ USB Keyboard only

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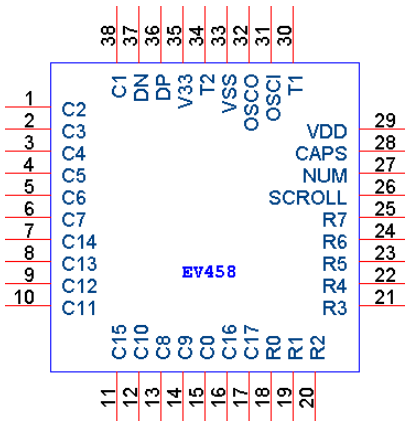
4. Pin Configuration



5. Pin Description

Symbol	PIN NUM.	I/O	Function
C2	1	O	Column 2 Low output scan line,3-state
C3	2	O	Column 3 Low output scan line,3-state
C4	3	O	Column 4 Low output scan line,3-state
C5	4	O	Column 5 Low output scan line,3-state
C6	5	O	Column 6 Low output scan line, 3-state
C7	6	O	Column 7 Low output scan line, 3-state
C14	7	O	Column 14 Low output scan line, 3-state
C13	8	O	Column 13 Low output scan line, 3-state
C12	9	O	Column 12 Low output scan line, 3-state
C11	10	O	Column 11 Low output scan line, 3-state
C15	11	O	Column 15 Low output scan line,3-state
C10	12	O	Column 10 Low output scan line, 3-state
C8	13	O	Column 9 Low output scan line, 3-state
C9	14	O	Column 8 Low output scan line, 3-state
C0	15	O	Column 0 Low output scan line, 3-state
C16	16	O	Column 16 Low output scan line, 3-state
C17	17	O	Column 17 Low output scan line, 3-state
R0	18	I	Row 0 Input scan line,internal pull high
R1	19	I	Row 1 Input scan line,internal pull high
R2	20	I	Row 2 Input scan line,internal pull high

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R3	21	I	Row 3 Input scan line,internal pull high
R4	22	I	Row 4 Input scan line,internal pull high
R5	23	I	Row 5 Input scan line,internal pull high
R6	24	I	Row 6 Input scan line,internal pull high
R7	25	I	Row 7 Input scan line,internal pull high
SCROLL	26	O	Scroll Lock Indicator
NUM	27	O	NUM Lock Indicator
CAPS	28	O	CAPS Lock Indicator
VDD	29	PWR	+5V Power Supply
T1	30	I	TEST PIN
OSCI	31	I	Connect 6MHZ Xtal for 6Mhz oscillation
OSCO	32	O	Connect 6MHZ Xtal for 6Mhz oscillation
VSS	33	PWR	Ground
T2	34	I	TEST PIN
V33	35	PWR	3.3V output
DP	36	I/O	USB D+
DN	37	I/O	USB D-
C1	38	O	Column 1 Low output scan line,3-state

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6. Matrix & HID Usage ID

	R0	R1	R2	R3	R4	R5	R6	R7
C0	PAUSE 48	POWER 0201		SLEEP 0202	CTRL-R 10	WAKE UP 0204	CTRL-L 01	F5 3E
C1	Q 14	TAB 2B	A 04	ESC 29	Z 1D	N-CHG 8B	`(~) 35	1(!) 1E
C2	W 1A	CAP 39	S 16	K45 64	X 1B	CHG 8A	F1 3A	2(@) 1F
C3	E 08	F3 3C	D 07	F4 3D	C 06	ROMA 88	F2 3B	3(#) 20
C4	R 15	T 17	F 09	G 0A	V 19	B 65	5(%) 22	4($) 21
C5	U 18	Y 1C	J 0D	H 0B	M 10	N 11	6(^) 23	7(&) 24
C6	I 0C	](}) 30	K 0E	F6 3F	,(<) 36	K56 87	=(+) 2E	8(*) 25
C7	O 12	F7 40	L 0F		.(>) 37	APP 65	F8 41	9(() 26
C8	P 13	[({) 2F	;(:) 33	'(") 34	K42 32	/(?) 38	-(_) 2D	0()) 27
C9	SCROLL 47	OO	Fn	ALT-L 04	M/Mode	ALT-R 40	OOO	PRINT 46
C10	K14 89	BACK 2A	\(|) 31	F11 44	ENTER 28	F12 45	F9 42	F10 43
C11	7(K) 5F	4(K) 5C	1(K) 59	SPACE 2C	NUM 53	↓ 51	DEL 4C	POWER 0201
C12	8(K) 60	5(K) 5D	2(K) 5A	0(K) 62	/(K) 54	→ 4F	INS 49	SLEEP 0202
C13	9(K) 61	6(K) 5E	3(K) 5B	.(K) 63	*(k) 55	-(K) 56	PAGE UP 4B	PAGE DOWN
C14	+(K) 57	K107 85	ENTER(K) 58	↑ 52	Play/Pause 01 CD 00	← 50	HOME 4A	END 4D
C15	WAKE UP 02 04	SHIFT-L 02	SHIFT-R 20	Volume- 01 EA 00	Volume+ 01 E9 00	NextTrack 01 B5 00	PrevTrack 01 B6 00	Media 01 83 01
C16	Mail 01 8A 01	WIN-L 08	wwwForward 01 25 02	wwwStop 01 26 02	wwwBack 01 24 02	wwwRefresh 01 27 02	Mute 01 E2 00	wwwSearch 01 21 02
C17	K150 91	wwwFavorite 01 2A 02	WIN-R 80	MyComputer 01 94 01	Stop 01 B7 00	Calculator 01 92 01	Web/Home 01 23 02	K151 90

7. Internal-Multi Function

	Multi-Media Function		Internal Function		O.S Function
Fn (M/Mode)	Pad Enter	Volume-	F1	Web/Home	F10 MyComputer
	Pad+	Volume+	F2	Favorites	F11 Calculator
	Left	PreTrack	F3	Search	
	Right	NextTrack	F4	Refresh	
	Up	Stop	F5	Stop	

	Down	Play/Pause	F6	Forward	
	F9	Media	F7	Back	
	F12	Mute	F8	Mail	

8. ABSOLUTE MAXIMUM RATINGS

Parameter	Sym.	Ratings
Supply Voltage	Vcc	-0.5V to +6V
Input Voltage	V_{IN}	-0.3V to +6V
Output Voltage	Vout	-0.3V to +6V
Temperature under bias	T_B	0℃ to 70℃
Storage temperature	T_S	-65℃ to 150℃

9. DC ELECTRICAL CHARACTERISTICS

Parameter	Sym.	Min.	Typ.	Max.	Unit	Condition
Operating voltage	Vcc	4.5	5	5.5	V	
Operating supply current	I_{CCI}			10	Ma	Freq.=6MHz
Input leakage	I_{IN}			±1	μA	V_{IN}=Vcc,Vss
Input high voltage	V_{IH}	2.0			V	
Input low voltage	V_{IL}			0.8	V	
Output low voltage	V_{OL1}		0.4		V	I_{OL1}=10 mA
Output low voltage for LEDS	V_{OL2}		3.0		V	I_{OL2}=10 mA
ESD	Vesd		+/-8KV		V	

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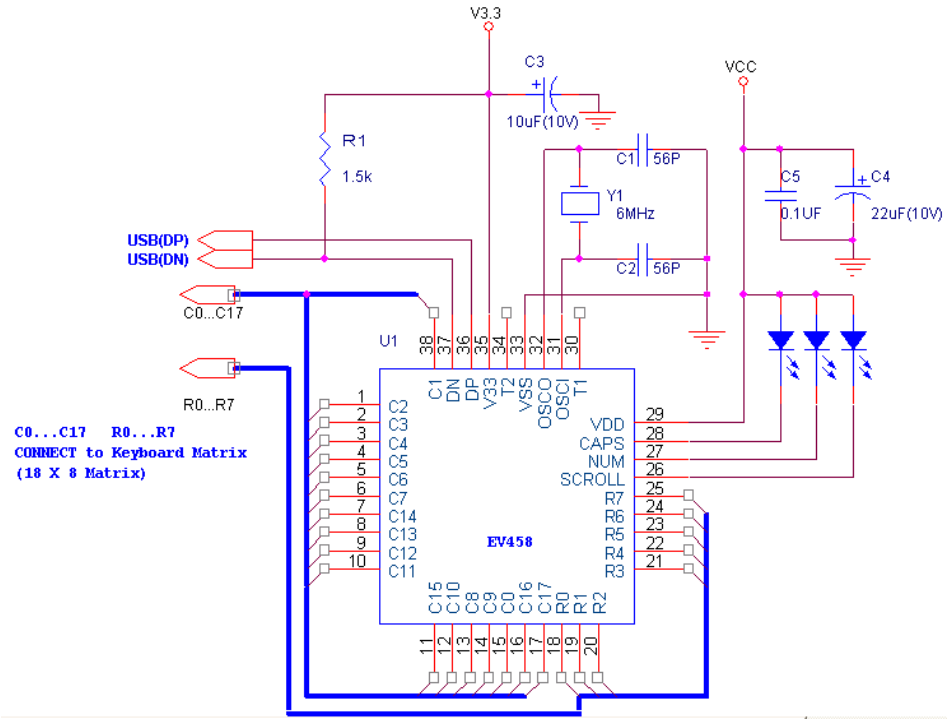
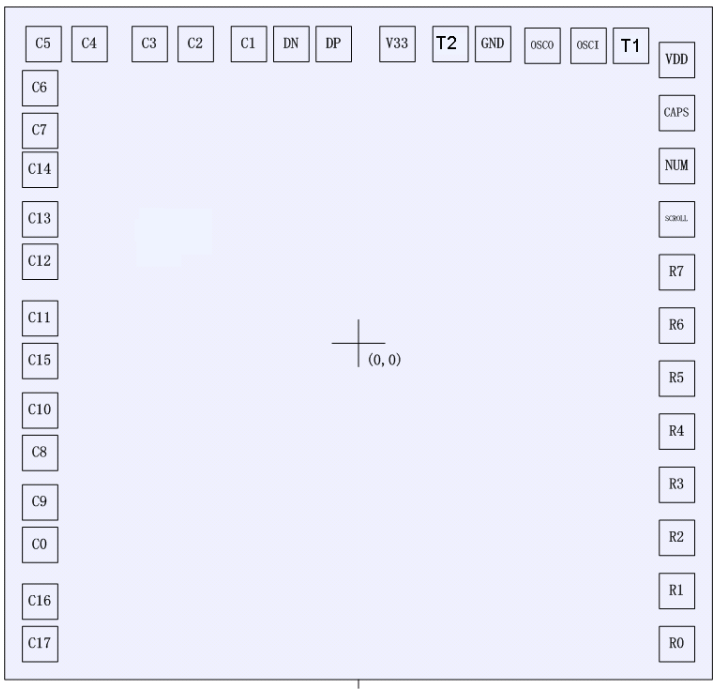
10. Application Circuit





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chip size:1980x1920

PAD	X	Y		PAD	X	Y
C5	-903	885		R5	916	-42
C6	-916	768		R6	916	123
C7	-916	602		R7	916	288
C14	-916	495		SCROLL_LOCK	916	454
C13	-916	329		NUM_LOCK	916	562
C12	-916	221		CAPS_LOCK	916	728
C11	-916	55		VDD	916	874
C15	-916	-51		T1	781	885
C10	-916	-218		OSCI	614	885
C8	-916	-325		OSCO	471	885
C9	-916	-491		GND	320	885
C0	-916	-598		T2	212	885
C16	-916	-765		V33	48	885
C17	-916	-872		DP	-139	885
R0	916	-870		DN	-248	885
R1	916	-705		C1	-355	885
R2	916	-539		C2	-520	885
R3	916	-373		C3	-628	885
R4	916	-207		C4	-795	885