
eKM6611

RF Mouse Tx Controller

**Product
Specification**

DOC. VERSION 1.0

ELAN MICROELECTRONICS CORP.
December 2002


PRELIMINARY



Trademark Acknowledgments:

IBM is a registered trademark and PS/2 is a trademark of IBM.

Windows is a trademark of Microsoft Corporation.

ELAN and ELAN logo  are trademarks of ELAN Microelectronics Corporation.

Copyright © 2005 by ELAN Microelectronics Corporation

All Rights Reserved

Printed in Taiwan

The contents of this specification are subject to change without further notice. ELAN Microelectronics assumes no responsibility concerning the accuracy, adequacy, or completeness of this specification. ELAN Microelectronics makes no commitment to update, or to keep current the information and material contained in this specification. Such information and material may change to conform to each confirmed order.

In no event shall ELAN Microelectronics be made responsible for any claims attributed to errors, omissions, or other inaccuracies in the information or material contained in this specification. ELAN Microelectronics shall not be liable for direct, indirect, special incidental, or consequential damages arising from the use of such information or material.

The software (if any) described in this specification is furnished under a license or nondisclosure agreement, and may be used or copied only in accordance with the terms of such agreement.

ELAN Microelectronics products are not intended for use in life support appliances, devices, or systems. Use of ELAN Microelectronics product in such applications is not supported and is prohibited.

NO PART OF THIS SPECIFICATION MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE EXPRESSED WRITTEN PERMISSION OF ELAN MICROELECTRONICS.



ELAN MICROELECTRONICS CORPORATION

Headquarters:

No. 12, Innovation Road 1
Hsinchu Science Park
Hsinchu, Taiwan 30077
Tel: +886 3 563-9977
Fax: +886 3 563-9966
<http://www.emc.com.tw>

Hong Kong:

Elan (HK) Microelectronics Corporation, Ltd.
Rm. 1005B, 10/F Empire Centre
68 Mody Road, Tsimshatsui
Kowloon, HONG KONG
Tel: +852 2723-3376
Fax: +852 2723-7780
elanhk@emc.com.hk

USA:

Elan Information Technology Group
1821 Saratoga Ave., Suite 250
Saratoga, CA 95070
USA
Tel: +1 408 366-8223
Fax: +1 408 366-8220

Europe:

Elan Microelectronics Corp. (Europe)
Siewerdtstrasse 105
8050 Zurich, SWITZERLAND
Tel: +41 43 299-4060
Fax: +41 43 299-4079
<http://www.elan-europe.com>

Shenzhen:

Elan Microelectronics Shenzhen, Ltd.
SSMEC Bldg., 3F, Gaoxin S. Ave.
Shenzhen Hi-Tech Industrial Park
Shenzhen, Guangdong, CHINA
Tel: +86 755 2601-0565
Fax: +86 755 2601-0500

Shanghai:

Elan Microelectronics Shanghai Corporation, Ltd.
23/Bldg. #115 Lane 572, Bibo Road
Zhangjiang Hi-Tech Park
Shanghai, CHINA
Tel: +86 021 5080-3866
Fax: +86 021 5080-4600

Contents

1	General Descriptor	1
2	Feature	1
3	Application	1
4	Pin Assignment	2
5	Pin Descriptor	2
6	Function Descriptor	3
6.1	Oscillator Frequency	3
6.2	Device ID	3
6.3	Z-axis Type	3
6.4	Operation Mode.....	3
7	Application Circuit	4
7.1	eKM6611_A.....	4
7.2	eKM6611_B.....	5

PRELIMINARY



Specification Revision History

Doc. Version	Revision Description	Date
1.0	Preliminary version	2002/12/10

PRELIMINARY

1 General Descriptor

The eKM6611 is a transmitter (Tx) controller of RF mouse, which support the 3D, 5/3 buttons RF mouse. And it's built-in the battery detect function. The eKM6611 is to match with RF Mouse Rx controller for eKM6211 series (PS/2) or eKM6251 (USB+PS2).

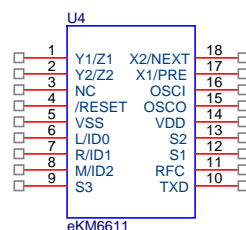
2 Feature

- Operating voltage range: 2.2V~5.5V
- Available in temperature range: 0 ~70
- Operating frequency: 4.00Mhz
- Efficient encoding algorithm for RF data packets.
- Device ID
 - Power-on is default ID.
 - Using the push button to random generate the 255 sets ID.
- Support 2 different Z-axis type and mouse buttons
 - Mechanical-device type , 5 buttons (eKM6611A)
 - Photo-couple type, 3 buttons (eKM6611B)
- Support 3 Operation Mode to saving power.
 - Operation mode
 - Standby mode
 - Sleep mode
- To match with RF Mouse Rx controller :
 - eKM6211: PS/2 only
 - eKM6251: USB and PS/2
- Package type: 16 pins DIP and SOP (300mil)

3 Application

- 3D, 5 buttons RF mouse Tx with mechanical Z-axis.
- 3D, 3 buttons RF Mouse Tx with photo Z-axis.

4 Pin Assignment



5 Pin Descriptor

Pin No.	Symbol	I/O	Function
1	Y1	I	Y1/Z1 input pin
2	Y2	I	Y2/Z2 input pin
3	NC	-	N.C.
4	/RESET	I	Reset pin
5	VSS	-	Ground pin
6	L	I	L buttons
7	R	I	R buttons
8	M	I	M buttons
9	S3	I/O	S3 control line,
10	TXD	O	RF data output
11	RFC	O	RF module control. High active
12	S1	I/O	S1 control output
13	S2	I/O	S2 control output
14	VDD	-	Voltage supply pin
15	OSCO	O	Output for crystal oscillator clock.
16	OSCI	I	External crystal input
17	X1	I	X1 input, Pre button
18	X2	I	X2 input, Next button

6 Function Descriptor

There are two types of eKM6611 series : eKM6611A and eKM6611B. The Table 1.1 summarizes the features of each type in eKM6611 series.

No.	Osc. Freq.	Z axis type	XY scan rate	Buttons	comment
eKM6611A	4.00Mhz	Mechanica	10.0KHz	5	
eKM6611B	4.00Mhz	Photo	6.6KHz	3	2-diode z axis photo

6.1 Oscillator Frequency

The external oscillator frequency is 4.00MHz, it's have higher movement scan rate (up to 10KHz).

6.2 Device ID

When eKM6611 is power-on, it initial to default ID (0xFF), first. eKM6611 is using the connect button to generate a random ID. After the button is pushed and released, the controller will generate a new ID (from 0x01 to 0xFF) and transmit the new ID to the receiver consecutively at least 10sec. Each power on time, the Device ID will set to 0xFF automatically. Only when the conflict occurs, user is needs to set ID manually.

6.3 Z-axis Type

The wheel of 3D mouse, which we used to call it Z-axis, it's detected by mechanical device or photo-couples. eKM6611_A, and eKM6611_B is support the latter. The noise immunity of photo-couples is better than the mechanical device. However, the photo-couples is more expensive.

6.4 Operation Mode

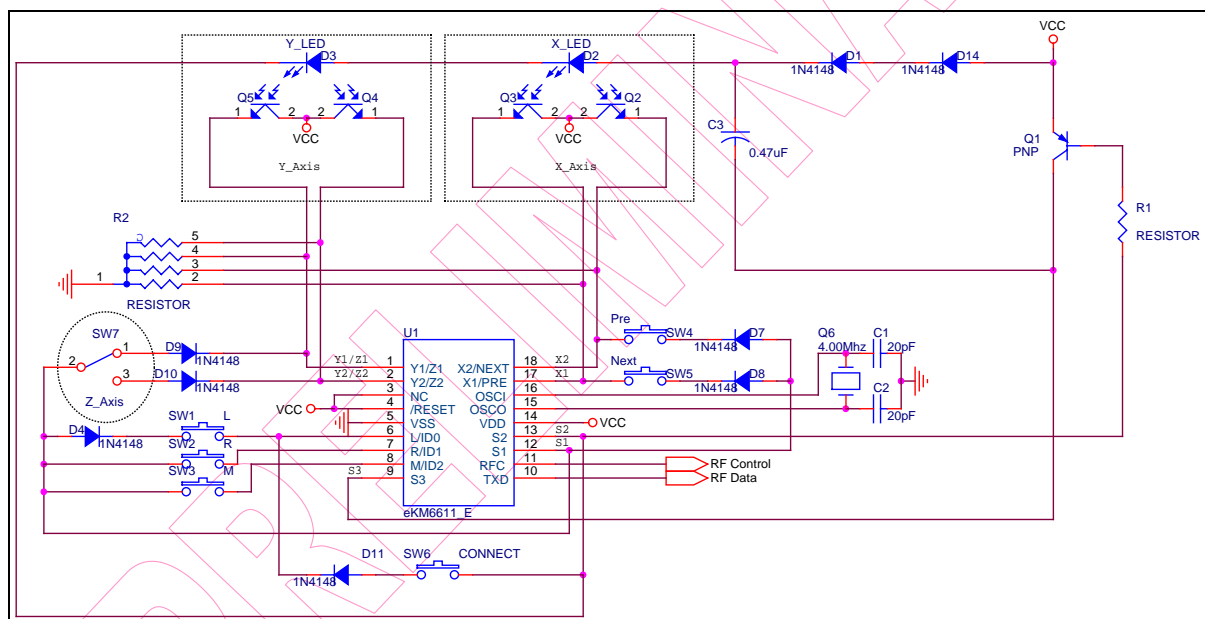
The eKM6611 have three operation modes, that's Operating Mode, Standby Mode and Sleep Mode. While the mouse is moving, the controller is working under the Operating Mode, sending the data to RF module for transmitting. If the mouse stops over 0.5 seconds, the eKM6611 will enter the Standby mode to reduce the consumption of power. Once the movement is detected or buttons are pushed, the controller will return to Operating mode. After working under the Standby Mode for an interval, it will enter Sleep Mode automatically. In Sleep Mode, the controller saves at least 95% consumption of power in Operating Mode.

Test IC: eKM6611A
Oscillator: 4.00Mhz
Battery Voltage: 3.15V

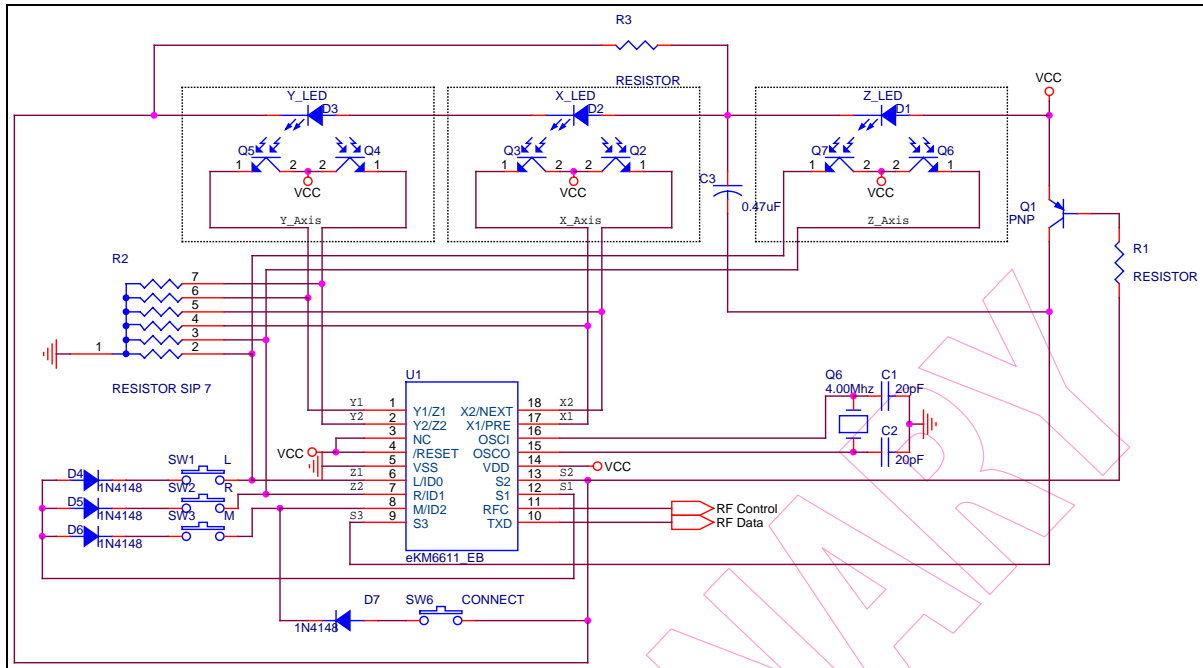
	with RF module	without RF Module
Operating Mode	10.2mA	6.7mA
Standby Mode	1.2mA	1.2mA
Sleep Mode	79µA	78µA

7 Application Circuit

7.1 eKM6611_A



7.2 eKM6611_B





PRELIMINARY