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## Infrared Remote Control Transmitter

PT2560

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### Description

PT2560 is an infrared remote control transmitter utilizing CMOS technology housed in a 20-pin DIP or SO package. A 4 x 8 key matrix and extension bit inputs allow the transmission of up to 256 instructions. The transmission code consists of 16 bits code (8 bits custom code and 8 bits data code) and a leader code. PT2560 is functionally compatible with M50560. However, there is a slight difference in their application circuits. If you are to replace M50560 with PT2560, you do not need to connect an external capacitor to Pin No.3 (SEL Pin).

Pin assignments and application circuit of PT2560 are optimized for easy PCB layout and cost saving advantage for remote control applications.

### Features

- CMOS Technology
- Low Power Consumption: 2.0 ~ 4.0 V
- Least External Components
- LED Power Dissipation is less during the transmission of instructions

### Applications

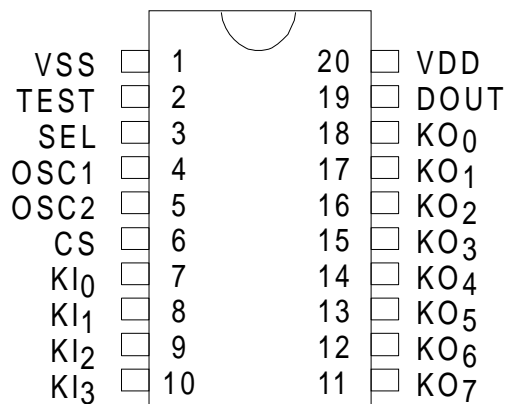
- Audio Equipment
- Television
- Video Cassette Recorder
- Air Conditioner



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**Infrared Remote Control Transmitter****PT2560**

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**Pin Configuration****PT2560****Order Information**

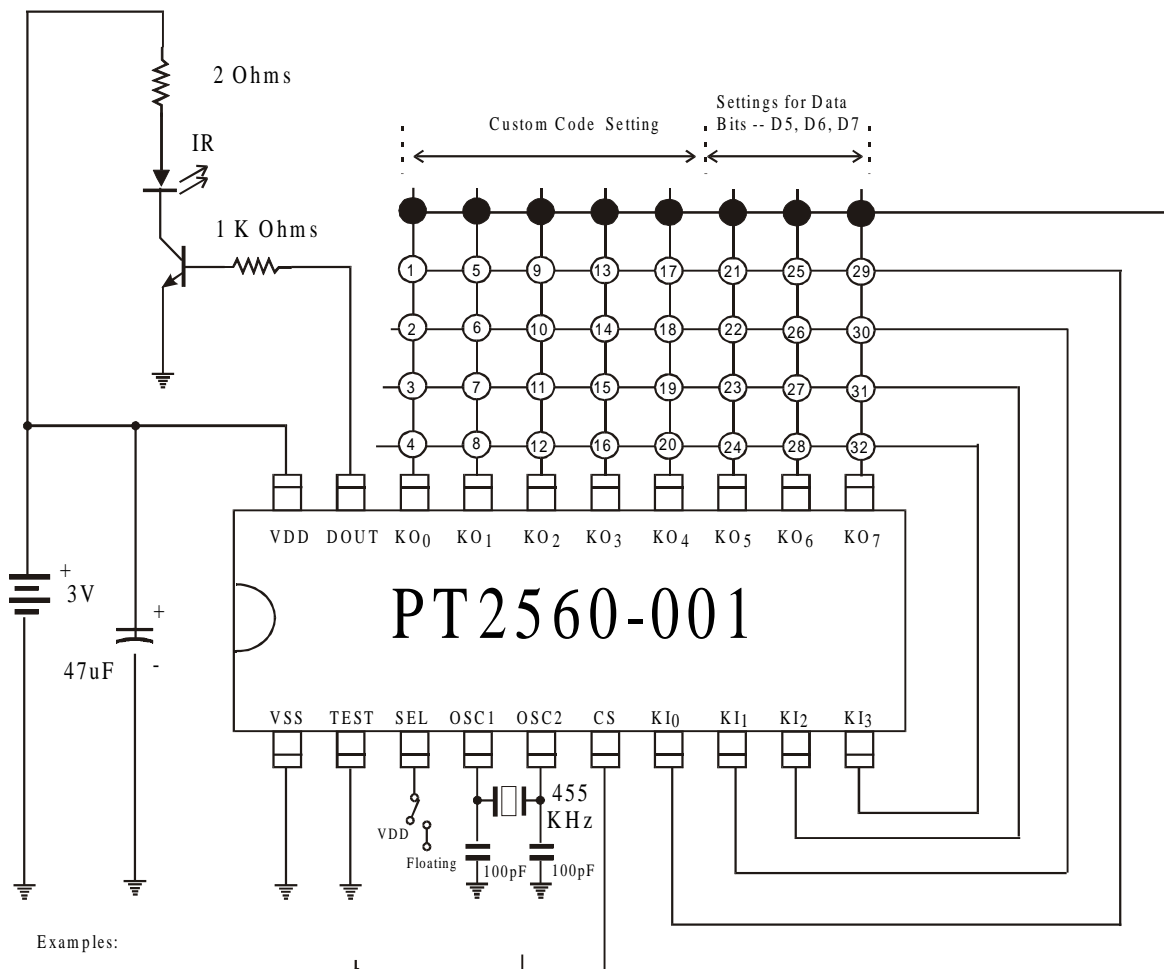
Valid Part Number	Package
PT2560-001	20 Pins, DIP Package (300 mil)
PT2560S-001	20 Pins, SO Package (300 mil)
PT2560-002	20 Pins, DIP Package (300 mil)
PT2560S-002	20 Pins, SO Package (300mil)
PT2560-003	20 Pins, DIP Package (300 mil)
PT2560S-003	20 Pins, SO Package (300 mil)



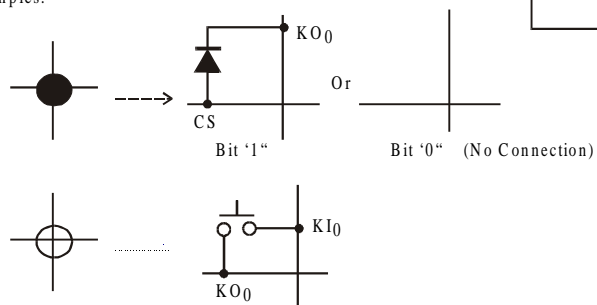
# Infrared Remote Control Transmitter

# PT2560

## Application Circuit 1



Examples:



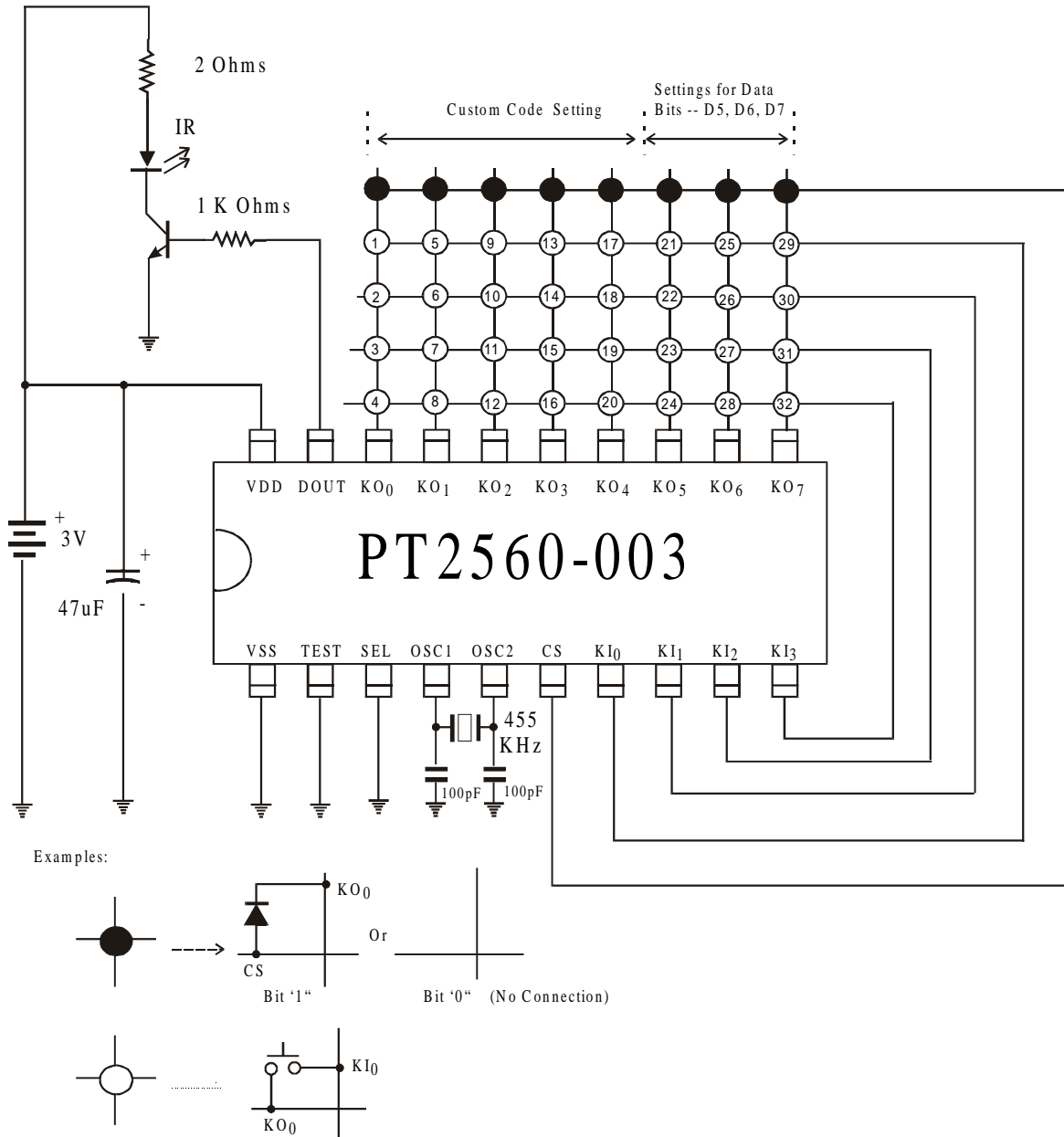
Note: Please take note that if you are replacing M50560 with PT2560, you do not need to connect an external capacitor to PT2560's Pin No. 3 (SEL PIN). PT2560 SEL Pin must either be "floating" or connected to VDD.



# Infrared Remote Control Transmitter

# PT2560

## Application Circuit 2



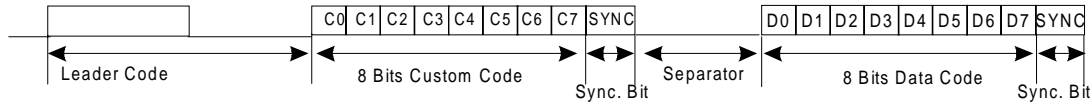
Note: Please take note that if you are replacing M50560 with PT2560, you do not need to connect an external capacitor to PT2560's Pin No. 3 (SEL PIN). PT2560 SEL Pin must be connected to the Ground.



Infrared Remote Control Transmitter

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Application Circuit 1 & 2 Key Table



PT2560-001/ PT2560-003 Custom Code Table for Application Circuit 1/2

Input CS	KO Lines					Custom Codes							
	KO <sub>0</sub>	KO <sub>1</sub>	KO <sub>2</sub>	KO <sub>3</sub>	KO <sub>4</sub>	C0	C1	C2	C3	C4	C5	C6	C7
						0	0	0	0	0	0/1	0	0
*	*					1	0	0	0	0	0/1	0	0
*		*				0	1	0	0	0	0/1	0	0
*	*	*				1	1	0	0	0	0/1	0	0
*			*			0	0	1	0	0	0/1	0	0
*	*		*			1	0	1	0	0	0/1	0	0
*		*	*			0	1	1	0	0	0/1	0	0
*	*	*	*			1	1	1	0	0	0/1	0	0
*				*		0	0	0	1	0	0/1	0	0
*	*			*		1	0	0	1	0	0/1	0	0
*		*		*		0	1	0	1	0	0/1	0	0
*	*	*		*		1	1	0	1	0	0/1	0	0
*			*	*		0	0	1	1	0	0/1	0	0
*	*		*	*		1	0	1	1	0	0/1	0	0
*		*	*	*		0	1	1	1	0	0/1	0	0
*	*	*	*	*		1	1	1	1	0	0/1	0	0
*				*	*	0	0	0	1	1	0/1	0	0
*	*			*	*	1	0	0	1	1	0/1	0	0
*		*		*	*	0	1	0	1	1	0/1	0	0
*	*	*		*	*	1	1	0	1	1	0/1	0	0
*			*	*	*	0	0	1	1	1	0/1	0	0
*	*		*	*	*	1	0	1	1	1	0/1	0	0
*		*	*	*	*	0	1	1	1	1	0/1	0	0
*	*	*	*	*	*	1	1	1	1	1	0/1	0	0

Note: \* = CS connected to the respective KO Line  
 For PT2560-001, Custom Code Bit 5 (C5) = "0".  
 For PT2560-003 Custom Code Bit 5 (C5) = "1".



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PT2560-001/PT2560-003 Data Code Table for Application Circuit 1/2

No.	KI Lines				KO Lines								Data Code				
	KI <sub>0</sub>	KI <sub>1</sub>	KI <sub>2</sub>	KI <sub>3</sub>	KO <sub>0</sub>	KO <sub>1</sub>	KO <sub>2</sub>	KO <sub>3</sub>	KO <sub>4</sub>	KO <sub>5</sub>	KO <sub>6</sub>	KO <sub>7</sub>	D0	D1	D2	D3	D4
1	*				*								0	0	0	0	0
2		*			*								1	0	0	0	0
3			*		*								0	1	0	0	0
4				*	*								1	1	0	0	0
5	*					*							0	0	1	0	0
6		*				*							1	0	1	0	0
7			*			*							0	1	1	0	0
8				*		*							1	1	1	0	0
9	*						*						0	0	0	1	0
10		*					*						1	0	0	1	0
11			*				*						0	1	0	1	0
12				*			*						1	1	0	1	0
13	*							*					0	0	1	1	0
14		*						*					1	0	1	1	0
15			*					*					0	1	1	1	0
16				*				*					1	1	1	1	0
17	*								*				0	0	0	0	1
18		*							*				1	0	0	0	1
19			*						*				0	1	0	0	1
20				*					*				1	1	0	0	1
21	*									*			0	0	1	0	1
22		*								*			1	0	1	0	1
23			*							*			0	1	1	0	1
24				*						*			1	1	1	0	1
25	*										*		0	0	0	1	1
26		*									*		1	0	0	1	1
27			*								*		0	1	0	1	1
28				*							*		1	1	0	1	1
29	*											*	0	0	1	1	1
30		*										*	1	0	1	1	1
31			*									*	0	1	1	1	1
32				*								*	1	1	1	1	1

Input CS	KO Lines			Data Code		
	KO <sub>5</sub>	KO <sub>6</sub>	KO <sub>7</sub>	D5	D6	D7
				0	0	0
*	*			1	0	0
*		*		0	1	0
*	*	*		1	1	0
*			*	0	0	1
*	*		*	1	0	1
*		*	*	0	1	1
*	*	*	*	1	1	1

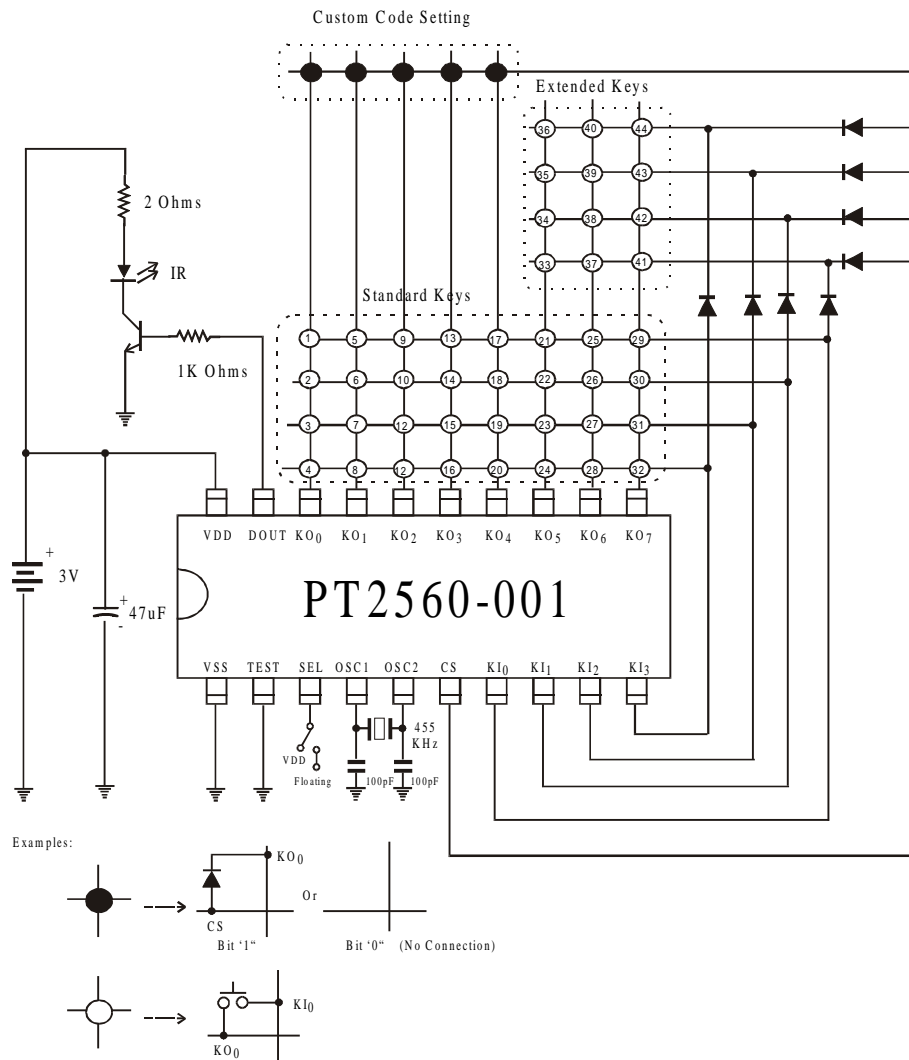


# Infrared Remote Control Transmitter

# PT2560

## Application Circuit 3

(Extended Codes)



Note: Please take note that if you are replacing M50560 with PT2560, you do not need to connect an external capacitor to PT2560's Pin No. 3 (SEL PIN). PT2560 SEL Pin must either be "floating" or connected to VDD.



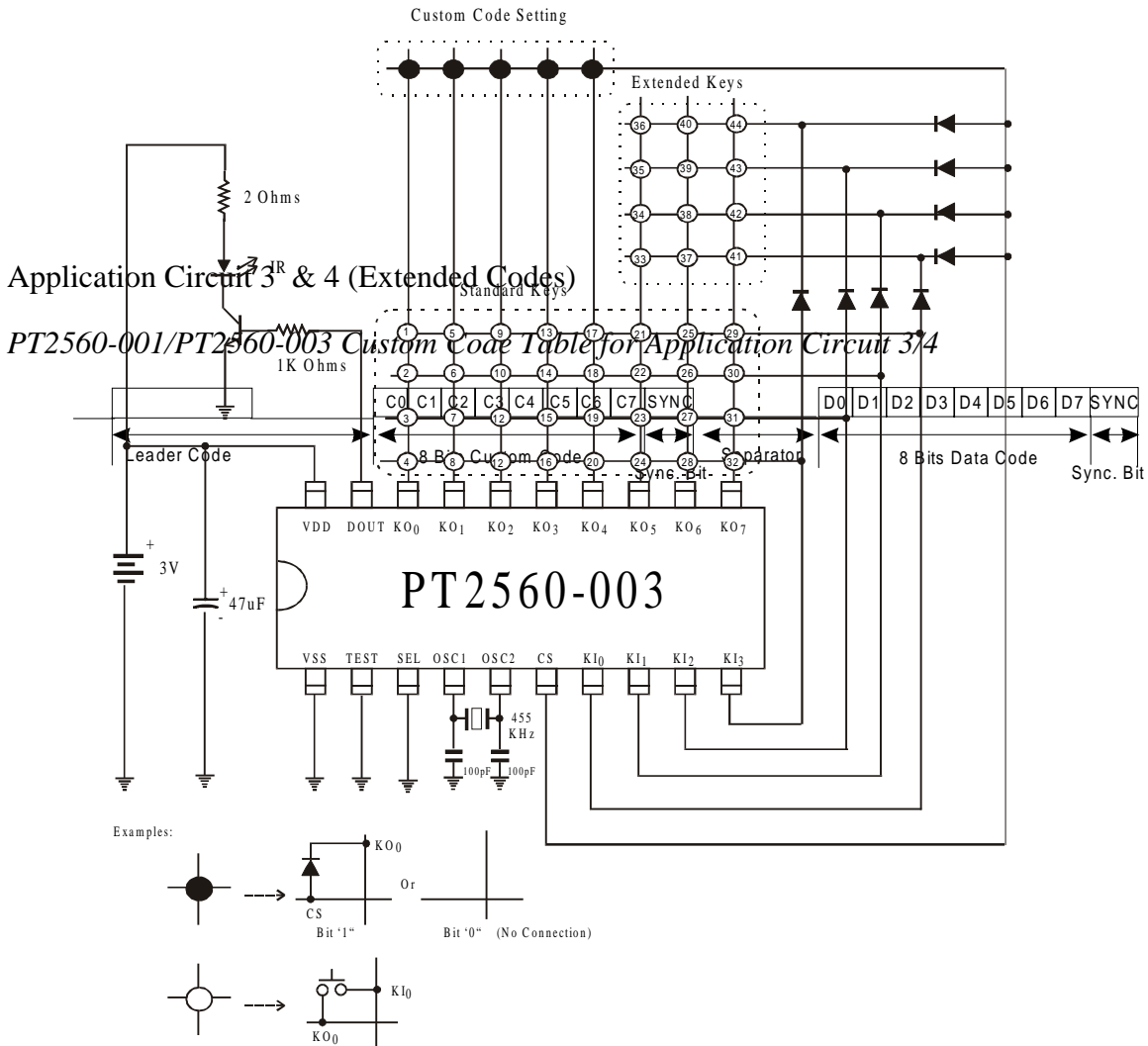
# Infrared Remote Control Transmitter

# PT2560

## Application Circuit 4

(Extended Codes)

Note: Please take note that if you are replacing M50560 with PT2560, you do not need to connect an external capacitor to PT2560's Pin No. 3 (SEL PIN). PT2560 SEL Pin must connected to the Ground.







Infrared Remote Control Transmitter

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Input CS	KO Lines					Custom Codes							
	KO <sub>0</sub>	KO <sub>1</sub>	KO <sub>2</sub>	KO <sub>3</sub>	KO <sub>4</sub>	C0	C1	C2	C3	C4	C5	C6	C7
						0	0	0	0	0	0/1	0	0
*	*					1	0	0	0	0	0/1	0	0
*		*				0	1	0	0	0	0/1	0	0
*	*	*				1	1	0	0	0	0/1	0	0
*			*			0	0	1	0	0	0/1	0	0
*	*		*			1	0	1	0	0	0/1	0	0
*		*	*			0	1	1	0	0	0/1	0	0
*	*	*	*			1	1	1	0	0	0/1	0	0
*				*		0	0	0	1	0	0/1	0	0
*	*			*		1	0	0	1	0	0/1	0	0
*		*		*		0	1	0	1	0	0/1	0	0
*	*	*		*		1	1	0	1	0	0/1	0	0
*			*	*		0	0	1	1	0	0/1	0	0
*	*		*	*		1	0	1	1	0	0/1	0	0
*		*	*	*		0	1	1	1	0	0/1	0	0
*	*	*	*	*		1	1	1	1	0	0/1	0	0
*					*	0	0	0	0	1	0/1	0	0
*	*				*	1	0	0	0	1	0/1	0	0
*		*			*	0	1	0	0	1	0/1	0	0
*	*	*			*	1	1	0	0	1	0/1	0	0
*			*		*	0	0	1	0	1	0/1	0	0
*	*		*		*	1	0	1	0	1	0/1	0	0
*		*	*		*	0	1	1	0	1	0/1	0	0
*	*	*	*		*	1	1	1	0	1	0/1	0	0
*			*	*	*	0	0	1	1	1	0/1	0	0
*	*		*	*	*	1	0	1	1	1	0/1	0	0
*		*	*	*	*	0	1	1	1	1	0/1	0	0
*	*	*	*	*	*	1	1	1	1	1	0/1	0	0

Note: \* = CS is connected to the respective KO Line.  
 For PT2650-001, Custom Code Bit 5 (C5) = "0".  
 For PT2560-003, Custom Code Bit 5 (C5) = "1".



Infrared Remote Control Transmitter

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PT2560-001/PT2560-003 Data Code Table for Application Circuit 3/4

No.	KI Lines				KO Lines								Data Code				
	KI <sub>0</sub>	KI <sub>1</sub>	KI <sub>2</sub>	KI <sub>3</sub>	KO <sub>0</sub>	KO <sub>1</sub>	KO <sub>2</sub>	KO <sub>3</sub>	KO <sub>4</sub>	KO <sub>5</sub>	KO <sub>6</sub>	KO <sub>7</sub>	D0	D1	D2	D3	D4
1	*				*								0	0	0	0	0
2		*			*								1	0	0	0	0
3			*		*								0	1	0	0	0
4				*	*								1	1	0	0	0
5	*					*							0	0	1	0	0
6		*				*							1	0	1	0	0
7			*			*							0	1	1	0	0
8				*		*							1	1	1	0	0
9	*						*						0	0	0	1	0
10		*					*						1	0	0	1	0
11			*				*						0	1	0	1	0
12				*			*						1	1	0	1	0
13	*							*					0	0	1	1	0
14		*						*					1	0	1	1	0
15			*					*					0	1	1	1	0
16				*				*					1	1	1	1	0
17	*								*				0	0	0	0	1
18		*							*				1	0	0	0	1
19			*						*				0	1	0	0	1
20				*					*				1	1	0	0	1
21	*									*			0	0	1	0	1
22		*								*			1	0	1	0	1
23			*							*			0	1	1	0	1
24				*						*			1	1	1	0	1
25	*										*		0	0	0	1	1
26		*									*		1	0	0	1	1
27			*								*		0	1	0	1	1
28				*							*		1	1	0	1	1
29	*											*	0	0	1	1	1
30		*										*	1	0	1	1	1
31			*									*	0	1	1	1	1
32				*								*	1	1	1	1	1

Input	KO Lines			Data Code		
CS	KO <sub>5</sub>	KO <sub>6</sub>	KO <sub>7</sub>	D5	D6	D7
				0	0	0
*	*			1	0	0
*		*		0	1	0
*	*	*		1	1	0
*			*	0	0	1
*	*		*	1	0	1
*		*	*	0	1	1
*	*	*	*	1	1	1



Infrared Remote Control Transmitter

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*PT2560-001/PT2560-003 Data Code Table for Application Circuit 3/4 (Extended Keys)*

No.	Input	KI Lines				KO Lines			Data Code							
	CS	KI <sub>0</sub>	KI <sub>1</sub>	KI <sub>2</sub>	KI <sub>3</sub>	KO <sub>5</sub>	KO <sub>6</sub>	KO <sub>7</sub>	D0	D1	D2	D3	D4	D5	D6	D7
33	*	*				*			0	0	1	0	1	1	0	0
34	*		*			*			1	0	1	0	1	1	0	0
35	*			*		*			0	1	1	0	1	1	0	0
36	*				*	*			1	1	1	0	1	1	0	0
37	*	*					*		0	0	0	1	1	0	1	0
38	*		*				*		1	0	0	1	1	0	1	0
39	*			*			*		0	1	0	1	1	0	1	0
40	*				*		*		1	1	0	1	1	0	1	0
41	*	*						*	0	0	1	1	1	0	0	1
42	*		*					*	1	0	1	1	1	0	0	1
43	*			*				*	0	1	1	1	1	0	0	1
44	*				*			*	1	1	1	1	1	0	0	1

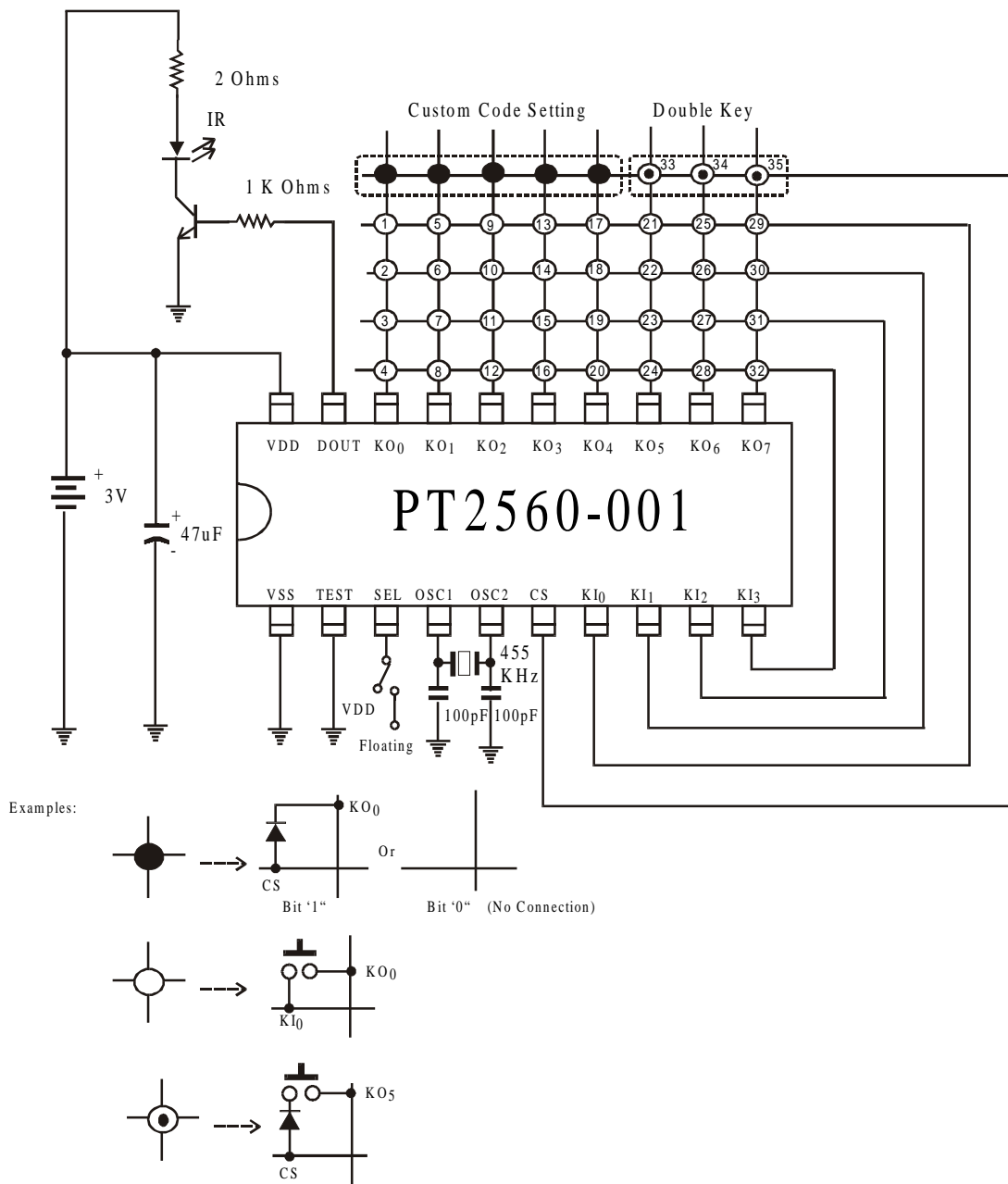


# Infrared Remote Control Transmitter

# PT2560

## Application Circuit 5

(Double Key Operation)



Note: Please take note that if you are replacing M50560 with PT2560, you do not need to connect an external capacitor to PT2560's Pin No. 3 (SEL PIN). PT2560 SEL Pin must either be "floating" or connected to VDD.

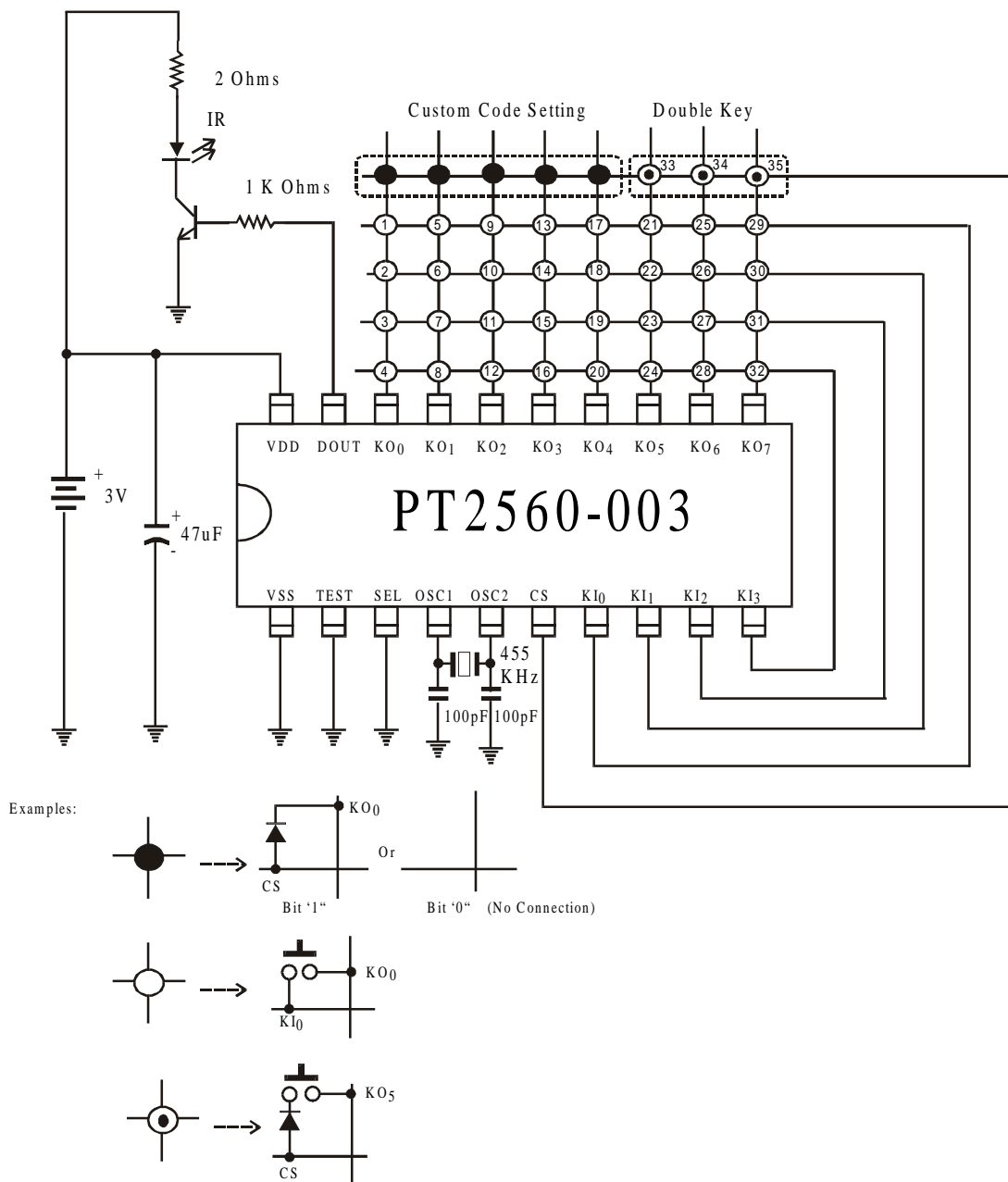


# Infrared Remote Control Transmitter

# PT2560

## Application Circuit 6

(Double Key Operation)



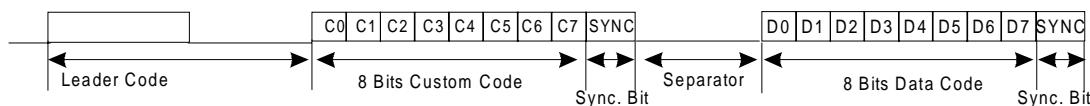
Note: Please take note that if you are replacing M50560 with PT2560, you do not need to connect an external capacitor to PT2560's Pin No. 3 (SEL PIN). PT2560 SEL Pin must be connected to the Ground.



Infrared Remote Control Transmitter

PT2560

Application Circuit 5 & 6 (Double Key Operation)



PT2560-001/PT2560-003 Custom Code Table for Application Circuit 5/6

Input CS	KO Lines					Custom Codes							
	KO <sub>0</sub>	KO <sub>1</sub>	KO <sub>2</sub>	KO <sub>3</sub>	KO <sub>4</sub>	C0	C1	C2	C3	C4	C5	C6	C7
						0	0	0	0	0	0/1	0	0
*	*					1	0	0	0	0	0/1	0	0
*		*				0	1	0	0	0	0/1	0	0
*	*	*				1	1	0	0	0	0/1	0	0
*			*			0	0	1	0	0	0/1	0	0
*	*		*			1	0	1	0	0	0/1	0	0
*		*	*			0	1	1	0	0	0/1	0	0
*	*	*	*			1	1	1	0	0	0/1	0	0
*				*		0	0	0	1	0	0/1	0	0
*	*			*		1	0	0	1	0	0/1	0	0
*		*		*		0	1	0	1	0	0/1	0	0
*	*	*		*		1	1	0	1	0	0/1	0	0
*			*	*		0	0	1	1	0	0/1	0	0
*	*		*	*		1	0	1	1	0	0/1	0	0
*		*	*	*		0	1	1	1	0	0/1	0	0
*	*	*	*	*		1	1	1	1	0	0/1	0	0
*				*	*	0	0	0	1	1	0/1	0	0
*	*			*	*	1	0	0	1	1	0/1	0	0
*		*		*	*	0	1	0	1	1	0/1	0	0
*	*	*		*	*	1	1	0	1	1	0/1	0	0
*			*	*	*	0	0	1	1	1	0/1	0	0
*	*		*	*	*	1	0	1	1	1	0/1	0	0
*		*	*	*	*	0	1	1	1	1	0/1	0	0
*	*	*	*	*	*	1	1	1	1	1	0/1	0	0

Note: \* = CS is connected to the respective KO Line.  
 For PT2560-001, Custom Code Bit 5 (C5) = "0".  
 For PT2560-003, Custom Code Bit 5 (C5) = "1".



Infrared Remote Control Transmitter

PT2560

*PT2560-001/PT2560-003 Data Code Table for Application Circuit 5/6*

No.	KI Lines				KO Lines								Data Code				
	KI <sub>0</sub>	KI <sub>1</sub>	KI <sub>2</sub>	KI <sub>3</sub>	KO <sub>0</sub>	KO <sub>1</sub>	KO <sub>2</sub>	KO <sub>3</sub>	KO <sub>4</sub>	KO <sub>5</sub>	KO <sub>6</sub>	KO <sub>7</sub>	D0	D1	D2	D3	D4
1	*				*								0	0	0	0	0
2		*			*								1	0	0	0	0
3			*		*								0	1	0	0	0
4				*	*								1	1	0	0	0
5	*					*							0	0	1	0	0
6		*				*							1	0	1	0	0
7			*			*							0	1	1	0	0
8				*		*							1	1	1	0	0
9	*						*						0	0	0	1	0
10		*					*						1	0	0	1	0
11			*				*						0	1	0	1	0
12				*			*						1	1	0	1	0
13	*							*					0	0	1	1	0
14		*						*					1	0	1	1	0
15			*					*					0	1	1	1	0
16				*				*					1	1	1	1	0
17	*								*				0	0	0	0	1
18		*							*				1	0	0	0	1
19			*						*				0	1	0	0	1
20				*					*				1	1	0	0	1
21	*									*			0	0	1	0	1
22		*								*			1	0	1	0	1
23			*							*			0	1	1	0	1
24				*						*			1	1	1	0	1
25	*										*		0	0	0	1	1
26		*									*		1	0	0	1	1
27			*								*		0	1	0	1	1
28				*							*		1	1	0	1	1
29	*											*	0	0	1	1	1
30		*										*	1	0	1	1	1
31			*									*	0	1	1	1	1
32				*								*	1	1	1	1	1

*PT2560-001/PT2560-003 Data Code Table for Double Key Operation*

Double Keys Key Nos.	Input CS	KO Lines			Data Code		
		KO <sub>5</sub>	KO <sub>6</sub>	KO <sub>7</sub>	D5	D6	D7
					0	0	0
33	*	*			1	0	0
34	*		*		0	1	0
33+34	*	*	*		1	1	0
35	*			*	0	0	1
33+35	*	*		*	1	0	1
34+35	*		*	*	0	1	1
33+34+35	*	*	*	*	1	1	1



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**Infrared Remote Control Transmitter****PT2560**

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Example 1: When the Double Key Operation is NOT used and the Key No. 2 is pressed, then the Data Code will be:

D0	D1	D2	D3	D4	D5	D6	D7
1	0	0	0	0	<u>0</u>	<u>0</u>	<u>0</u>

Take note that since the Double Key Operation is NOT used, the value of data bits D5, D6, and D7 is "0".

Example 2: When only 1 Double Key (Key Nos. 33 + Key No. 2) is used, then the Data Code is

D0	D1	D2	D3	D4	D5	D6	D7
1	0	0	0	0	<u>1</u>	<u>0</u>	<u>0</u>

Example 3: When 2 Double Keys (Key Nos. [33 + 35] + Key No. 2) are used, the Data Code is

D0	D1	D2	D3	D4	D5	D6	D7
1	0	0	0	0	<u>1</u>	<u>0</u>	<u>1</u>



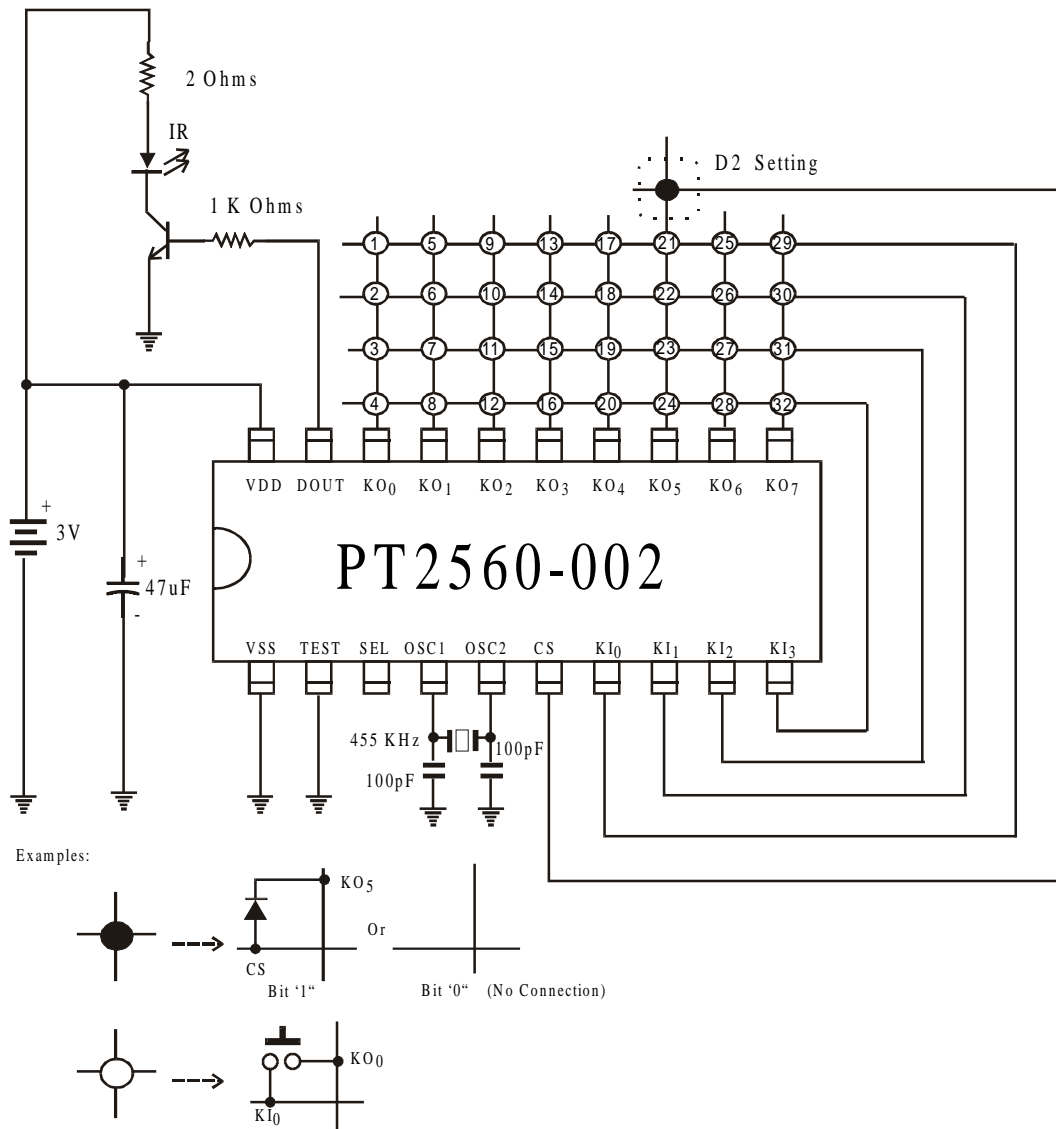


# Infrared Remote Control Transmitter

# PT2560

## Application Circuit 7

(No Leader Code and Custom Code)



Note: D2 is the Extended Code setting. When KO5 is connected to a DIODE, the Data Bit D5 is "1". Conversely, if the KO5 is not connected to a DIODE, then the Data Bit, D5 is "0". PT2560 SEL Pin is "floating".



Infrared Remote Control Transmitter

PT2560

PT2560-002 Data Code Table for Application Circuit 7 (MODE B)

No.	KI Lines				KO Lines								Data Code					
	KI <sub>0</sub>	KI <sub>1</sub>	KI <sub>2</sub>	KI <sub>3</sub>	KO <sub>0</sub>	KO <sub>1</sub>	KO <sub>2</sub>	KO <sub>3</sub>	KO <sub>4</sub>	KO <sub>5</sub>	KO <sub>6</sub>	KO <sub>7</sub>	D0	D1	D2	D3	D4	D5
1	*				*								0	0	0	0	0	0/1
2		*			*								1	0	0	0	0	0/1
3			*		*								0	1	0	0	0	0/1
4				*	*								1	1	0	0	0	0/1
5	*					*							0	0	1	0	0	0/1
6		*				*							1	0	1	0	0	0/1
7			*			*							0	1	1	0	0	0/1
8				*		*							1	1	1	0	0	0/1
9	*						*						0	0	0	1	0	0/1
10		*					*						1	0	0	1	0	0/1
11			*				*						0	1	0	1	0	0/1
12				*			*						1	1	0	1	0	0/1
13	*							*					0	0	1	1	0	0/1
14		*						*					1	0	1	1	0	0/1
15			*					*					0	1	1	1	0	0/1
16				*				*					1	1	1	1	0	0/1
17	*								*				0	0	0	0	1	0/1
18		*							*				1	0	0	0	1	0/1
19			*						*				0	1	0	0	1	0/1
20				*					*				1	1	0	0	1	0/1
21	*									*			0	0	1	0	1	0/1
22		*								*			1	0	1	0	1	0/1
23			*							*			0	1	1	0	1	0/1
24				*						*			1	1	1	0	1	0/1
25	*										*		0	0	0	1	1	0/1
26		*									*		1	0	0	1	1	0/1
27			*								*		0	1	0	1	1	0/1
28				*							*		1	1	0	1	1	0/1
29	*											*	0	0	1	1	1	0/1
30		*										*	1	0	1	1	1	0/1
31			*									*	0	1	1	1	1	0/1
32				*								*	1	1	1	1	1	0/1