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TX ASSY-KEYLESS ENTRY / RX ASSY-KEYLESS ENTRY

User's Manual

TX Model: 100060233 / 100060234 / 100060235
RX Model: 223004360

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FCC STATEMENT

FCC NOTICE: This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This devices may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generate, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.

1. Constitution of the Radio Frequency Keyless Entry System for vehicle

The radio frequency keyless entry is a system that it controls locking and unlocking doors. It can open and close sliding doors and tail gate automatically. It can notice us where the car is by panic button.

The TRANSMITTER is a device that transmits the signal when the button is pressed. The transmission signal consists of several synchronous codes, unique identification code, security code and function code.

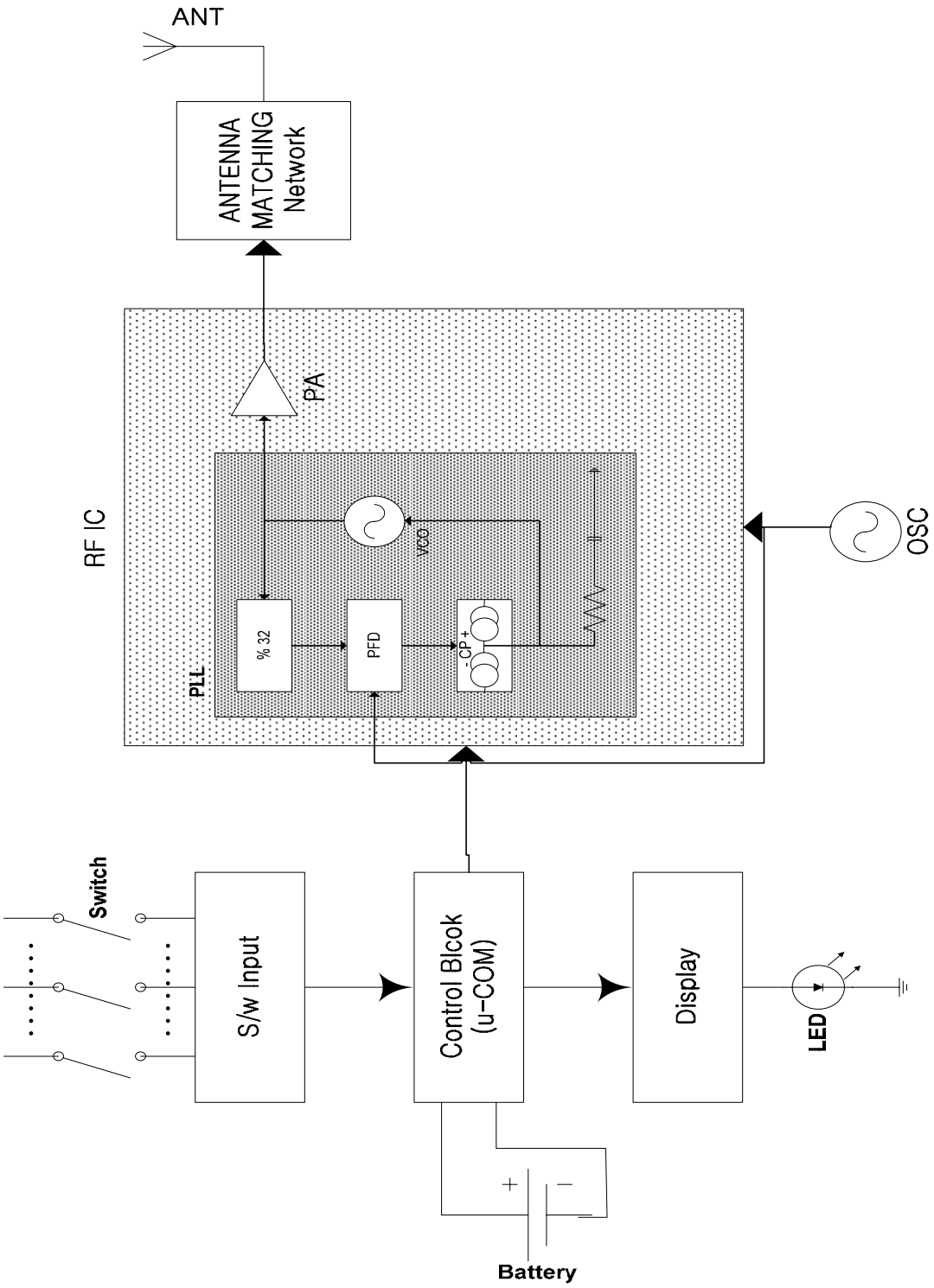
The RECEIVER is fixed inside the vehicle. It works intermittently to prevent the battery exhaustion. When the receiver detects the synchronous code, it runs continuously to receive the signals completely. After receiving the signal, the receiver decides which operation will be performed. The user can select the following operations by pressing the button of the remote transmitter.

2. User's manual

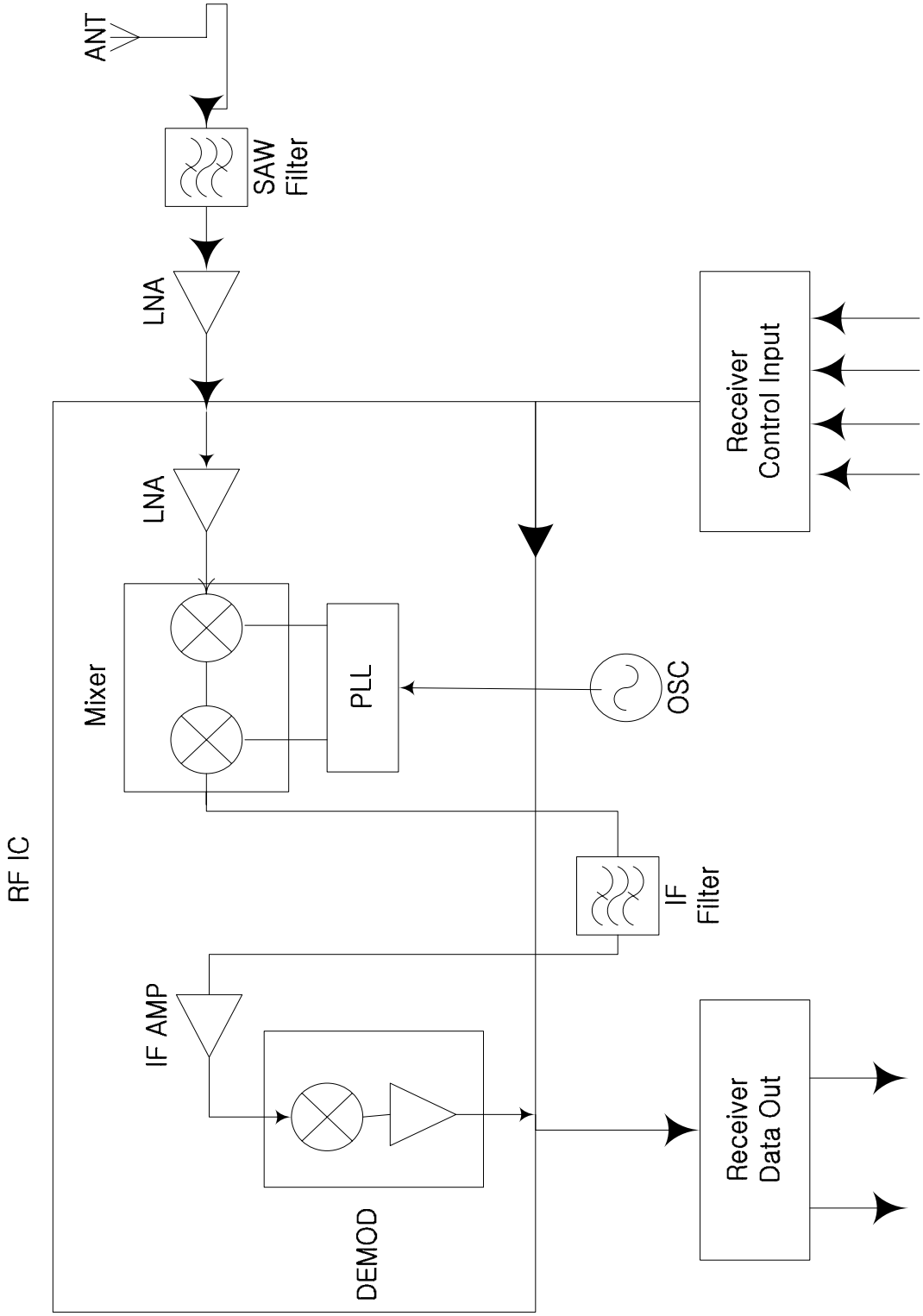
Key	Mark	Operation	Function	Model
Lock		Lock key is pressed	CENTRAL LOCK	100060233 100060234 100060235
			Horning for 30ms	
			Lighting turn lamp for 1 second	
		Lock key is pressed for 0.5 seconds	DRIVER POWER WINDOW CLOSE	
			Closing window of driver's seat	
Unlock		Unlock key is pressed	CENTRAL UNLOCK	100060233 100060234 100060235
			Blinking turn lamp twice for 1 second	
		Unlock key is pressed for 0.5 seconds	DRIVER POWER WINDOW OPEN	
			Opening window of driver's seat	
Panic		Panic key is pressed	To stop horning by pressing the panic key	100060233 100060234 100060235
			Horning for 27 seconds	
			Blinking turn lamp for 27 seconds	
Sliding Door Left		Sliding door left key is pressed for 0.5 seconds	To open or close LEFT sliding door by pressing the Sliding Door Left button	100060234 100060235
Sliding Door Right		Sliding door right key is pressed for 0.5 seconds	To open or close RIGHT sliding door by pressing the Sliding Door Right button	100060234 100060235
Tail Gate		Tailgate key is pressed for 0.5 seconds	To open or close tailgate by pressing the tailgate button	100060235
			Blinking turn lamps 5 times	

3. Block diagram

3.1 Transmitter



3.2 Receiver


ANT
SAW Filter
LNA
LNA
Receiver Control Input
Mixer
PLL
OSC
RF IC
IF Filter
IF AMP
Receiver Data Out
DEMOD

4. Specification

4.1 CPU

Type	PIC16F676 Manufacturer : MICROCHIP
RFIC	TH72001 Manufacturer : Melexis
Memory	2K × 8bit
Clock frequency	4.00MHz
Clock frequency generation	INTERNAL
Package	14pin TSSOP

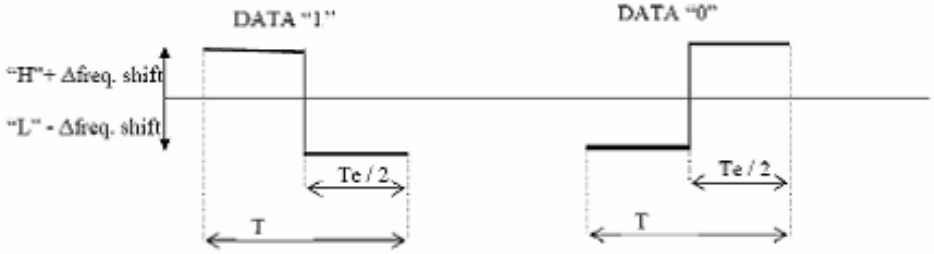
4.2 RF Receiver module

Local clock frequency	315 MHz
Frequency generation	Crystal
Modulation Scheme	FM (Single Superheterodyne)
Bandwidth	±100KHz
RFIC	TH71102 Manufacturer : Melexis

4.3 Others

Dimension	68.3 x 37.8 x 11.0
Weigh	30g
Battery	Car Battery(DC 12V)
Operation Voltage,Current	DC3V, 14mA(1uA on standby)
Operation Temperature	-30℃ ~ +80℃

5. DATA structures



First frame structure :

Preamble T_{preamb}	Header T_{head}	Random code T_{rand}	Key data (Tkeydata)	Synch. Counter (Tsynch)	Check Sum (Tchksum)	Interframe (Tinter)
40 bits Manchester data "0" (1200Hz 50% duty cycle	4 bits Manch data at "1010"	20 bits coded data	6 bits key data	20 bits incremental counter data	8 bit SUM of data	Manchester code violation

Message field table :

FRAME	Field	Length (Tbits)	Value (Bin=binary/hex= hexadecimal)	Duration (ms)
First frame	Preamble	40	00000 hex	33.33
	Header	4	1010 bin	3.332
	Random	20	RRRRR hex	16.66
	Key	6	k-k-k-k-k-k-bin	4.998
	Sync.	20	SSSSS hex	16.66
	Check sum	8	XX hex	6.664
	Inter-frame	6	**"H"+"L" + 0000 bin**	4.998
Second frame	Header	4	1010 bin	3.332
	Random	20	RRRRR hex	16.66
	Key	6	k-k-k-k-k-k-bin	4.998
	Sync.	20	SSSSS hex	16.66
	Check sum	8	XX hex	6.664
	Inter-frame	6	**"H"+"L" + 0000 bin**	4.998
Third frame	Header	4	1010 bin	3.332
	Random	20	RRRRR hex	16.66
	Key	6	k-k-k-k-k-k-(b)	4.998
	Sync.	20	SSSSS (h)	16.66
	Check sum	8	XX (h)	6.664
	Inter-frame	2	**"H"+"L"**	**1.666**
	TOTAL	*228 bits*		***190 ms***

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