

GM3044 CMOS REMOTE CONTROL TRANSMITTER

Description

The GM3044 is CMOS IC for control circuits of infrared remote control transmitter which are available for TV, STEREO, VTR and TOY etc.

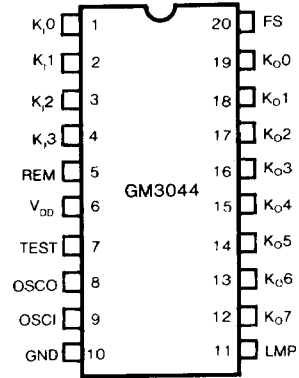
For the digital commands, this use a P.P.M system of 16 bit code, which transmit the code twice (invert in the second time) to prevent operation by false codes.

This IC is designed to be received with 4 bit CPU(DTS).

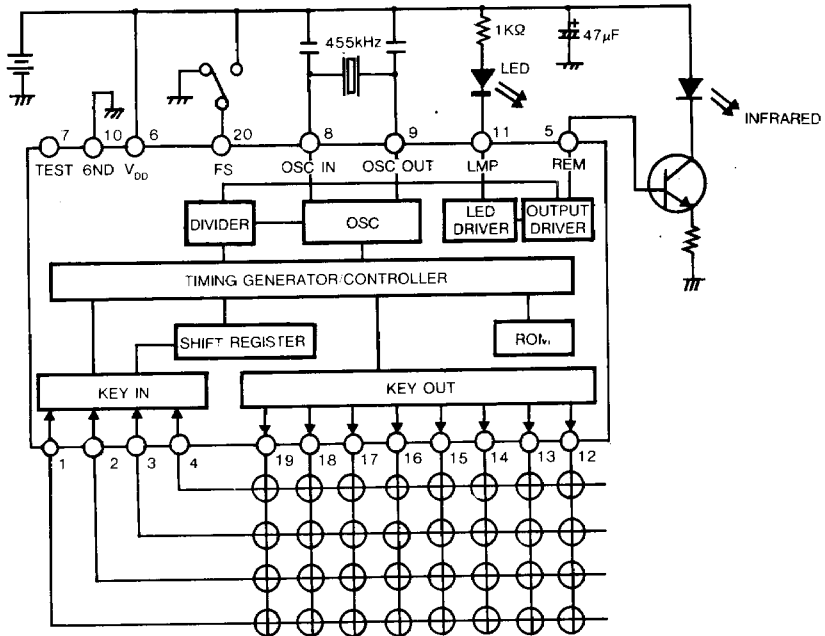
Feature

- Low Voltage Operation $V_{DD} = 2.0 \sim 3.3V$
- Frequency Select Terminal is Attached
- LED Driver for TX is Included
- 32 Function Key (8×4 key Matrix)
- Custom Code is Included
- 16 bit Pulse Position Modulated Code
- Custom Code Select Diode is not Necessary
- Package 20 SO Package

Pin Configuration



Block Diagram



Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Supply Voltage	V_{DD-GND}	4.0	V
Power Dissipation	P_d	500	mW
Operating Temperature Range	T_{opr}	-20 to +75	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +125	$^\circ\text{C}$

Electrical Characteristics ($T_a=25^\circ\text{C}$, $V_{DD}=3.0\text{V}$)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{DD}		2.0	3.0	3.3	V
Supply Current	$I_{DD(OP)}$	$f_{OSC}=455\text{ kHz}$		0.1	1.0	mA
Supply Current	$I_{DD(ST)}$				1	μA
Input High Voltage	$V_{IH(KI)}$	PIN 1~4	0.7 V_{DD}		V_{DD}	V
Input Low Voltage	$V_{IL(KI)}$	PIN 1~4	0		0.3 V_{DD}	V
Input Pull Down R	$R_{(KI)}$	PIN 1~4	150	900	1500	k Ω
Output Current	$I_{OH(REM)}$	$V_{OH(REM)}=1.5\text{ V}$	6	15	—	mA
Lamp Output Current	$I_{OL(LMP)}$	$V_{OL(LMP)}=0.3\text{ V}$	1	2	—	mA

Pin Description

PIN NO.	SYMBOL	DESCRIPTION
1~4	$K_{I0}\sim K_{I3}$	Key Input; Internally Pull-down to GND by Resistor.
5	REM	Remote Output
6	V_{DD}	Positive Supply ... 2.0 to 3.3V
7	TEST	Normally "H" state, due to Internal Pull-up Resistor to V_{DD} . In order to test, set to "L" state.
8	OSC0	Oscillator Output Ceramic Resonator
9	OSC1	Oscillator Input (400 to 500 kHz)
10	GND	Ground
11	LMP	LAMP Output Indicator for Transmission
12~19	$K_{O0}\sim K_{O7}$	Key Output As Time of 36ms has passed after key-push, REM Output is transmitted.
20	FS	Frequency Select When set to "H" state, the basic frequency is reduced to half the normal one. Therefore, 64 function keys can be available. When used as 32 function key mode, set to "L" state.

Key Data Code

Key	CONNECTION				K _o	DATA CODE							
	K _i 0	K _i 1	K _i 2	K _i 3		D0	D1	D2	D3	D4	D5	D6	D7
K1	*				K _o 0	0	0	0	0	0	0	0	0
K2		*				1	0	0	0	0	0	0	0
K3			*			0	1	0	0	0	0	0	0
K4				*		1	1	0	0	0	0	0	0
K5	*				K _o 1	0	0	1	0	0	0	0	0
K6		*				1	0	1	0	0	0	0	0
K7			*			0	1	1	0	0	0	0	0
K8				*		1	1	1	0	0	0	0	0
K9	*				K _o 2	0	0	0	1	0	0	0	0
K10		*				1	0	0	1	0	0	0	0
K11			*			0	1	0	1	0	0	0	0
K12				*		1	1	0	1	0	0	0	0
K13	*				K _o 3	0	0	1	1	0	0	0	0
K14		*				1	0	1	1	0	0	0	0
K15			*			0	1	1	1	0	0	0	0
K16				*		1	1	1	1	0	0	0	0
K17	*				K _o 4	0	0	0	0	1	0	0	0
K18		*				1	0	0	0	1	0	0	0
K19			*			0	1	0	0	1	0	0	0
K20				*		1	1	0	0	1	0	0	0
K21	*				K _o 5	0	0	1	0	1	0	0	0
K22		*				1	0	1	0	1	0	0	0
K23			*			0	1	1	0	1	0	0	0
K24				*		1	1	1	0	1	0	0	0
K25	*				K _o 6	0	0	0	1	1	0	0	0
K26		*				1	0	0	1	1	0	0	0
K27			*			0	1	0	1	1	0	0	0
K28				*		1	1	0	1	1	0	0	0
K29	*				K _o 7	0	0	1	1	1	0	0	0
K30		*				1	0	1	1	1	0	0	0
K31			*			0	1	1	1	1	0	0	0
K32				*		1	1	1	1	1	0	0	0

Dual Action Key Code

KEY	D0	D1	D2	D3	D4	D5	D6	D7
K21 + K22	1	0	1	0	1	1	0	0
K21 + K23	0	1	1	0	1	1	0	0
K21 + K24	1	1	1	0	1	1	0	0

ROM Data for Custom Code

EX:	C0	C1	C2	C3	C4	C5	C6	C7
	0	1	1	1	0	1	1	0

Remote Output Waveforms

* For $f_{osc} = 455\text{kHz}$, FS="L".

* For FS="H", time is doubled

