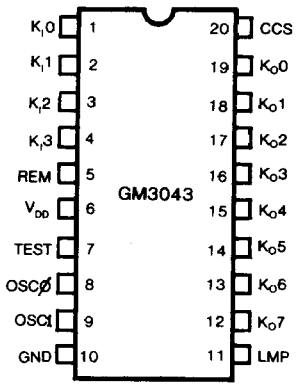
GM3043
CMOS REMOTE CONTROL TRANSMITTER

Description

The GM3043 is a CMOS IC for control circuits of infrared remote control transmitter which is available for TV, STEREO, VTR and TOY etc. GM3043 is designed to transmit 8960 commands[(32 KEY+3)×256 custom code]. For the digital commands, this uses 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).

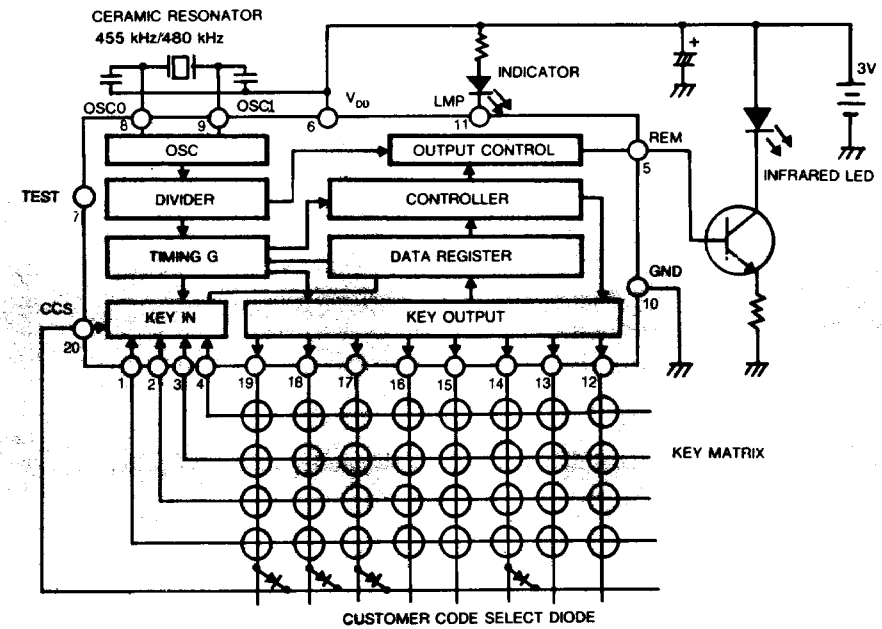
Pin Configuration



Features

- **Low Voltage Operation ..... V_{DD} = 2.0~3.3V**
- **Low Power Consumption ... I_{DD}<1 μA at Standby Mode**
- **32 Function KEY and 3 dual Action KEY**
- **256 Custom Codes Selected by External Diode**
- **16 Bit Pulse Position Modulated Code**
- **High Efficiency Transmission.... IR LED on Duty 3%**
- **Indicator Output**
- **Package ..... 20 SO Package**

Block Diagram



Absolute Maximum Ratings (T_a=25°C)

Supply Voltage	V_{DD}-GND	4.0	V
Input voltage	V_{IN}-GND	−0.3 to V_{DD}	V
Output Current	$I_{OH(REM, LMP)}$	−15.0	mA
Power Dissipation	P_d	250	mW
Operating Temperature Range	T_{opr}	−20∼ +75	°C
Storage Temperature Range	T_{stg}	−40∼+125	°C

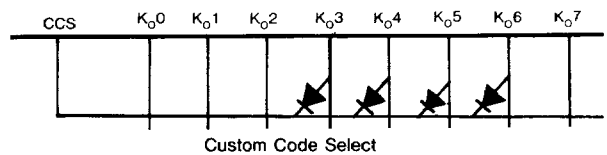
Recommended Operating Conditions

		MIN	TYP	MAX	UNIT
Supply Voltage	V_{DD}	2.0	3.0	3.3	V
Oscillation Frequency	f_{OSC}	400	455	500	kHz
Lamp Output Current	$I_{OL(LMP)}$		1		mA

Electrical Characteristics (T_A=25°C, V_{DD}=3.0V)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Supply Current	$I_{DD(OP)}$	f_{OSC}=455 kHz		0.1	1.0	mA
Supply Current	$I_{DD(ST)}$	f_{OSC}=STOP			1	μA
Input High Voltage	$V_{IH(KI)}$		0.7 V_{DD}		V_{DD}	V
Input Low Voltage	$V_{IL(KI)}$		0		0.3 V_{DD}	V
Input Pull Down R	$R_{(KI)}$		150	900	1500	kΩ
Output Current	$I_{OH(REM)}$	$V_{OH(REM)}$=1.5V	−5			mA
Output Low Voltage	$V_{OL(LMP)}$	I_{OL}=1.0 mA			0.3	V

Pin Description

PIN NO.	SYMBOL	EXPLANATION
1∼4	K_I0∼K_I3	Key Input; Internaly Pull-down to GND by Resister.
5	REM	Remote Output
6	V_{DD}	Positive Supply ..... 2.0 to 3.3V
7	TEST	TEST Terminal ..... Normaly Open
8	OSCO	Oscillator Output Ceramic Resonator
9	OSCI	Oscillator Input (400 to 500 kHz)
10	LMP	LAMP Output ..... Indicator for Transmission
11	GND	Ground
12∼19	K_O0∼K_O7	Key Output
20	CCS	Custom Code Select Input Custom Code is selected by diode Connection to Key Output (K_O0 to K_O7) This terminal is usually pull up to V_{DD} by internal Resistor.  Custom Code Select Example .... C0 to C7 = 00011110

Key Data Code

Key	CONNECTION					DATA CODE								REMARKS
	K_I0	K_I1	K_I2	K_I3	K_O	D0	D1	D2	D3	D4	D5	D6	D7	
K1	*				K_O0	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_O1	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_O2	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_O3	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_O4	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_O5	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_O6	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_O7	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	REMARKS
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	

Custom Code

EX:

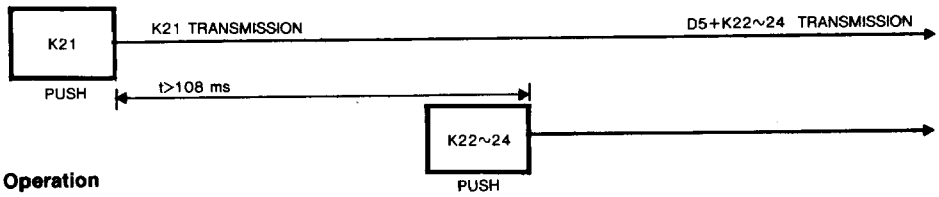
D0	D1	D2	D3	D4	D5	D6	D7
1	0	1	0	1	1	0	0

Operation of Dual Action Key

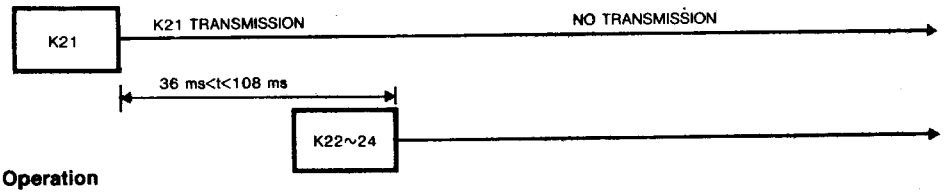
Keys (K21 to K24) are used for preventing failure caused by mistakes
Ex: Cassette Tape Recoder K21 .... REC KEY
K22 .... PLAY KEY

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

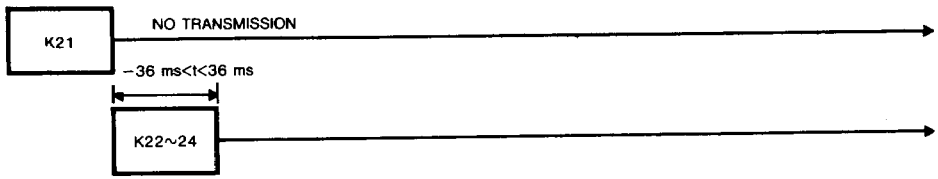
(a) Operation



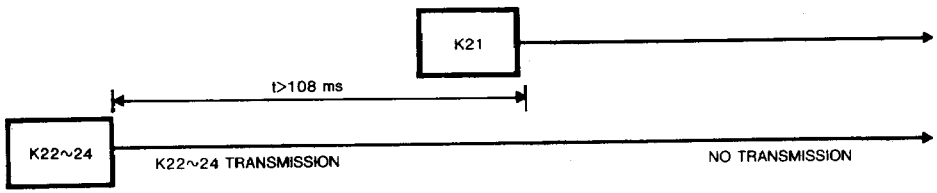
(b) No Operation



(c) No Operation



(d) No Operation



Remote Output Waveforms