

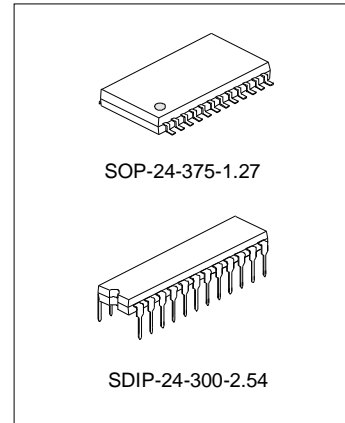
## INFRARED REMOTE CONTROL TRANSMITTER OF 3004 CODE FORMAT

### DESCRIPTION

SC3004 is a remote control transmitter utilizing CMOS Technology specially designed for use on general purpose (RC-5) infrared applications with low voltage supply and large debounce time.

### FEATURES

- \* CMOS Technology
- \* Low Voltage Supply
- \* Bi-phase Transmission Technique



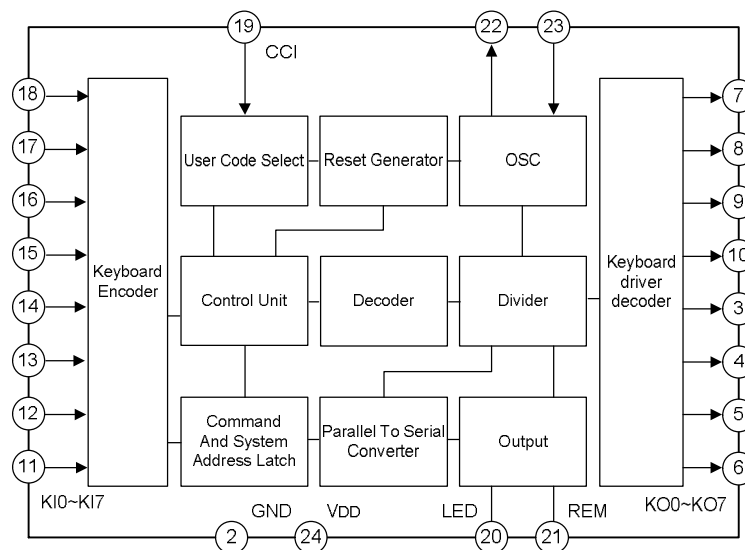
### APPLICATIONS

- \* Television
- \* VCR
- \* Audio Equipment
- \* Multi-Media System
- \* Personal Computer

### ORDERING INFORMATION

Device	package
SC3004	SDIP-24-300-2.54
SC3004S	SOP-24-375-1.27

### BLOCK DIAGRAM



### ABSOLUTE MAXIMUM RATING (T<sub>amb</sub>=25°C, unless otherwise specified)

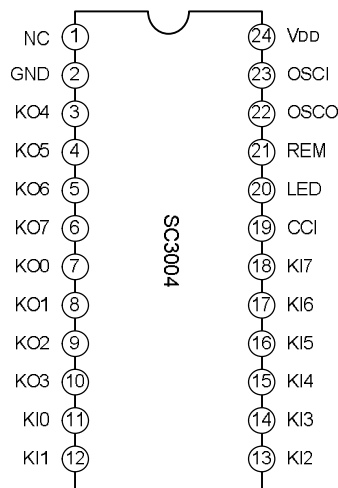
Characteristics	Symbol	Test conditions	Value	Unit
Supply Voltage*	VDD		V <sub>SS</sub> -0.3 ~ 5.5	V
Input Voltage*	V <sub>IN</sub>	VDD=3 V	-0.5 ~ VDD+0.5	V
Output Voltage*	V <sub>OUT</sub>	VDD=3 V	-0.5 ~ VDD+0.5	V
Operating Temperature	T <sub>OPR</sub>	VDD=3 V	-20~85	°C

NOTE: \* = with reference to V<sub>SS</sub>

**ELECTRICAL CHARACTERISTICS** (T<sub>amb</sub>=25°C, unless otherwise specified)

Characteristics	Symbol	Test conditions	Min	Typ	Max	Unit
Supply Voltage	V <sub>DD</sub>	Freq=455KHz	2.0	3.0	5.5	V
Stand-By Current	I <sub>DD</sub>	V <sub>DD</sub> =3V (Output no load)		0	10	μA
Input Current(KI0~KI7,C0~C3)	I <sub>IN</sub>	V <sub>I</sub> =0V T <sub>1</sub> =0 T <sub>2</sub> =0 SMS=0		15	600	μA
High Level Input Voltage (KI0~KI7,C0~C3,SMS,T1,T2)	V <sub>IH</sub>	V <sub>DD</sub> =3V,(KI0~KI7 And C0~C3 Connected To V <sub>DD</sub> )	0.7 V <sub>DD</sub>			V
Low Level Input Voltage (KI0~KI7,C0~C3,SMS,T1,T2)	V <sub>IL</sub>	V <sub>DD</sub> =3V,( T <sub>1</sub> ,T <sub>2</sub> ,OSC,SMS Connected To V <sub>SS</sub> )			0.3 V <sub>DD</sub>	V
Input Current Leakage (KI0~KI7,C0~C3)	I <sub>LEAK1</sub>	V <sub>I</sub> =3V V <sub>DD</sub> =3V T <sub>1</sub> =T <sub>2</sub> =High		0	1.0	μA
		V <sub>I</sub> =0V V <sub>DD</sub> =3V T <sub>1</sub> =T <sub>2</sub> =High		0	1.0	
Input Current Leakage (OSC)	I <sub>LEAK2</sub>	V <sub>I</sub> =0V V <sub>DD</sub> =3V T <sub>1</sub> =T <sub>2</sub> =High		0	1.0	μA
	I <sub>LEAK3</sub>	V <sub>I</sub> =3V V <sub>DD</sub> =3V T <sub>1</sub> =T <sub>2</sub> =High	4.5	15	30	
Input Leakage Current (SMS,T1,T2)	I <sub>LEAK4</sub>	V <sub>I</sub> =3V V <sub>DD</sub> =3V T=25°C		0	1.0	μA
		V <sub>I</sub> =0V V <sub>DD</sub> =3V T=25°C		0	1.0	
High Level Output Voltage (Dout, MDOUT)	V <sub>OH</sub>	V <sub>DD</sub> =3V I <sub>OH</sub> =0.4mA	V <sub>DD</sub> - 0.3			V
Low Level Output Voltage (Dout, MDOUT)	V <sub>OL</sub>	V <sub>DD</sub> =3V I <sub>OH</sub> =0.6mA			0.35	
Output Current Leakage (Dout, MDOUT)	I <sub>LEAK5</sub>	V <sub>O</sub> =3V V <sub>DD</sub> =3V T=25°C			10	μA
		V <sub>O</sub> =0V V <sub>DD</sub> =3V T=25°C			1	
Low Level Output Voltage (KO0~KO7)	V <sub>OL</sub>	V <sub>DD</sub> =3V I <sub>OL</sub> =0.3mA			0.8	V
Output Current Leakage (KO0~KO7)	I <sub>LEAK6</sub>	V <sub>O</sub> =3V V <sub>DD</sub> =3V T=25°C		0	1	μA
		V <sub>O</sub> =3V V <sub>DD</sub> =3V T=-25~85°C		3	10	
Drive Current (Dout, MDout)	I <sub>D</sub>	V <sub>DD</sub> =3V V <sub>O</sub> =1.5V	1.5		2	mA
Operational Frequency	F <sub>osc</sub>	V <sub>DD</sub> =3V	400		600	KHz

**PIN CONFIGURATIONS**



**PIN DESCRIPTION**

PIN NO.	Symbol	DESCRIPTIONS
1	NC	NOT CONNECT
2	GND	Negative Power Supply
3-10	KO0-KO7	Scan Driver Pins
11-18	KI0-KI7	Key Sense Input Pins
19	CCI	User Code Select
20	LED	Led Pin
21	REM	Generate Output Data Pin (with carrier wave)
22	OSCO	Oscillator output
23	OSCI	Oscillator input
24	VDD	Power Supply

**FUNCTIONAL DESCRIPTION**

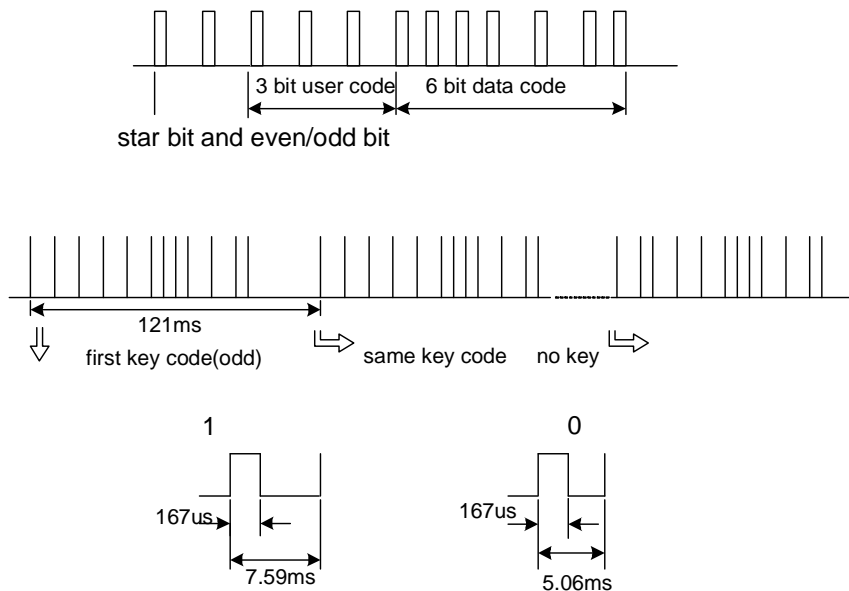
SC3004 CODE FORMAT:

Start bit	Even/odd	User code			Data code					
1	1/0	S2	S1	S0	D5	D4	D3	D2	D1	D0

User code can be set to one of following (decided by pin CCI):

line	KO0	KO1	KO2	KO3	KO4	KO5	KO6
S2 S1 S0	000	001	010	011	100	101	111

The SC3004 code format is showed as following:



Note: Even/odd bit: the bit will retake when a key is pressed.

**DATA CODE**

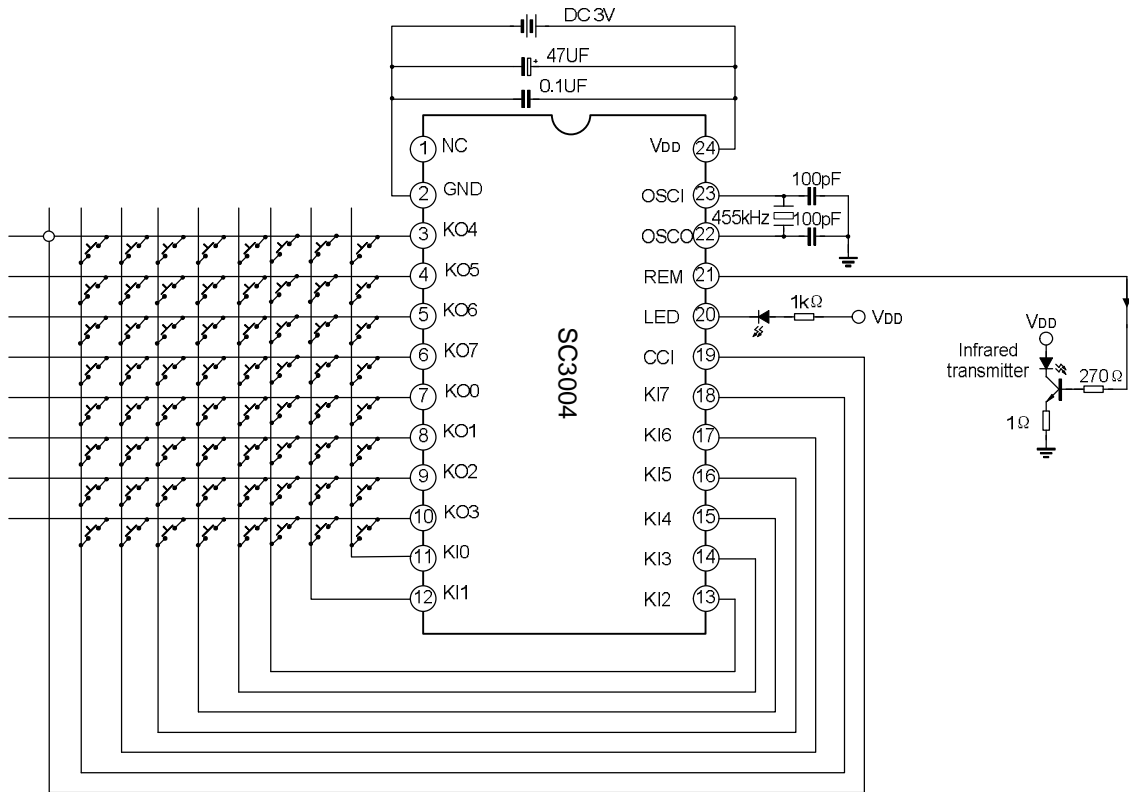
Pin no	K00	K01	K02	K03	K04	K05	K06	K07	Data code
K10	.								00
		.							01
			.						02
				.					03
					.				04
						.			05
							.		06
								.	07
K11	.								08
		.							09
			.						0A
				.					0B
					.				0C
						.			0D
							.		0E
								.	0F
K12	.								10
		.							11
			.						12
				.					13
					.				14
						.			15
							.		16
								.	17
K13	.								18
		.							19
			.						1A
				.					1B
					.				1C
						.			1D
							.		1E
								.	1F
K14	.								20
		.							21
			.						22
				.					23
					.				24
						.			25

(To be continued)

(Continued)

Pin no	K00	K01	K02	K03	K04	K05	K06	K07	Data code
K14							•		26
								•	27
K15	•								28
		•							29
			•						2A
				•					2B
					•				2C
						•			2D
							•		2E
								•	2F
K16	•								30
		•							31
			•						32
				•					33
					•				34
						•			35
							•		36
								•	37
K17	•								38
		•							39
			•						3A
				•					3B
					•				3C
						•			3D
							•		3E
								•	3F

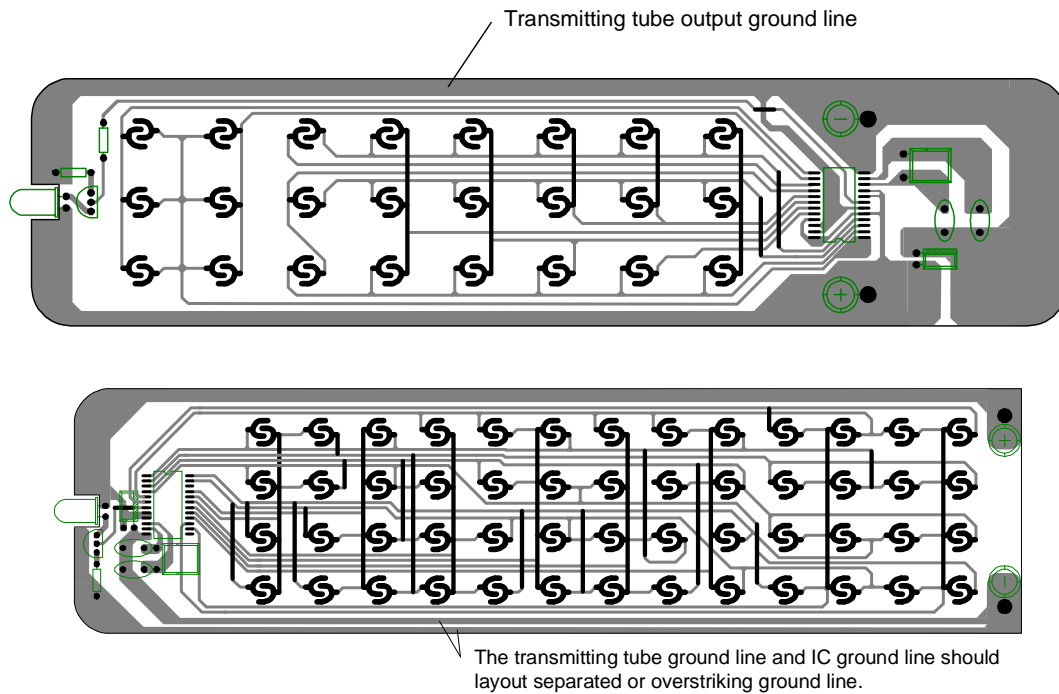
APPLICATION CIRCUIT



○ connect directly

NOTE: Pin 19 connect with one of scan driver pin to decide the user code

PCB WIRE LAYOUT SCHEMATIC



The above IC only use to hint, not to specified.

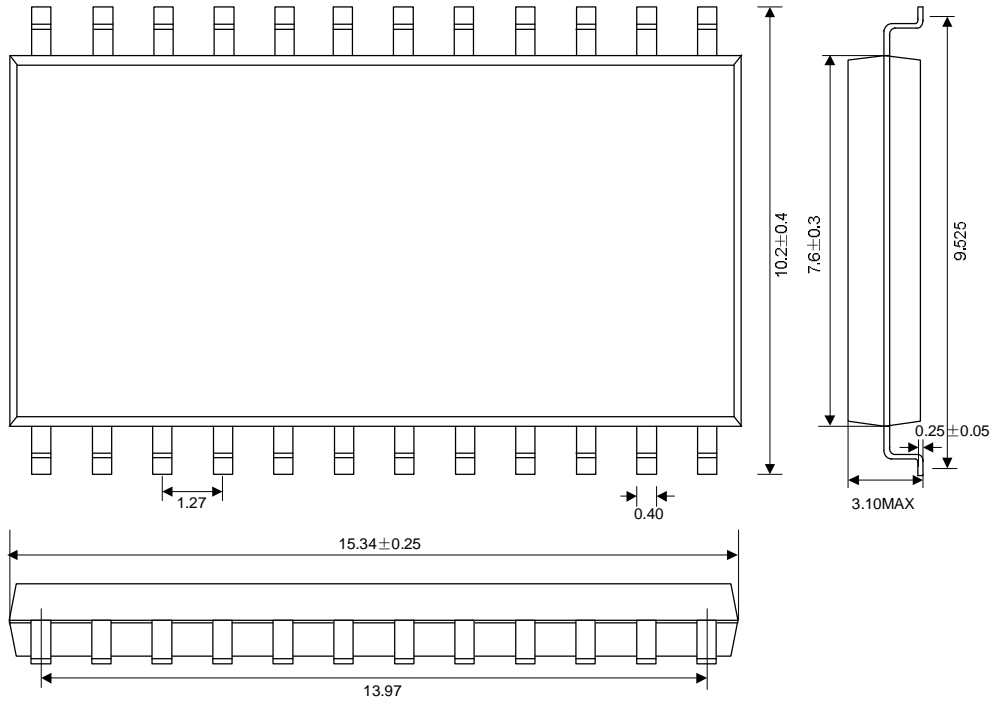
Note:

- \* In wire layout, the power filter capacitor should near to IC.
- \* In wire layout, should avoid power line and ground line too long.
- \* Recommended infrared transmit unit and IC ground line should layout separated, or over striking lines.
- \* The emitter of triode connect  $1\Omega$  resistor at least.
- \* Recommended triode use 9014.

PACKAGE OUTLINE

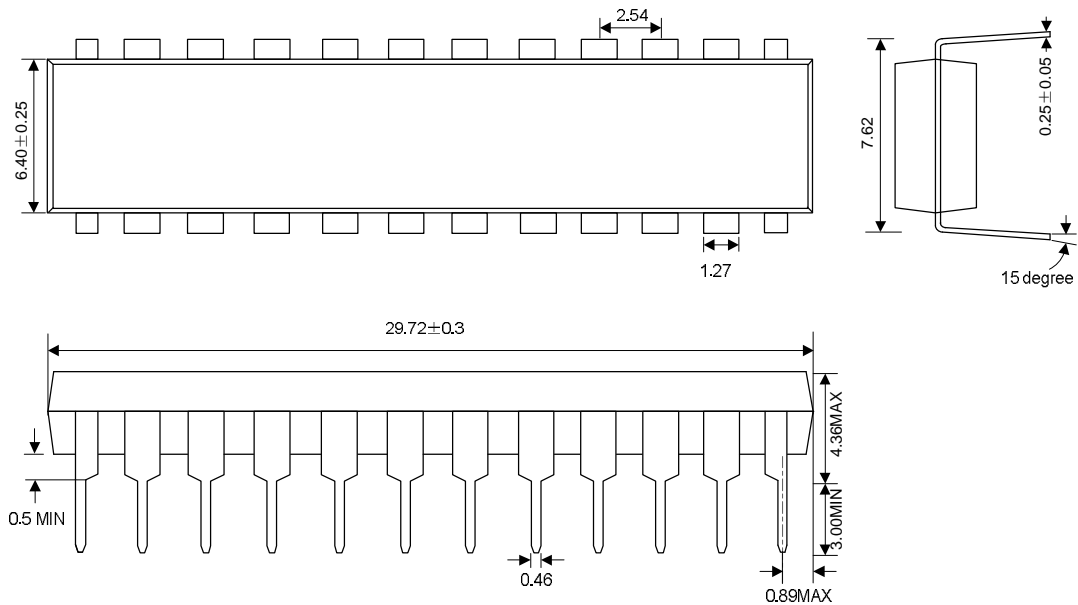
SOP-24-375-1.27

Unit: mm



SDIP-24-300-2.54

Unit: mm







#### HANDLING MOS DEVICES:

Electrostatic charges can exist in many things. All of our MOS devices are internally protected against electrostatic discharge but they can be damaged if the following precautions are not taken:

- Persons at a work bench should be earthed via a wrist strap.
- Equipment cases should be earthed.
- All tools used during assembly, including soldering tools and solder baths, must be earthed.
- MOS devices should be packed for dispatch in antistatic/conductive containers.

**Note:** IC oscillator input mustn't be on the outside layer, thus to avoid the abnormal working when human body touches the remote controller without crust in testing.