

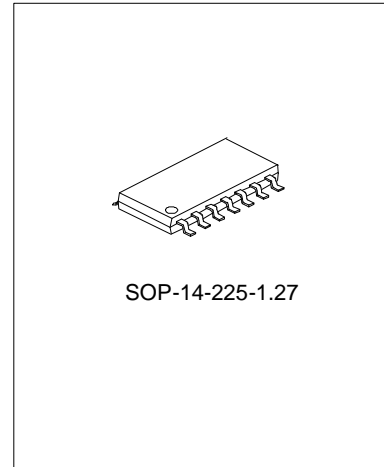
CASCADE LED DRIVER OF HEAVY CURRENT

DESCRIPTION

SC16722 is a chip special for LED driver. It utilizes advanced CMOS technology and provides low power dissipation. This circuit has the protecting circuit for all the inputs and outputs to avoid the damage caused by the static discharge. And it has the ability of driving load and features high noise immunity.

FEATURES

- * 3 bits driving output (Max.=30mA)
- * Provides the interface suited for cascade.
- * Input compatible with 5V CMOS voltage.
- * Maximum 15M serial clock frequency.



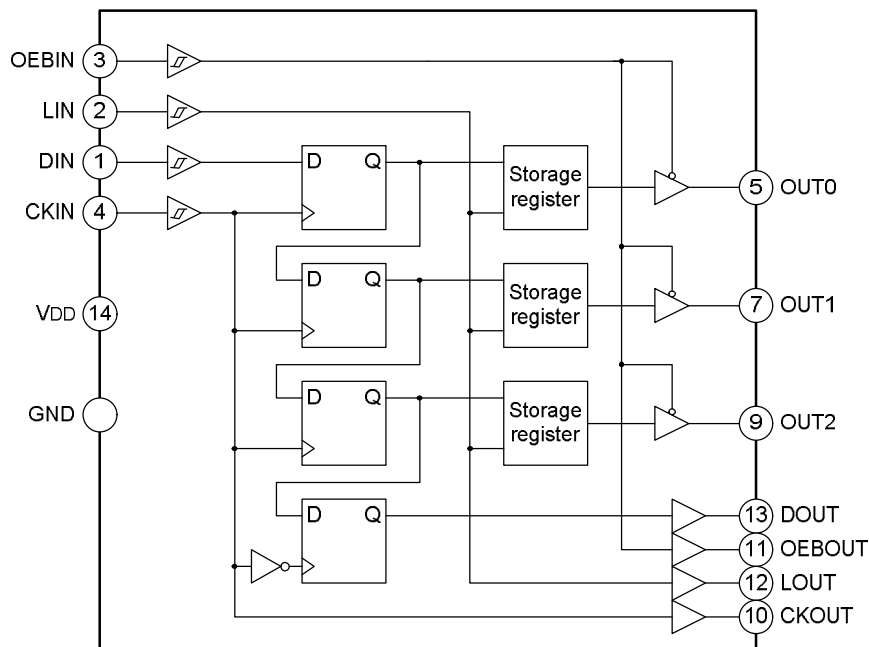
APPLICATION

- * Lights decorations
- * Outdoors lights

ORDERING INFORMATION

Device	Package
SC16722	SOP-14-225-1.27
SC16722	COB

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS ($T_{amb}=25^{\circ}\text{C}$)

Characteristics	Symbol	Ratings	Unit
Power Supply Voltage	VDD	0~+5.0	V
Input Voltage	VIN	-0.4~ VDD +0.4	V
Output Current	IOUT	30	mA
Output Voltage	VOUT	-0.5~ VDD +0.5	V
Clock Frequency	FCLK	15	MHz
Power Dissipation	PD	600	mW
Pin Temperature	TL	260(10S)	$^{\circ}\text{C}$
Operating Temperature	Topr	-40~+85	$^{\circ}\text{C}$
Storage Temperature	Tstg	-65~+150	$^{\circ}\text{C}$

RECOMMENDED OPERATING CONDITIONS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Operating Voltage	VDD		2.0		6.0	V
Output Voltage	VOUT	-40~85 $^{\circ}\text{C}$		5		V
Output Current	IOUT	Driving output	25	30		mA
	IOH	Other output			1.0	mA
	IOL	Other output			-1.0	mA
Input Voltage	VIH		4	5	5.5	V
	VIL		-0.3		2.1	V
Clock Frequency	FCLK				15	MHz
Clock High Level Width	CLKH		25			ns
Clock Low Level Width	CLKL		25			ns
Signal Set-up Tme	SETUP		10			ns
Signal Hold Time	HOLD		10			ns
Power Dissipation	CLKH				450	mW
Clock Low Level Width	CLKL		25ns			ns
Storage Temperature	Tstg		-40~+100			$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS

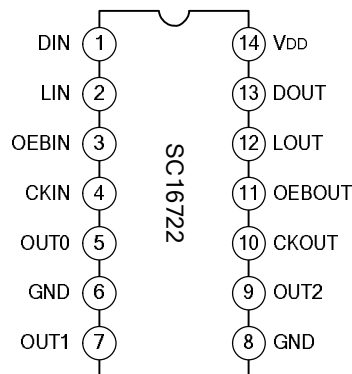
Characteristics	Symbol	Test conditions	VDD	$T_{amb}=25^{\circ}\text{C}$		$T_{amb}=-40\sim 85^{\circ}\text{C}$	$T_{amb}=-55\sim 125^{\circ}\text{C}$	Unit
The Minimum Output High Level	VOH	VIN= VIH or VIL IOUT <30		TYP.		Limit value		
			2.0	2.0	1.9	1.9	1.9	V
			4.5	4.5	4.4	4.4	4.4	V
			6.0	6.0	5.9	5.9	5.9	V
The Maximum Output Low Level	VOL	VIN= VIH or VIL IOUT <30		TYP.		Limit value		
			2.0	0	0.1	0.1	0.1	V
			4.5	0	0.1	0.1	0.1	V
			6.0	0	0.1	0.1	0.1	V
The Maximum Input Current	IIN	VIN= VDD or GND	6.0		± 0.1	± 0.1	± 0.1	μA

TIME SEQUENCE CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Clock High Level Width	CLKH		25			ns
Clock Low Level Width	CLKL		25			ns
Signal Set-up Time	SETUP		10			ns
Signal Hold Time	HOLD		10			ns

Characteristics	Symbol	VDD	T _{amb} =25°C		T _{amb} =	T _{amb} =	Unit	
			TYP.	Limit value	-40~85°C	-55~125°C		
The Maximum Input Rising and Falling Time	Tr Tf	2		1000	1000	1000	ns	
				500	500	500	ns	
				400	400	400	ns	
The Maximum Output Rising and Falling Time	T _{THL} T _{TTLH}	2	25	60	75	90	ns	
			4.5	7	12	15	18	ns
			6	6	10	13	15	ns

PIN CONFIGURATIONS



PIN DESCRIPTION

Pin No.	Pin Name	I/O	Descriptions
1	DIN	I	Serial data input
2	LIN	I	Loading signal input
3	OEIN	I	Output enable input
4	CKIN	I	Serial clock input

(To be continued)

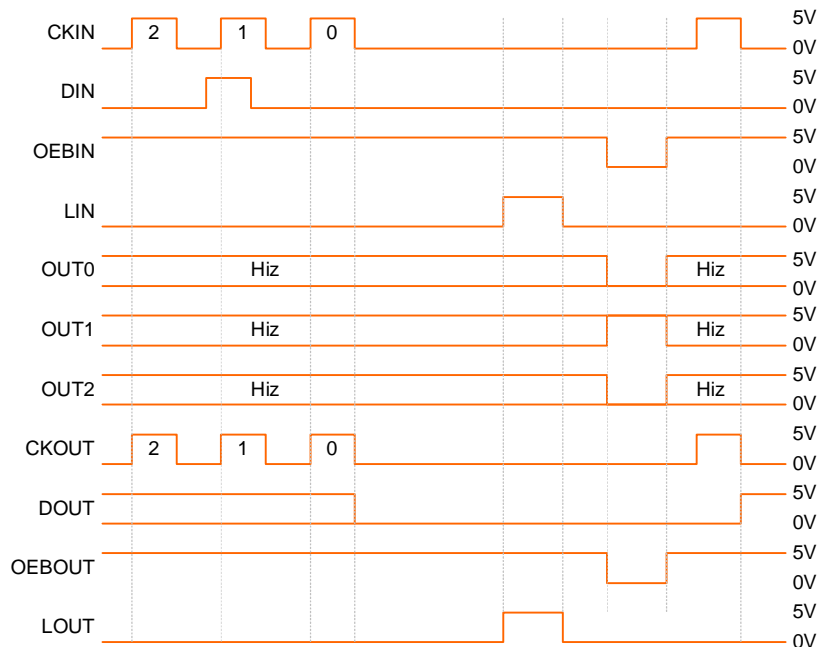
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Pin No.	Pin Name	I/O	Descriptions
5	OUT0	O	Driving output
6	GND	I/O	Ground
7	OUT1	O	Driving output
8	GND	I/O	Ground
9	OUT2	O	Driving output
10	CKOUT	O	Serial clock output
11	OEOUT	O	Output enable output
12	LOUT	O	Loading signal output
13	DOUT	O	Serial data output
14	VDD	I/O	Power supply

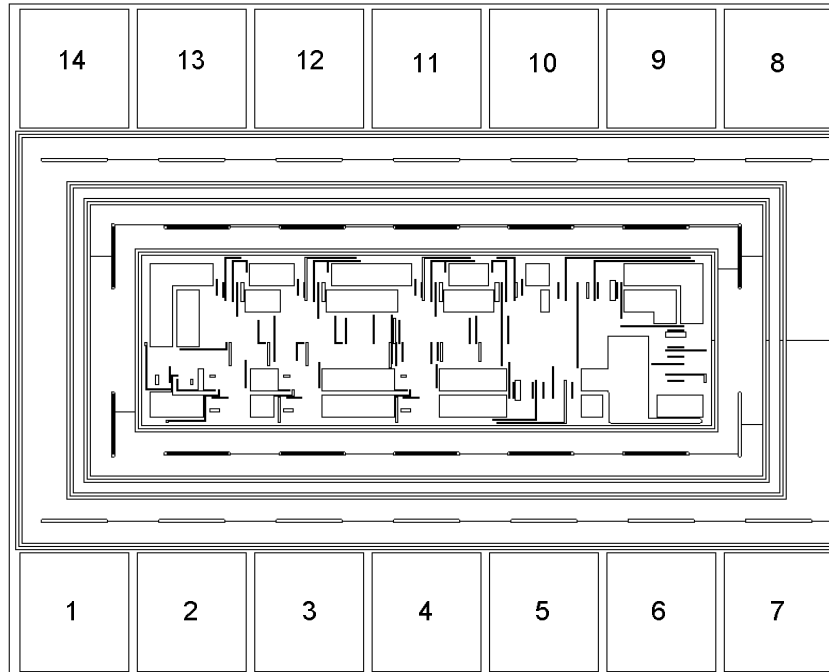
FUNCTION DESCRIPTION

SC16722 provides serial shift register and output storage register. When the serial clock input signal (CKIN) leaps from low level to high level, the serial input data (DIN) is stored in register and the serial input changes to 3 bits parallel output; When the loading signal input (LIN) leaps from low level to high level, the output of register is as the input of the output storage register. SC16722 applies for LED display device, and it can provide 3 driving output of heavy current. Also it adapts to various cascade applications.

TIME SEQUENCY SCHEME



CHIP TOPOGRAPHY



Chip size: 0.90x0.76 (mm²)

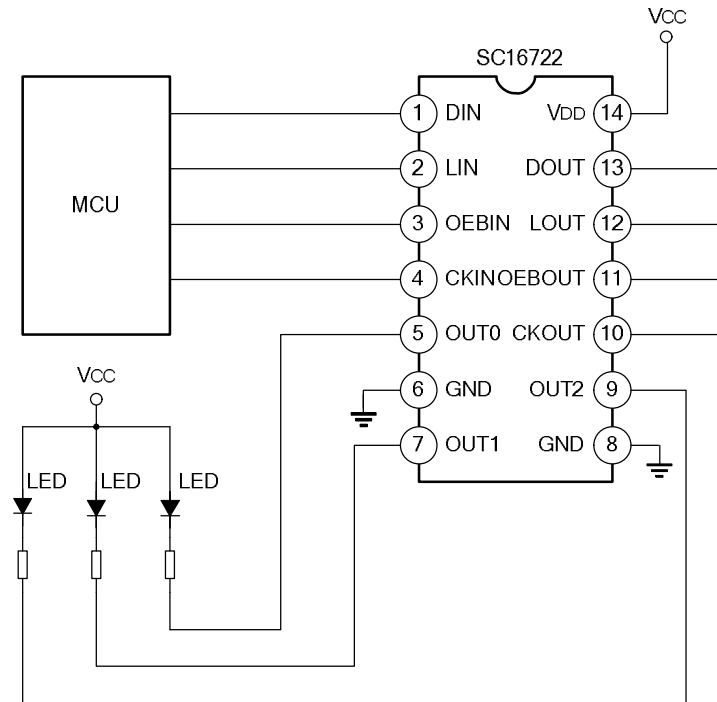
Note: The substrate is connected with GND.

BONDING PAD COORDINATES

Boding pad	Symbol	X	Y	Boding pad	Symbol	X	Y
1	DIN	-329.10	-263.90	8	GND	330.90	263.875
2	LIN	-219.10	-263.90	9	OUT2	220.90	263.875
3	OEBIN	-109.10	-263.90	10	CKOUT	110.90	263.875
4	CKIN	0.90	-263.90	11	OEBOUT	0.90	263.875
5	OUT0	110.90	-263.90	12	LOUT	-109.10	263.875
6	GND	220.90	-263.90	13	DOUT	-219.10	263.875
7	OUT1	330.90	-263.90	14	VDD	-329.10	263.875

Note: The original point of the coordinate is the die center.

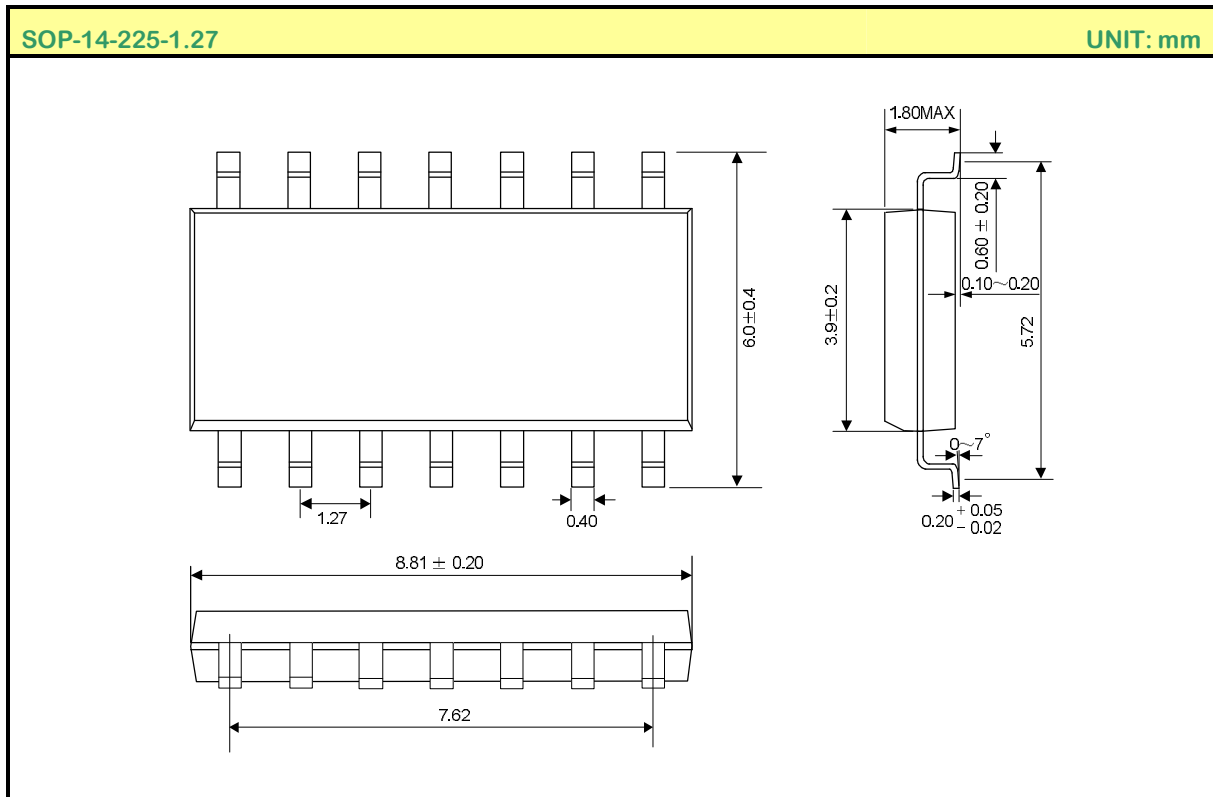
TYPICAL APPLICATION CIRCUIT



PACKAGE OUTLINE

SOP-14-225-1.27

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.