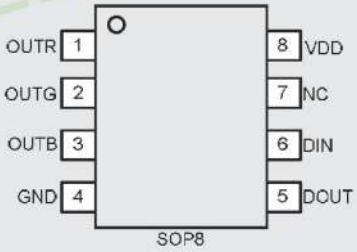
Feature:

- Synchronous refresh
- CMOS technology
- DC5V-24V Input @ Built-in regulator circuit
- withstand voltage 26V
- 256 Gray scale
- Power-On Self-Test POST,white color is on
- Ouput current: constant 17MA/CH
- Single line SPI control protocol
- Built-in high precision oscillator
- Data reshape
- Data sending rate:800Kbps
- Footprint:SOP8

PIN define



Summary

SM16703 is a intelligent control chip that the control circuit that refer to SPI communication Protocol

The data transfer protocol use single NZR communication mode It include intelligent digital port data latch and signal reshaping amplification drive circuit. Also include a precision internal oscillator

Model	Pack	Package		Reel Size
		Tube	Belts	
SM16703P	SOP8	100PCS	2500PCS	13"

PIN Define

symbol	Function	NO.	spec
OUTR	Output channel	1	Red color output
OUTG	Output channel	2	Green color output
OUTB	Output channel	3	Blue color output
GND	GND	4	GND
DOUT	data ouput	5	data ouput cascade
DIN	data input	6	data input
NC	NULL	7	NULL
VDD	power	8	power

Electrical absolute parameter Ta = 25℃

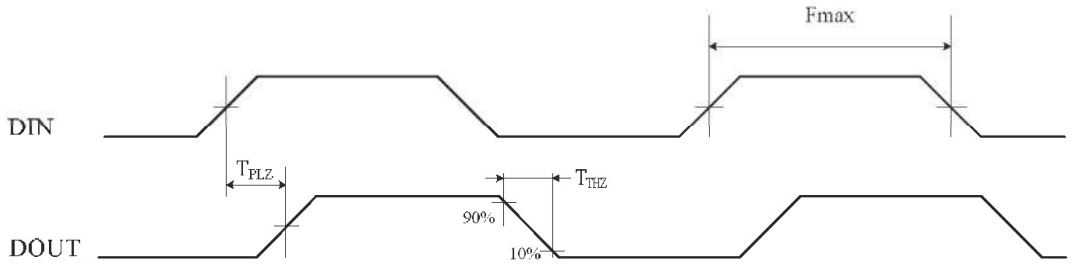
parameter	symbol	Range	unit
Input voltage	V_{IN}	5——24	V
withstand voltage	V_{DS}	26	V
logic voltage	V_{I1}	-0.5——5.5	V
R/G/B output current	I_{OL1}	17	mA
power comsuption	PD	550	mW
working temperature range	T_{OPT}	-40——+85	℃
Storage temperature range	T_{STG}	-50——+150	℃
ESD 耐压	V_{ESD}	8K	V

Electrical Characteristics Ta = 25℃

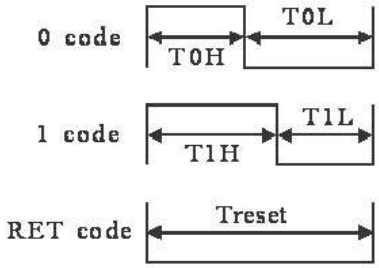
parameter	symbol	test condition	min	typ	max	unit
Input voltage	V_{IN}	-	-	5	24	V
internal voltage	VDD	-	-	5.2	-	V
R/G/B withstand	$V_{DS,MAX}$	OUT R/G/B	-	-	26	V
R/G/B current	I_{OUT_R}	V_{DS_R}=1V	-	17	-	mA
DOUT Driving ability	ID_{OH}	DOUT short GND,MAX driving current	-	49	-	mA
	ID_{OL}	DOUT short VDD,MAX irrigation current	-	-50	-	mA
Rollover threshold	V_{IH}	VDD=5.0V	-	3.4	-	V
	V_{IL}		-	1.6	-	V
R/G/B Current variable	%VS.V_{DS}	V_{DS}=1~5V,I_{OUT}=17 mA	-	0.5	-	%
	%VS.VDD	VDD=1~5V,I_{OUT}=17 mA	-	0.3	-	%
	%VS.Tem.	V_{DS}=1~5V,I_{OUT}=17 mA,Tem.= -40~+85℃	-	4.0	-	%
R/G/B port voltage	V_{DS}	I_{OUT}=17 mA	0.8	-	-	V
PWM frequency	f_{PWM}	-	-	1.2	-	KHZ
static power	I_{DD}	-	-	2.0	-	mW

Dymatic Characteristics Ta = 25℃

parameter	symbol	test condition	min	typ	max	unit
Transmission rate	f_{DIN}	duty ratio (67 percent, Total 1)	-	800	-	KHZ
DOUT delay time	t_{PLZ}	DIN→DOUT	-	-	500	ns
	t_{PLZ}		-	-	500	ns
I_{OUT} rise time	T_r	V_{DS}=1.5	-	32	-	ns
	T_f	I_{OUT}=17mA	-	27	-	ns



Code Specification:

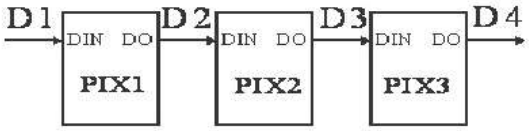


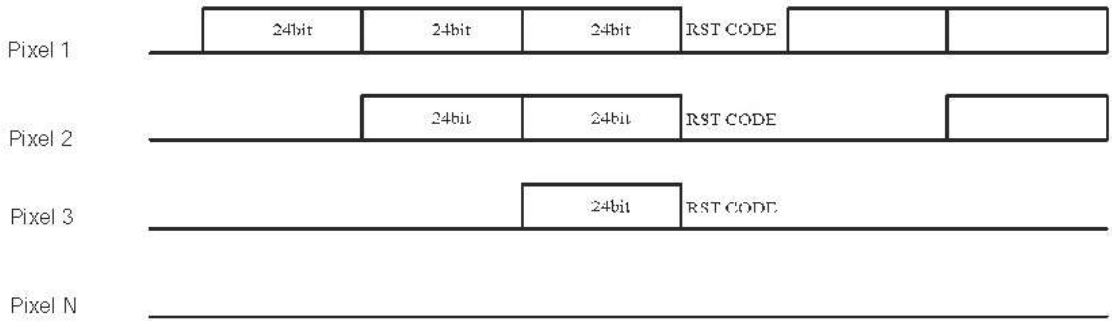
name	description	min	tpy	max	deviation	unit
T0H	0 code,high voltage time	-	0.3	-	±0.05	us
T1H	1 code,high voltage time	-	0.9	-	±0.05	us
T0L	0 code,low voltage time	-	0.9	-	±0.05	us
T1L	1 code,low voltage time	-	0.3	-	±0.05	us
Tst	Reset low voltage time	-	80	-	-	us

Follow the order of RGB to sent data and the high bit sent at first

R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0

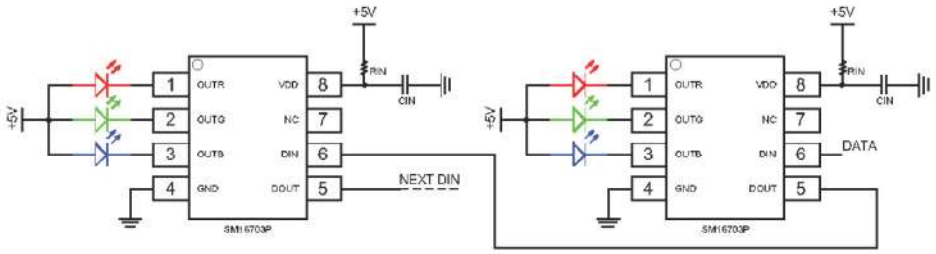
bit23.....bit0



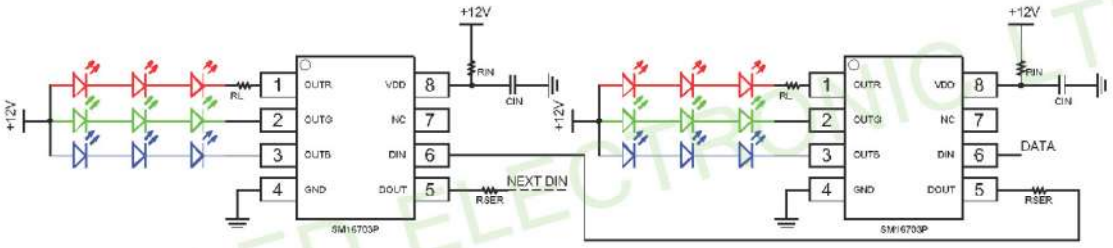


Application circuit

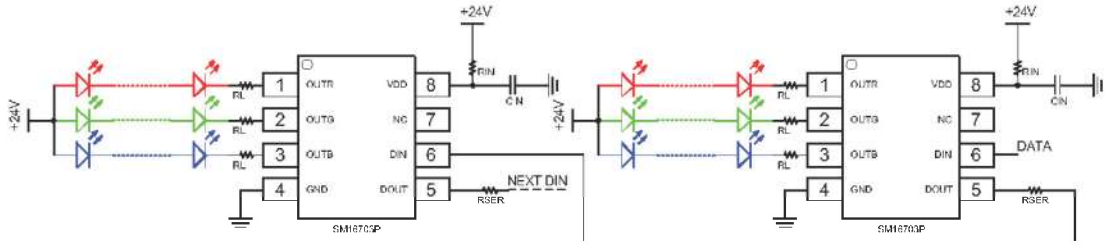
（1）5V



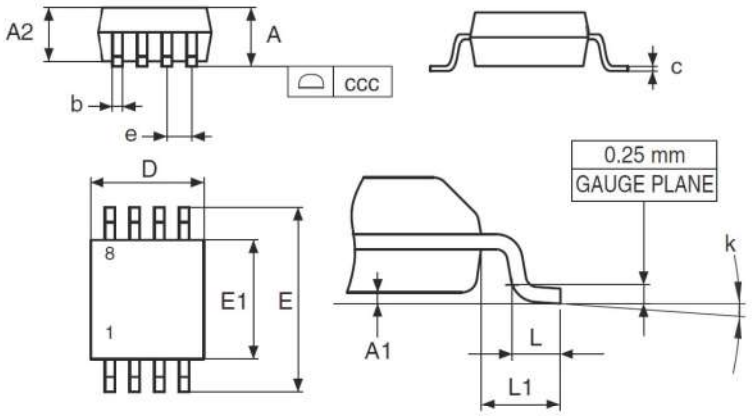
（2）12V



（3）24V



SOP8



DEMENSIONS						
REF.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.75			0.0689
A1	0.1		0.25	0.0039		0.0098
A2	1.25			0.0492		
b	0.28		0.48	0.011		0.0189
c	0.17		0.23	0.0067		0.0091
ccc			0.1			0.0039
D	4.8	4.9	5	0.189	0.1929	0.1969
E	5.8	6	6.2	0.2283	0.2362	0.2411
E1	3.8	3.9	4	0.1496	0.1535	0.1575
e		1.27			0.05	
h	0.25		0.5	0.0098		0.0197
k	0		8	0		8
L	0.4		1.27	0.0157		0.05
L1		1.04			0.0409	