Raffar Technology Corp.

RT5929

Built-in Shift Register 8-channel N-MOS with Anti-ghosting Control Function

2021/01

Version: 0.2

Description

RT5929 is an 8-channel N-MOS for common cathode high refresh rate LED display application. Built-in the 8-bit shift register, RT5929 makes the data transfer by serial connection without decoding component on board to simplify the PCB layout.

By giving a very simple control model to let controller determined the turn-on, pre-charge, and row blank timing, the RT5929 can effectively to eliminate the LED ghosting phenomena, to remove LED cascading/cross bright line caused by a LED short or LED open, and also to avoid the over reverse voltage to damage LEDs in order to raise the display performance.

Features

- 8-channel NMOS for common cathode LED display application
- Built-in anti-ghosting function for dynamic display
- Built-in circuit to eliminate the LED cascading and cross bright line caused by LED defected (Timing adjustment with controller)
- Serial Data connection transfer for easy and simplified PCB layout
- Wipe off 138 decoder
- Low standby current(IDD_off):43.6uA (typ.)
- Extra low $R_{DS(on)}$

  $R_{DS(ON)}$, V_{gs}@5.0V,I_{ds}@1.0A 100mΩ (typ.)

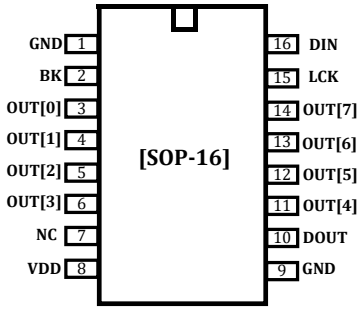
Application

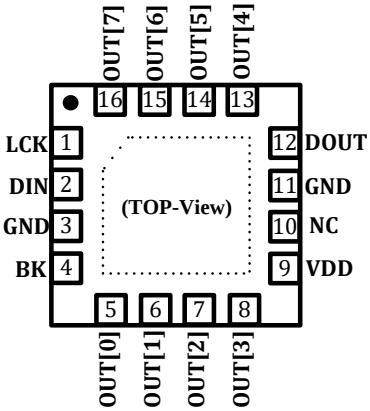
Indoor and outdoor common-cathode LED display

Order Information

No.	Part No.	Package
1	RT5929SP	SOP16-150 mil-1.27 mm
2	RT5929QN	QFN16-4mm*4mm

Pin Assignment



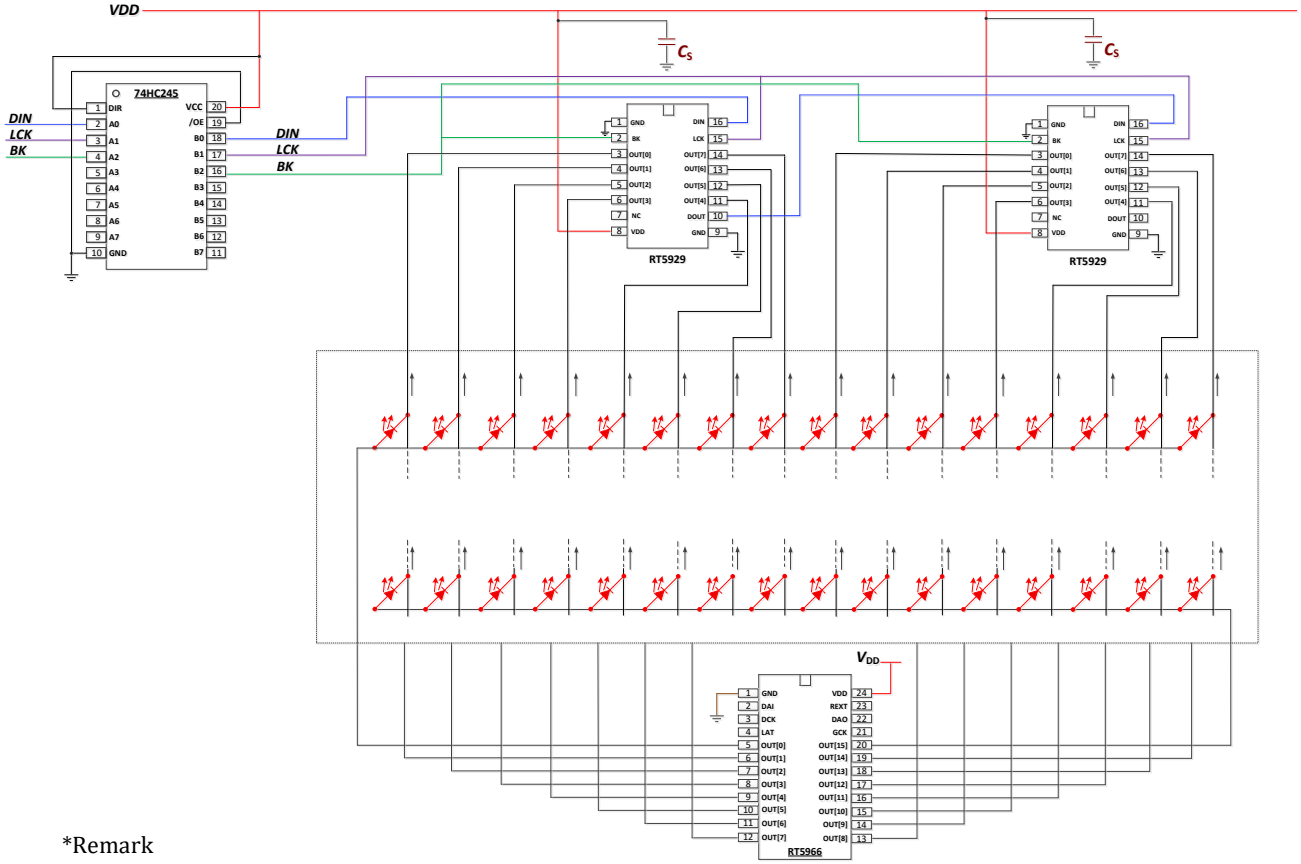


Recommend Application Circuit

To have the best performance of fine pitch dynamic LED display, RT5929 provides the pre-charge circuit to eliminate the ghosting from LED row. However, there is also a slight LED ghosting from the LED column which needs to use a constant current LED driver IC (e.g. RT5966) with discharging circuit to achieve the non-ghosting display performance.

By controlling the output turn-off time and row blank timing, the RT5988 can effectively avoid the over reverse voltage to damage LEDs and eliminate LED cascading and cross bright line caused by a LED short and open.

RT5929 is an integrated 8 outputs power MOS. To avoid the overheating issue, the IC power dissipation and the thermal design has to be put in consideration of design.

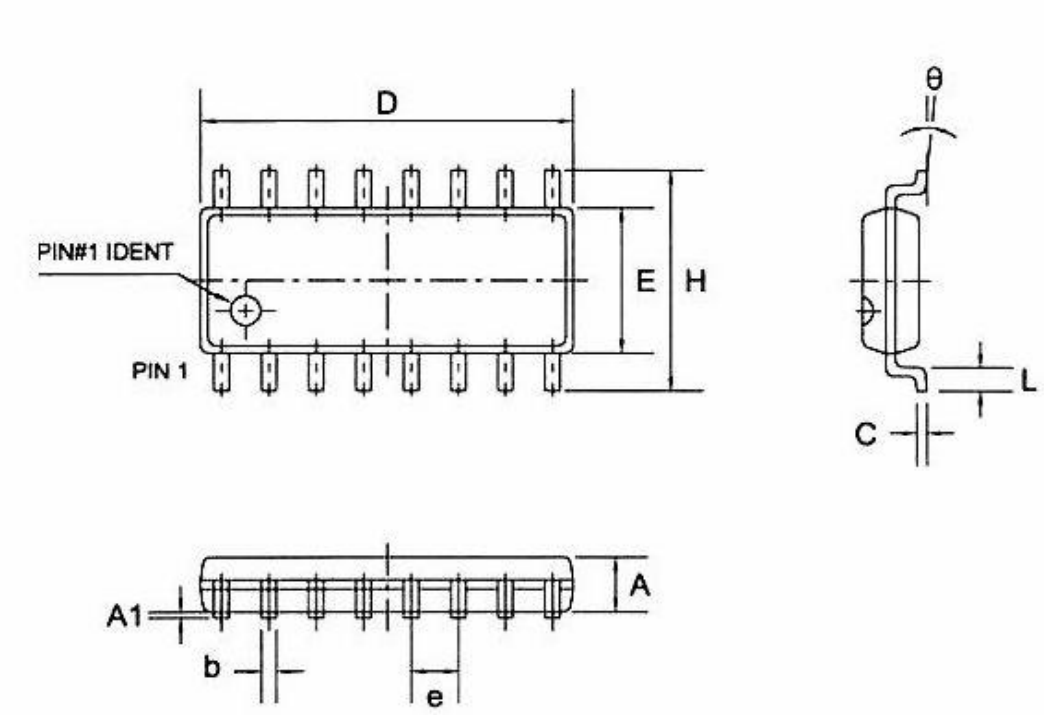


*Remark
Cs is the by-pass capacitor of RT5929, which is necessary to be added on the board for the stability of chip operation. The suggested value of Cs is 1uF.

【Typical 16-scan application circuit】

Package Outline

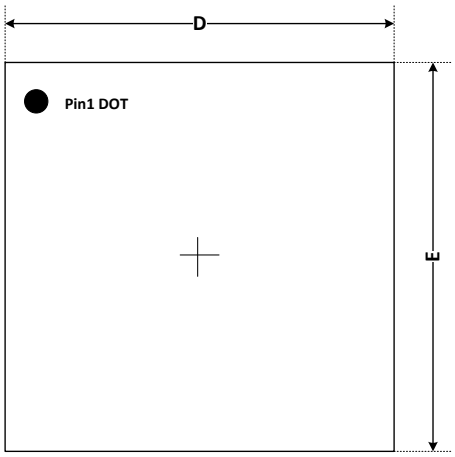
SOP16 Dimension (150mil, 1.27mm)



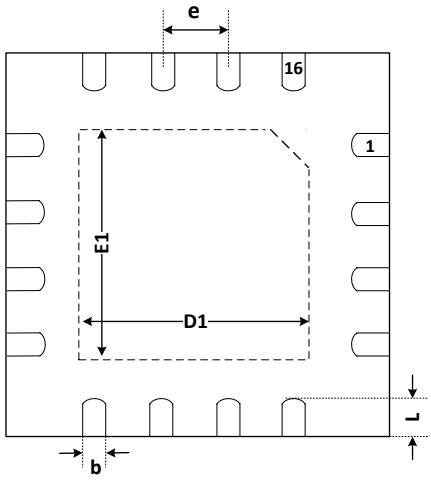
Symbol	Millimeter (mm)	
	Min.	Max.
A	1.30	1.75
A1	0.10	0.25
b	0.30	0.55
C	0.15	0.35
D	9.70	10.3
E	3.75	4.15
H	5.80	6.20
e	1.27 (BSC)	
L	0.40	1.25
θ°	0	8

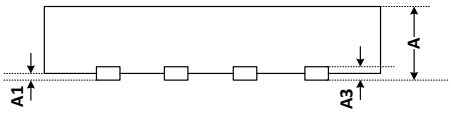
QFN16 4x4mm Dimension

TOP VIEW



BOTTOM VIEW





Symbol	Millimeters (mm)		
	Min.	Nom.	Max.
A	0.70	0.75	0.80
A1	0.00	----	0.05
A3	0.203 Ref.		
b	0.24	0.29	0.34
D	3.90	4.00	4.10
D1	2.40	2.50	2.60
E	3.90	4.00	4.10
E1	2.40	2.50	2.60
e	0.65 BSC		
L	0.40	0.48	0.55

Note

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