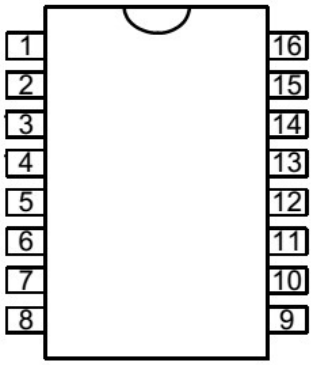
D7258 8 channel LED large screen scanning blanking control circuit

D7258 is specially designed for LED large screen scanning screen a 8-channel blanking control circuit, its internal integration with 138 decoder, constant charge absorbing circuit, can eliminate the phenomenon of ghosting, greatly improve the refresh rate, at the same time also can eliminate because LED the caterpillar phenomena caused by leakage, short circuit. Built-in the short circuit protection, over current protection circuit, greatly improving the product's adaptation. Single chip can be used as 8S application, by cascading 2 chip EN end can be used as 16S application. D7258 using SOP-16 package to improve the compatibility of the product.

- Built-in 138 decoder
- Eliminate the phenomenon of ghosting
- Single 8-channel output can be used as 8S application
- By cascading 2 chip EN end can be used as 16S application
- Greatly improve the refresh rate
- Eliminate the phenomenon of LED leakage and short-circuit, caterpillar
- Built in short circuit protection, over current protection circuit
- D7258 using SOP - 16 package

Package: SOP-16



Note: Note: Pin1 and pin9 are VDD, layout need to be connected

PIN	definition
1	VDD
2	C
3	OUT1
4	OUT2
5	OUT3
6	OUT4
7	ENH
8	GND
9	VDD
10	ENL
11	OUT5
12	OUT6
13	OUT7
14	OUT8
15	A
16	B

Absolute maximum ratings (T_A=25°C)

symbol	parameter		value	unit
VDD	Supply voltage		6.5	V
$V_{A,\ B,\ C,\ ENH,,\ ENL}$	Input voltage		6.5	V
P_D	maximum power dissipation	SOP-16	1	W
T_{STG}	Storage temperature		-55 to 150	°C
T_{OPR}	Operating Ambient Temperature		-30 to 85	°C

Thermal Resistence

Symbol	Parameter	Max value	unit
$R_{\theta JA}$	PN junction to ambient	125	℃/W

truth table

input section					output unit							
ENH	ENL	C	B	A	OUT1	OUT2	OUT3	OUT4	OUT5	OUT6	OUT7	OUT8
H	L	L	L	L	H	L	L	L	L	L	L	L
		L	L	H	L	H	L	L	L	L	L	L
		L	H	L	L	L	H	L	L	L	L	L
		L	H	H	L	L	L	H	L	L	L	L
		H	L	L	L	L	L	L	H	L	L	L
		H	L	H	L	L	L	L	L	H	L	L
		H	H	L	L	L	L	L	L	L	H	L
		H	H	H	L	L	L	L	L	L	L	H
H	H	×	×	×	L	L	L	L	L	L	L	L
L	L	×	×	×	L	L	L	L	L	L	L	L

Note:1) ENH, ENL, A, B, C is the input pins, they prevent float, need to set high or low potential.

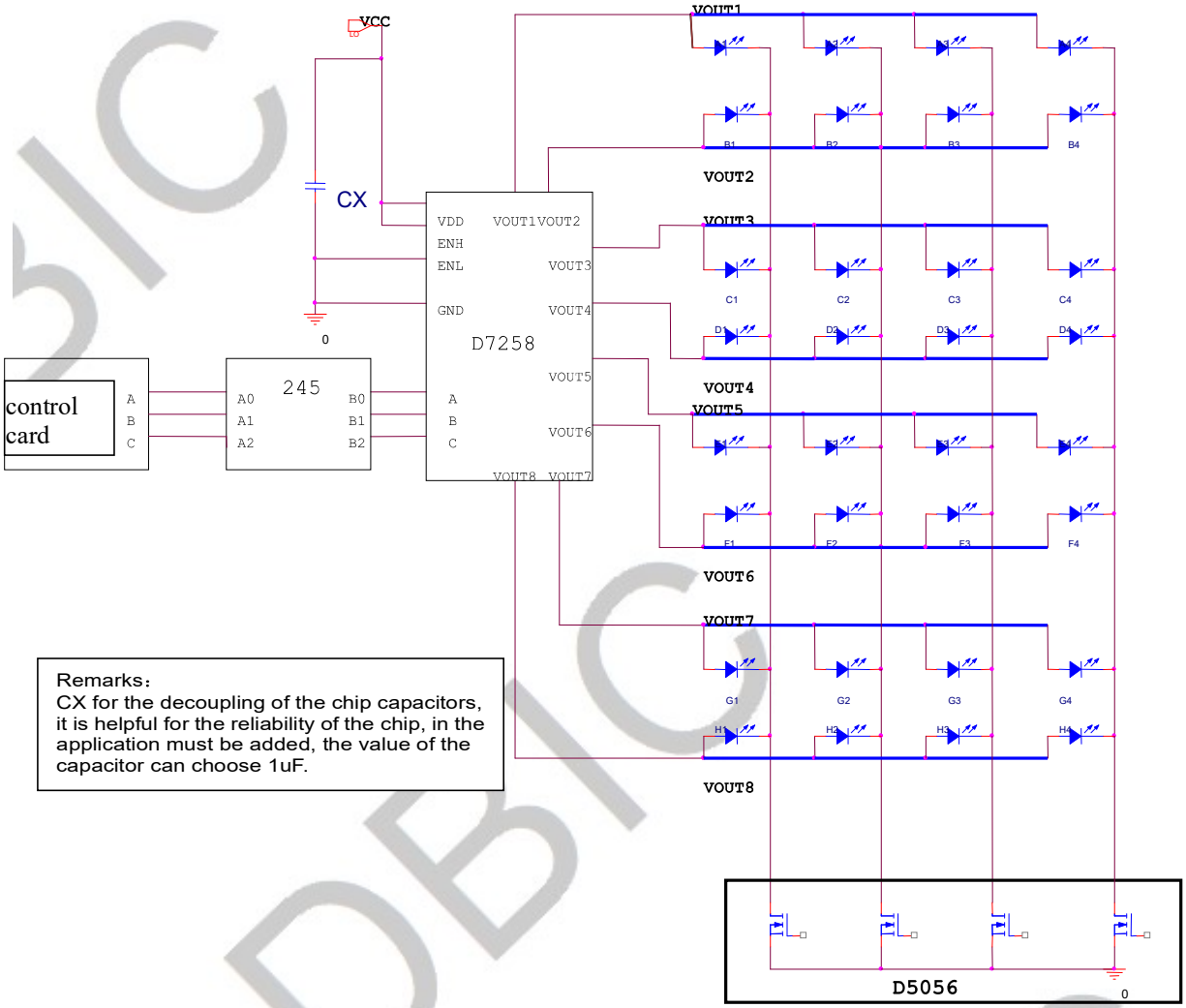
2) For input pins, the H represents a high level, and L represents a low level

3) For the output pins, the H represents the turn-on, and the L represents the shutdown

Electrical Characteristics(Tj=25°C, In the absence of other specific instructions)

Symbol	parameter	Test condition	Min	Typ	Max	Unit
IDD	Suppy current	VDD=5V		1		mA
RDS	Swtich on Resistence	VDD=5V，Io=1A		110		mΩ
		VDD=4V，Io=1A		120		mΩ
Io	Max operating current	VDD=5V			3	A

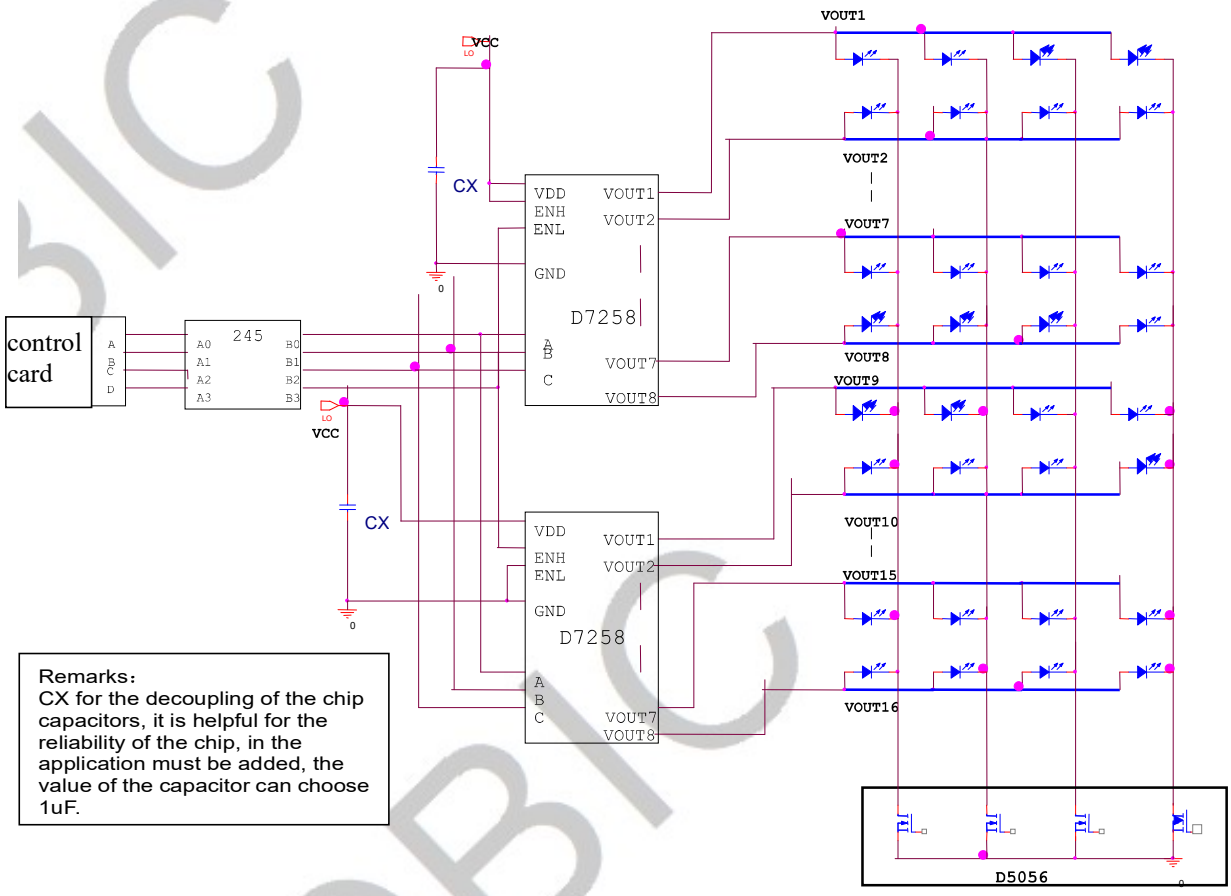
Typical application1



8S Typical application diagram

Note: in the scanning process, if the D7258 has no output pins must be suspended.

Typical application2



16S Typical application diagram

Note: in the scanning process, if the D7258 has no output pins must be suspended.

Application note：

1. Package power dissipation P_D

As the temperature rises,the ratio of Pd is as below

Package	Ta<+25 °C	Ta<+70 °C	Ta<+85 °C
SOP-16	1000mW	640mW	520mW

(1) The thermal resistance is calculated by JESD51-5.

2. Thermal resistance calculation

1）Taking SO-16 package as an example：

Rth（j-a）= Rth（j-c）+ Rth（c-a）=125 ℃/W （Tj=25℃）

Note: the package thermal resistance Rth (j-a) is composed of two parts, Rth（j-c）for PN junction to case, the Rth（c-a）for case to the thermal resistance of ambient .

$$P_{DMAX}=\frac{Tj-Ta}{Rthj-a}=\frac{150-25}{125}=1W$$

When the Led display is N scan，the total current of the unit pixel is Iled（1R1G1B），can be driven by a number of:

The power dissipation of the is $P_O=2*I^2R_{DS.}$

Power consumption of D7258 output in N scan :D7258 $Po=\frac{8*Iled*Iled*Rds}{N}$

Static power consumption for D7258 Pc=VDD*IDD

So the total power consumption:

$$Pd=Po+Pc=\frac{8*Iled*Iled*Rds}{N}+VDD*IDD\cdots\cdots(1)$$

Example: the input voltage is 5 v, IR = 23 mA, IG = 13 mA, IB = 10 mA. 16S, a line with M units pixels (i.e., Iled = 0.046* M), by the parameter can get Rds typical value of 0.11 Ohms,IDD,typical value of 1mA

So

(1) is simplified to

$$Pd=\frac{8*Iled*Iled*Rds}{16}+VDD*IDD$$

$$=\frac{8*0.046M*0.046M*0.11}{16}+5\times0.001$$

$$=0.000116*M^2+0.005$$

When Ta<25 degrees,Pd<1 .So, M<92

Pd<1.5 , So, M<113

When Ta<70 degrees,Pd<0.64 , So,M<74

Pd<0.96 degrees, So ,M<90

The above is based on the PD to calculate the M, due to the maximum working current to take into account the 3A IC, so the unit LED drive current for the case of M, 46mA should be less than 64. When the unit drive current is 40mA, the M should be less than 70.