CHIPONE
集创北方

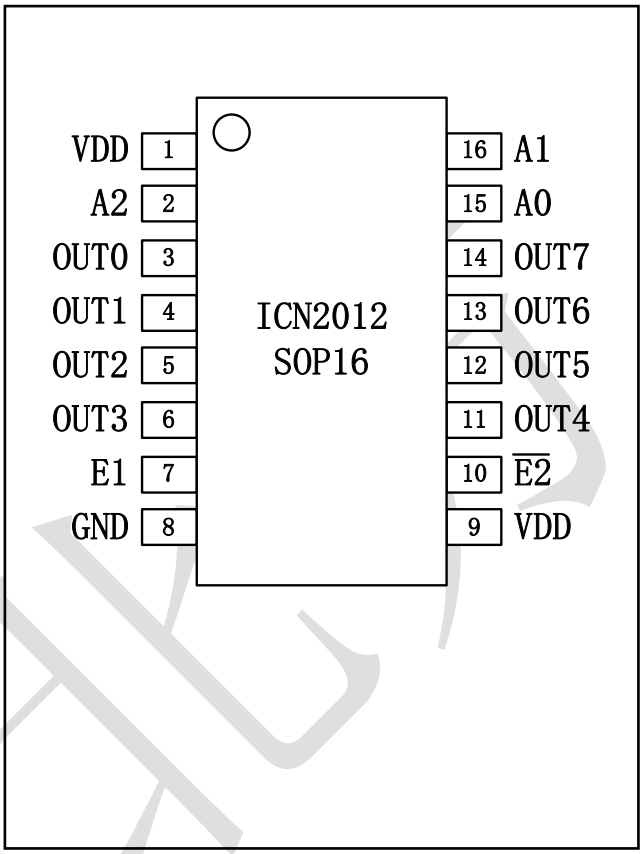
ICN2012

(8-Channel Power Switch for LED Display)

Description

ICN2012 is a 8-channel power switch for LED display.ICN2012 Integrated 74HC138 (3-Line to 8-Line Decoders) and 8 Channel P-Channel Enhancement Mode MOSFET driver.

ICN2012 used for LED display could instead of 1Pcs 74HC138 and 4 Pcs 4953.ICN2012 also integrated Ghosting Reduction, Caterpillar Cancelling and LED Protection circuit.



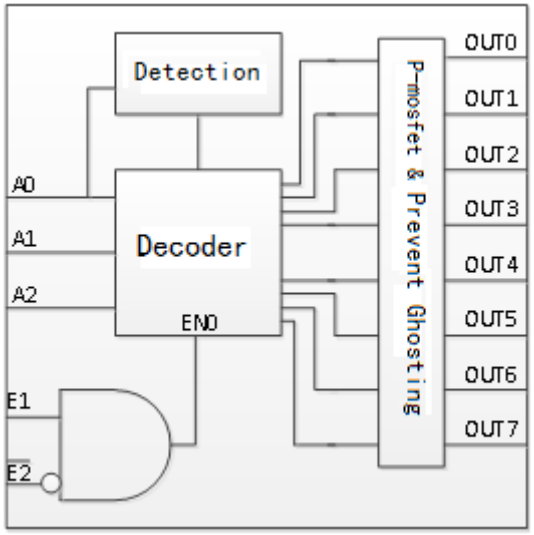
Features

- ✧ Integrated 74HC138 (3-Line to 8-Line Decoders)
- ✧ 8 Channel P-Channel Enhancement Mode MOSFET driver
- ✧ P-MOSTEF $R_{ds(ON)}$ 100 mΩ, Max output current 2.5A
- ✧ Incorporate Tow Enable Inputs to Simplify Cascading
- ✧ Ghosting Reduction
- ✧ Caterpillar Removal for LED Short
- ✧ LED Protection
- ✧ Max Power Dissipation <650mW @ VDD=5V & Ivdd=2.5A

Pin Description

Pin Name	Pin No	Function
OUT0~OUT7	3~6,11~14	Output with P-Channel Enhancement Mode MOSFET
A0~A2	15,16,2	Binary-Select Inputs
E1, $\overline{E2}$	7,10	Enable Inputs
VDD	1,9	Power-Supply Voltage
GND	8	Power Ground

Block Diagram



Truth Table

Input					Output							
E1	$\overline{E2}$	A0	A1	A2	OUT0	OUT1	OUT2	OUT3	OUT4	OUT5	OUT6	OUT7
L	X	X	X	X	Z	Z	Z	Z	Z	Z	Z	Z
X	H	X	X	X	Z	Z	Z	Z	Z	Z	Z	Z
H	L	L	L	L	H	Z	Z	Z	Z	Z	Z	Z
H	L	H	L	L	Z	H	Z	Z	Z	Z	Z	Z
H	L	L	H	L	Z	Z	H	Z	Z	Z	Z	Z
H	L	H	H	L	Z	Z	Z	H	Z	Z	Z	Z
H	L	L	L	H	Z	Z	Z	Z	H	Z	Z	Z
H	L	H	L	H	Z	Z	Z	Z	Z	H	Z	Z
H	L	L	H	H	Z	Z	Z	Z	Z	Z	H	Z
H	L	H	H	H	Z	Z	Z	Z	Z	Z	Z	H

Specifications

Maximum Ratings (T_a =25℃)

Characteristics	Symbol	Rating	Unit
Supply Voltage	V_{DD}	-0.5 ～ +7.0	V
Input Voltage	VIN	-0.5 ～ VDD+0.5	V
Power Dissipation	PD	<500	mW
Operating Temperature	Topt	-40 ～ +80	℃
Storage Temperature	Tstg	-50 ～ +150	℃

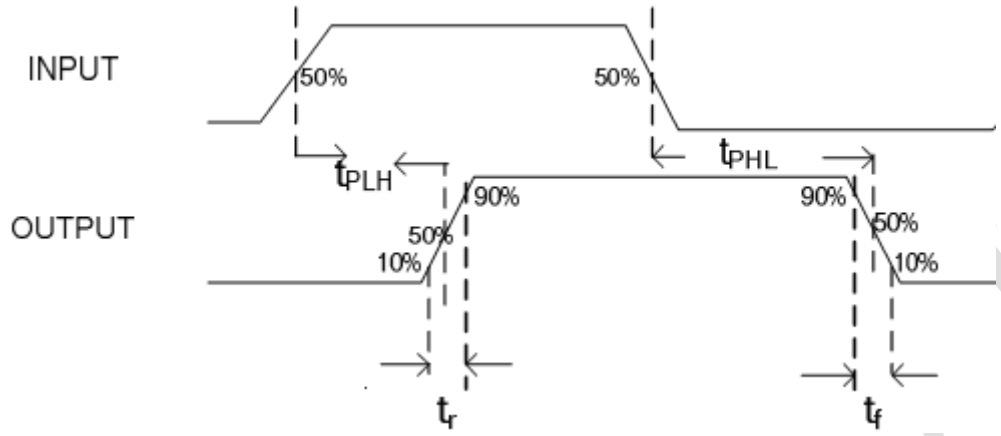
DC Items (Unless otherwise specified, T_a =-40℃~85℃)

Characteristics	Symbol	Min	Typ	Max	Unit	Test Conditions
Power Supply Voltage	V_{DD}	3.0	5.0	5.5	V	-
High Level Logic Input Voltage	V_{IH}	3.0			V	VDD=5.0V
High Level Logic Input Voltage	V_{IL}			2.0	V	VDD=5.0V
Quiescent Device Current	I_{DD}		3		mA	VDD=5.0V
Drain Current	I_{OH}			2.5	A	VDD=5.0V
Drain-Source On-State Resistance	$R_{DS(on)}$		100		mΩ	VDD=5.0V

Switching Characteristics (Unless otherwise specified, T_a =25℃，V_{DD} =5.0V)

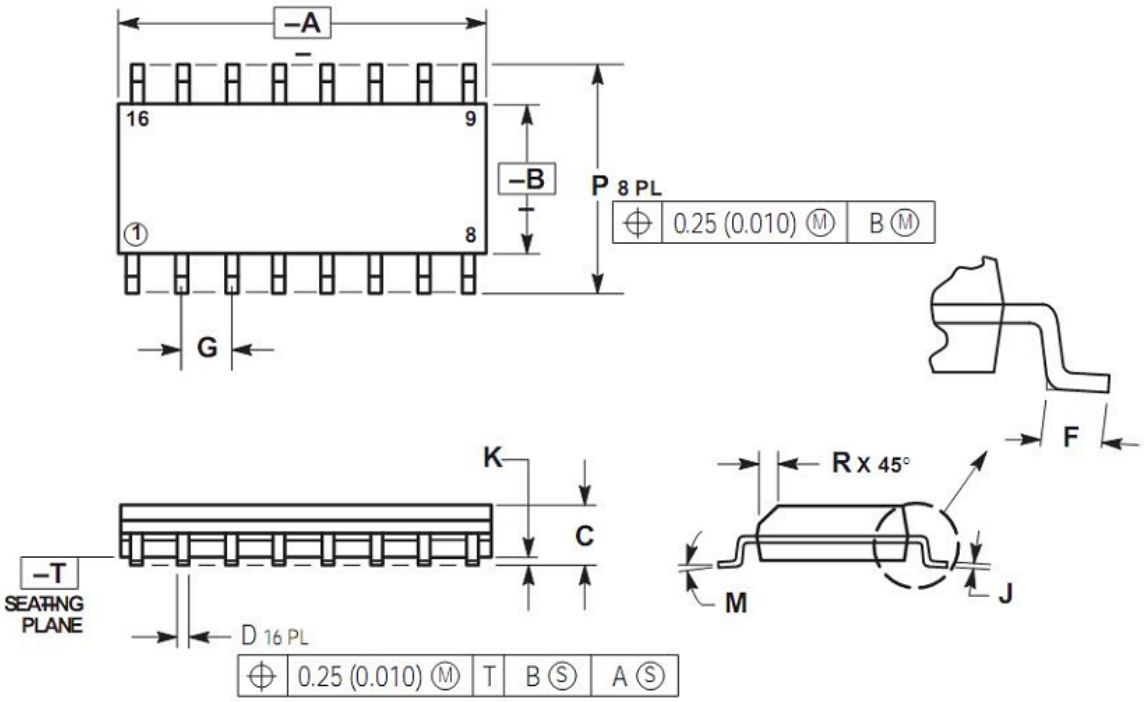
Characteristics	Symbol	Min	Typ	Max	Unit	Test conditions
Propagation	t_{PLH}		50		nS	VDD=5.0V
Delay Time	t_{PHL}		300		nS	CL=2nF
Output rise Time	tr		50		nS	
Output fall Time	tf		200		nS	

Timing Waveforms



Package Outline

SOP16



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.80	10.00	0.386	0.393
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.224
R	0.25	0.50	0.010	0.019

Product Ordering Information

Product number	Package （Pb-Free）	Package （mm）	Weight （mg）
ICN2012	SOP16	9.9*3.9*1.4	159.5

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