ST1681

EL BACKLIGHT DRIVER

Feature

1.Bi- CMOS process, high performance and stability
2.Low power consumption
3. Two input pin, one is level hold and the other one is level hold with dim.
4.Voltage switching frequency adjustable.
5. Drive capability up to 14nF capacitance load.
6. Low stand by current.
7.Use small size coil.

Application

1. Mobile **3.** MP3

2. Wireless

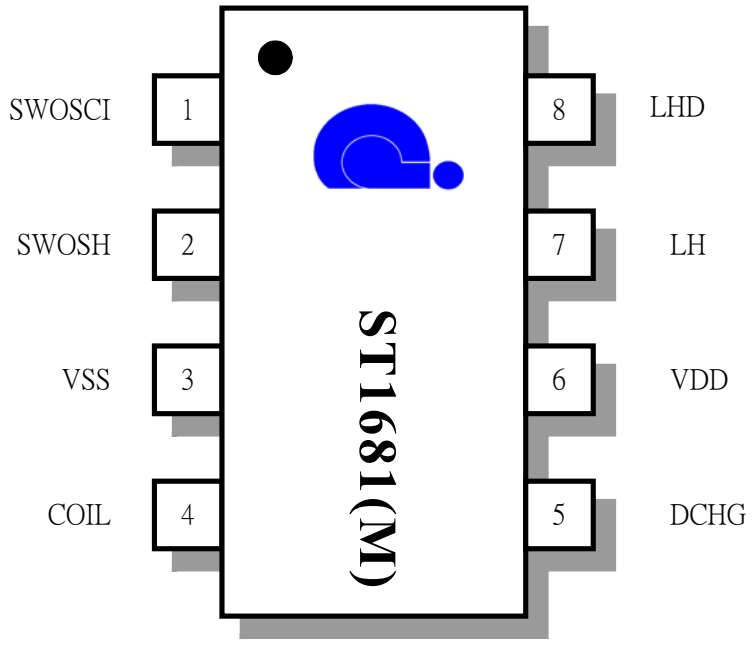
Description

ST1681 is a low noise EL drive IC, only need one coil and diode. The switching frequency only need one external resister to adjust the frequency and duty rate. It support 2 input pin, one is level hold and the other one is level hold with dim function.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply voltage	VDD	-0.3	6	V
Input/Output voltage	Vi, Vo	VSS-0.3	VDD+0.3	V
Storage temperature	Tstg	-40	125	◦ C
Operating temperature	Top	0	70	◦ C

Pin Assignment



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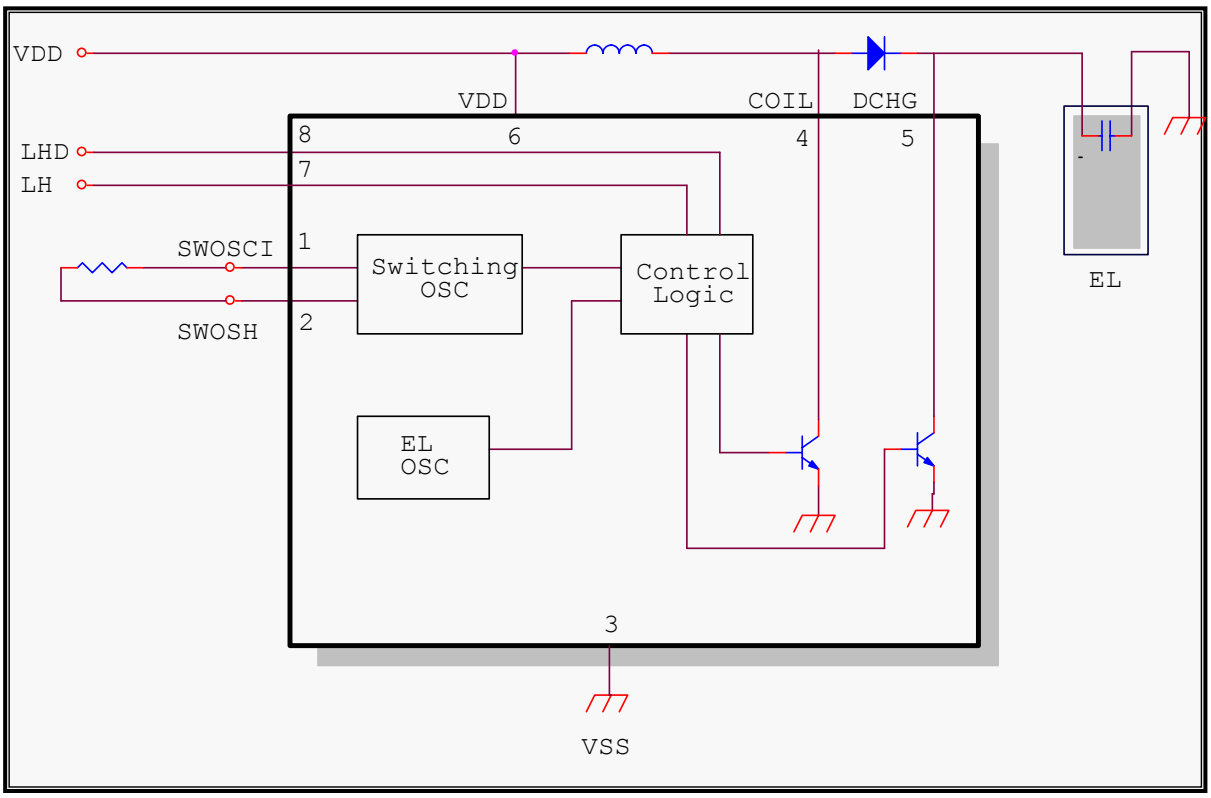
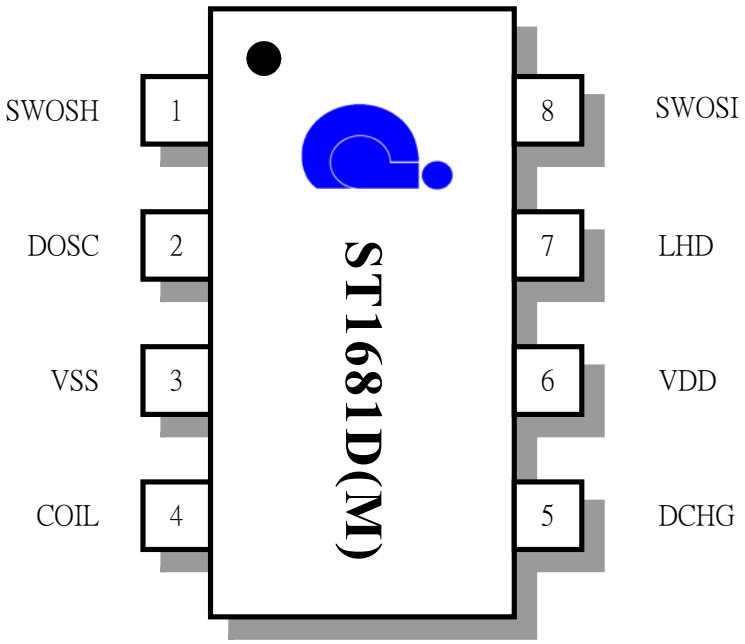
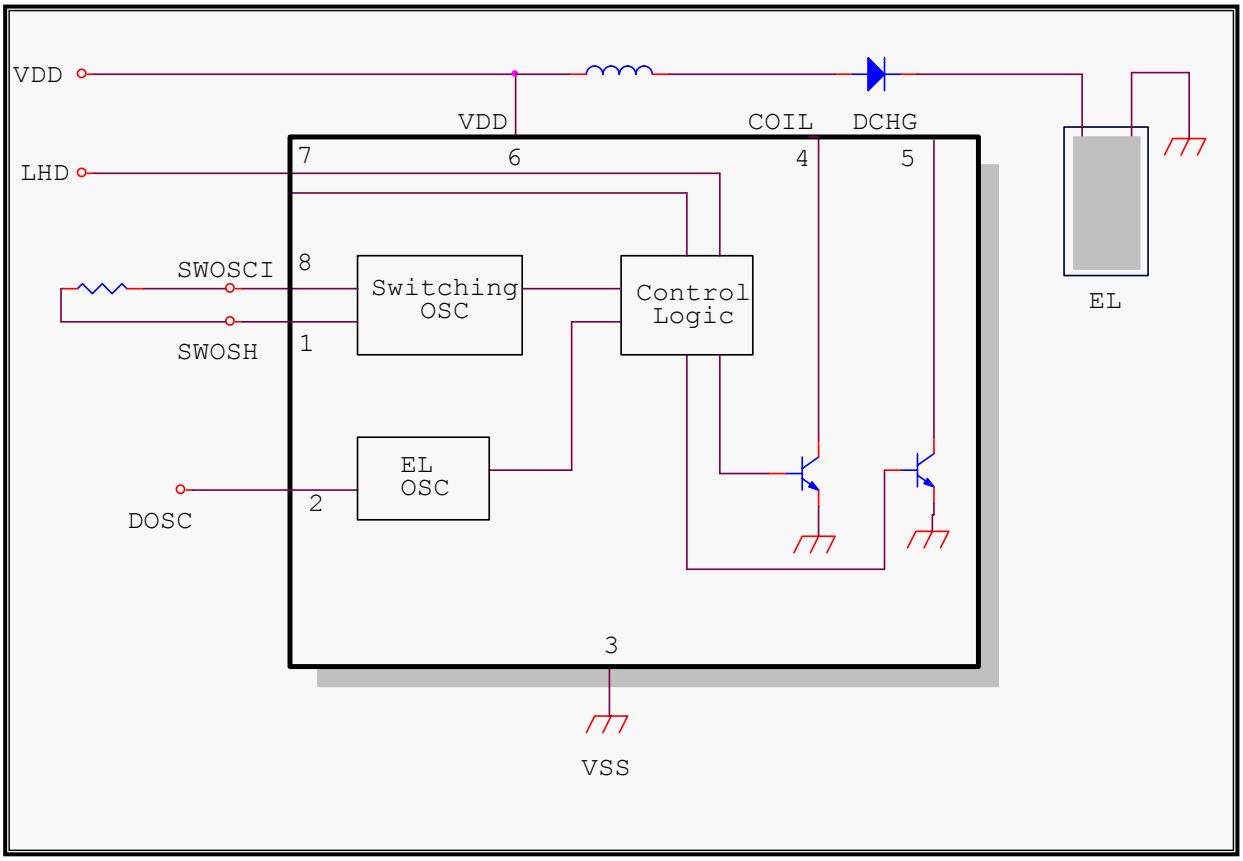
Block Diagram



Pin Assignment



Block Diagram



Pin Description(ST1681&1681M)

Pad No.	Pad Name	I/O	Description
1	SWOSI	I	Switching frequency oscillator input pin
2	SWOSH	I	Switching frequency oscillator adjust pin
3	VSS	Power	Negative power supply
4	COIL	O	Coil connect pin
5	DCHG	O	Discharge pin
6	VDD	Power	Positive power supply
7	LH	I	Level hold input pin
8	LHD	I	Level hold with dim function input pin

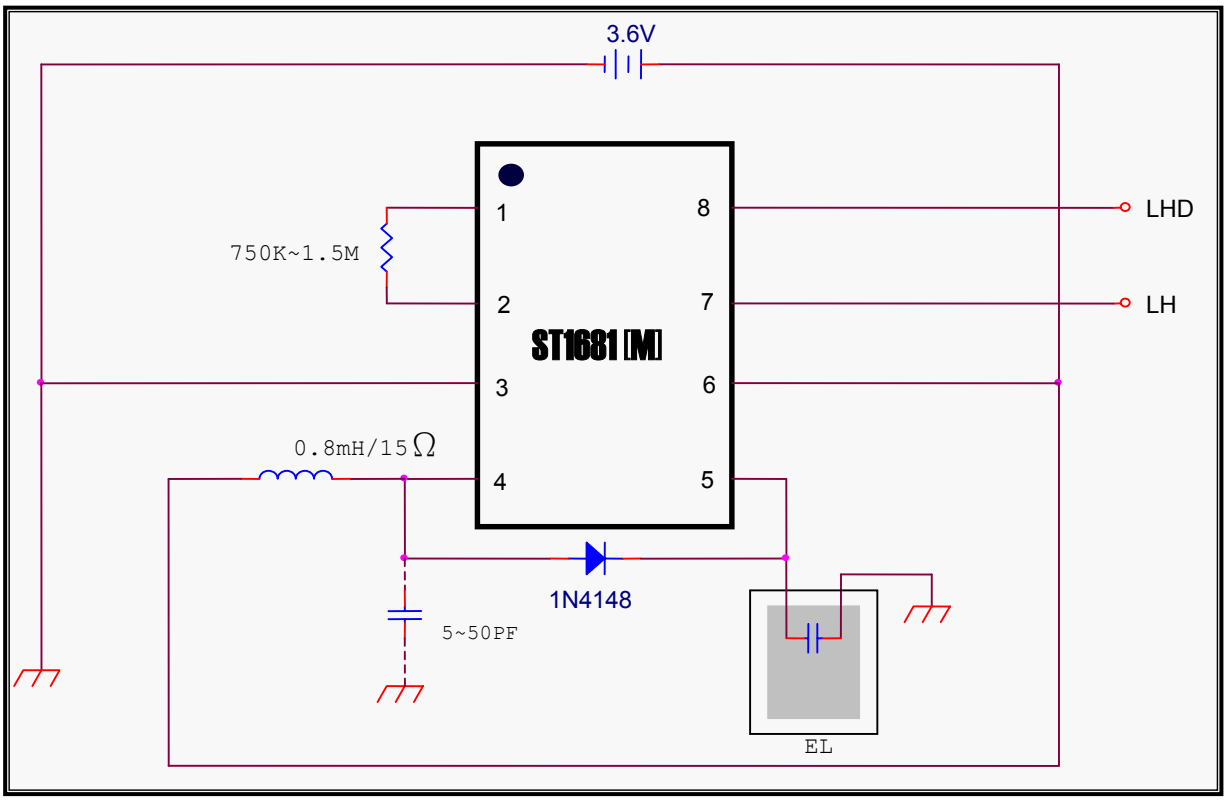
Pin Description(ST1681&1681M)

Pad No.	Pad Name	I/O	Description
1	SWOSI	I	Switching frequency oscillator input pin
2	DOSC	I	Voltage pump duration adjust pin
3	VSS	Power	Negative power supply
4	COIL	O	Coil connect pin
5	DCHG	O	Discharge pin
6	VDD	Power	Positive power supply
7	LH	I	Level hold input pin
8	LHD	I	Level hold with dim function input pin

DC Electric Characteristics (VDD=3V, T=25°C, L=0.8mH/15Ω, EL=8nF)

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Operating voltage	VDD		2.2	3.6	4.5	V
Stand-by current	Istb	VDD=3.6V		0.3	1	uA
Supply current	I_{DD}+I_{COIL}	VDD=3.6V, 910KΩ Oscillator resister		15	20	mA
Coil freq.	Fosc	Build-in,VDD=3.6 V		45		KHz
EL freq.	Fel	Build-in,VDD=3.6 V		320		Hz
TRG input voltage	Vih	VDD=3.6V	2.5			V
TRG input voltage	Vil	VDD=3.6V			0.9	V
EL voltage	Vpp	VDD=3.6V	120	160	180	V

Recommended Application Circuit 1



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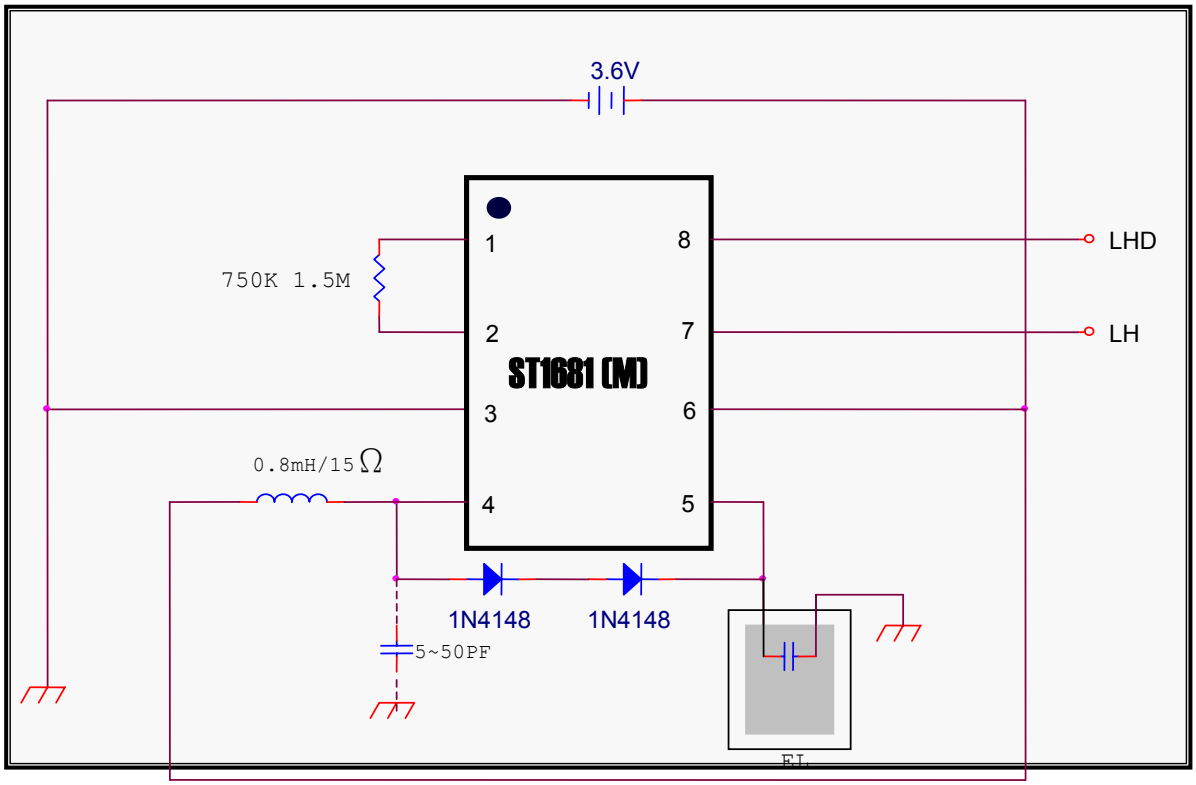
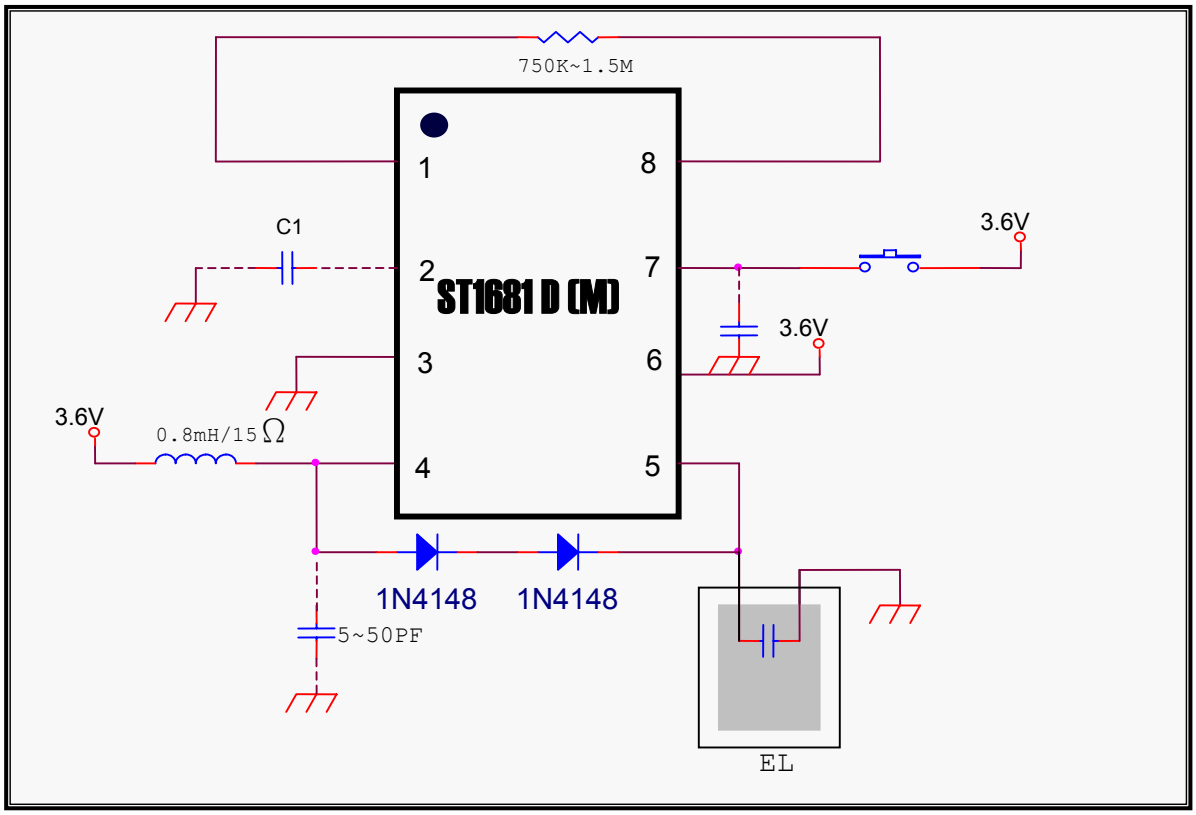
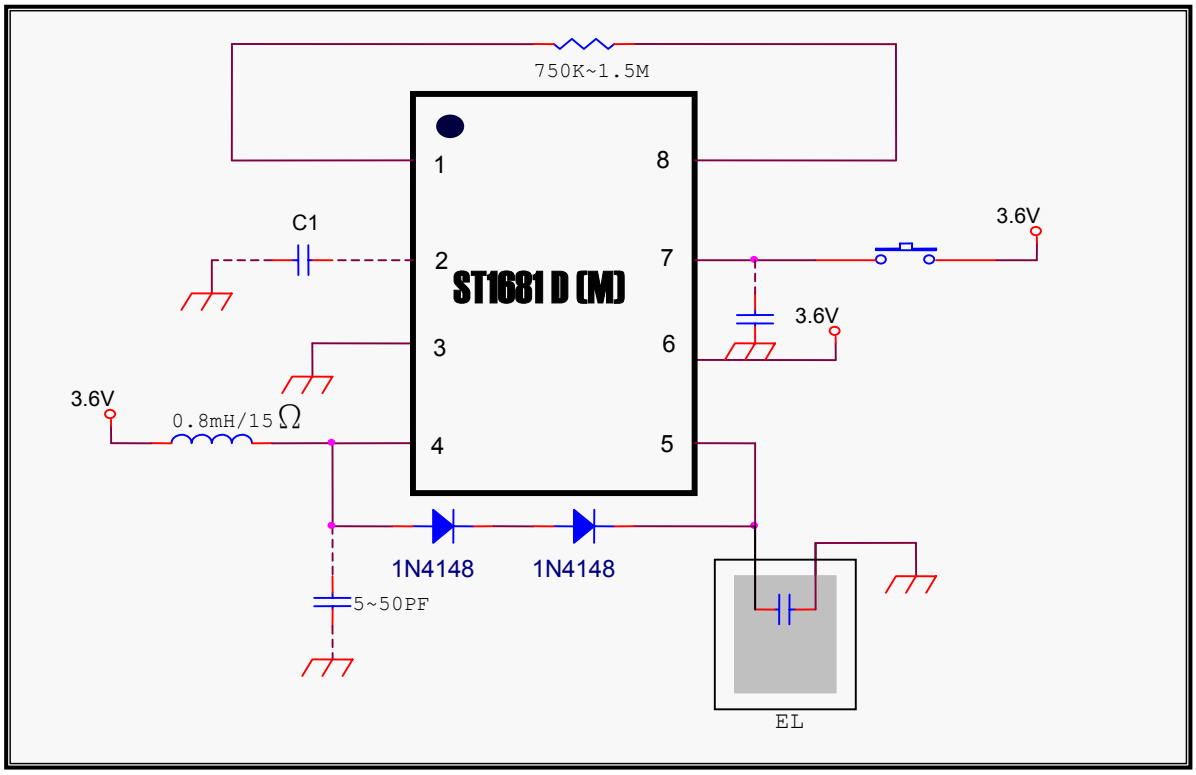
Recommended Application Circuit 2



Recommended Application Circuit3

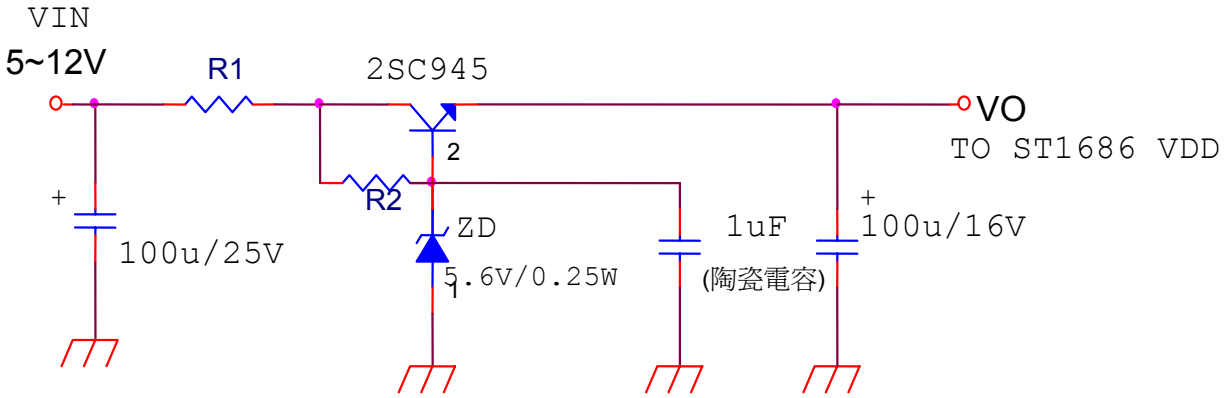


Recommended Application Circuit 4



* If the brightness is not enough , connect C1 to increase the time of voltage pump to make the brightness higher, Recommand value is 1pf~100pf , ST1681D(M) can drive maximum 14nf EL capacitance, pin2—DOSC need to connect 82pf cap.

Apply to master phone of cordless phone to reduce interference application circuit



VIN	5V	6V	7V	8V	9V	10V	11V	12V
R1	5/0.25W	20/0.25W	43/0.5W	57/0.5W	72/1W	86/1W	100/1W	115/1W
R2	100	500	1K	2K	3K	4K	5K	6K

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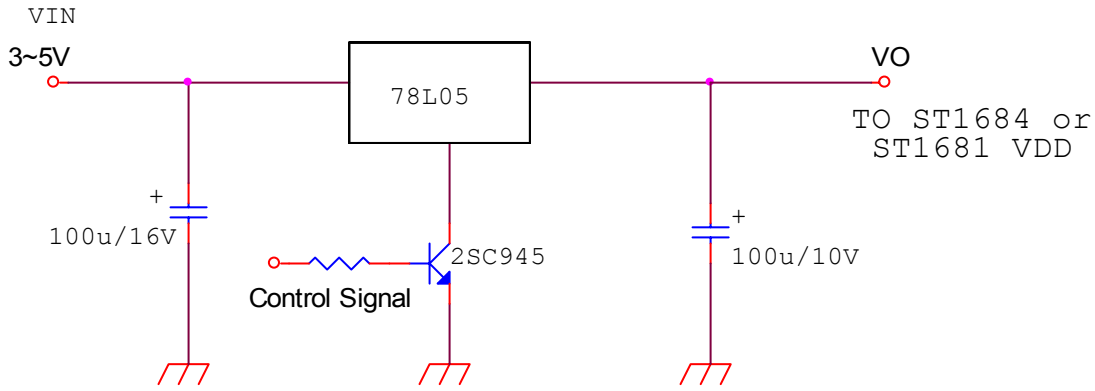
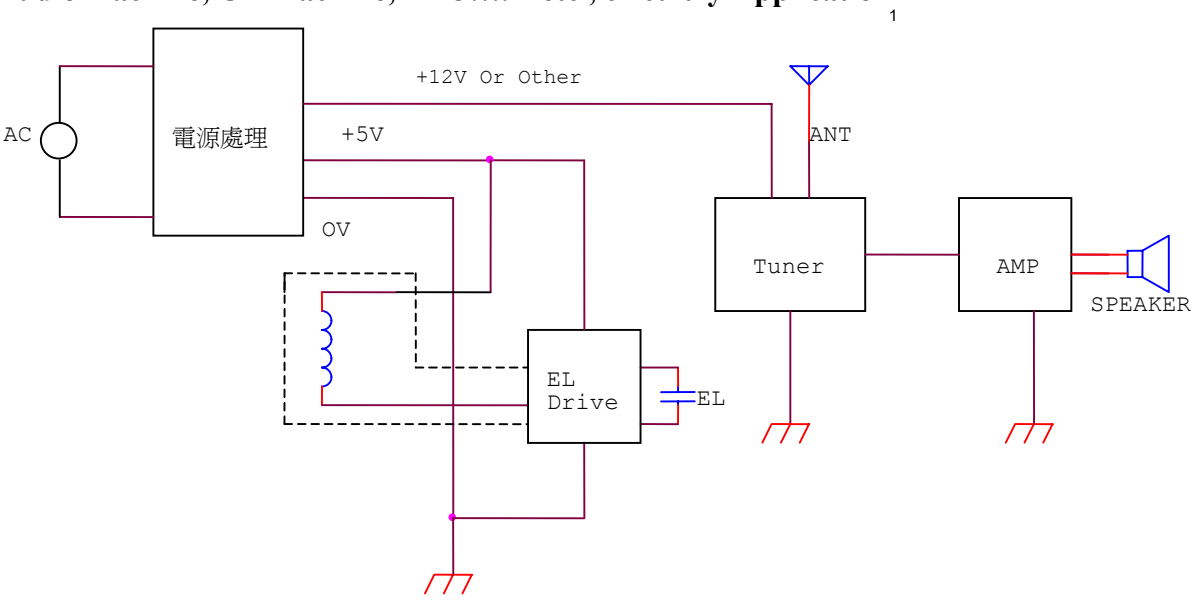
Apply to handset of cordless phone to reduce interference application circuit

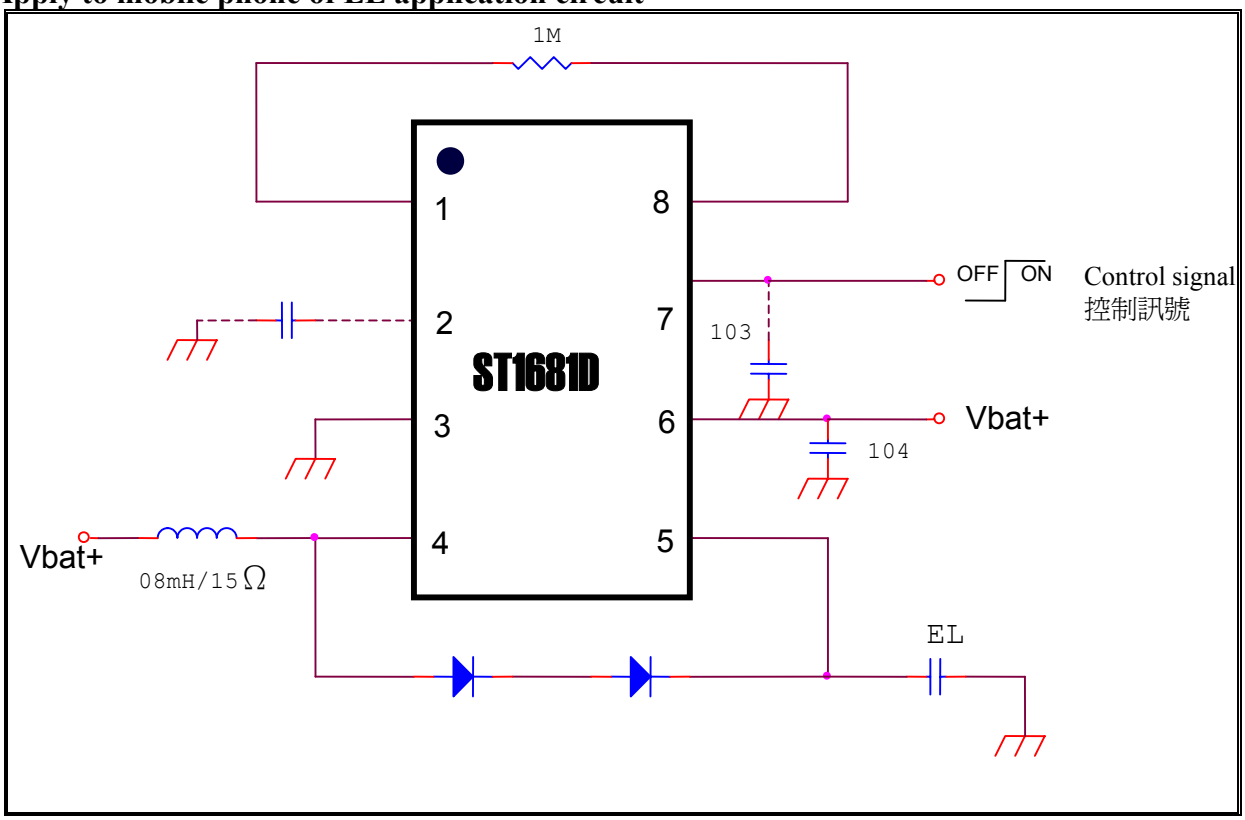


Audio machine, CD machine, MP3…. etc , circuitry Application



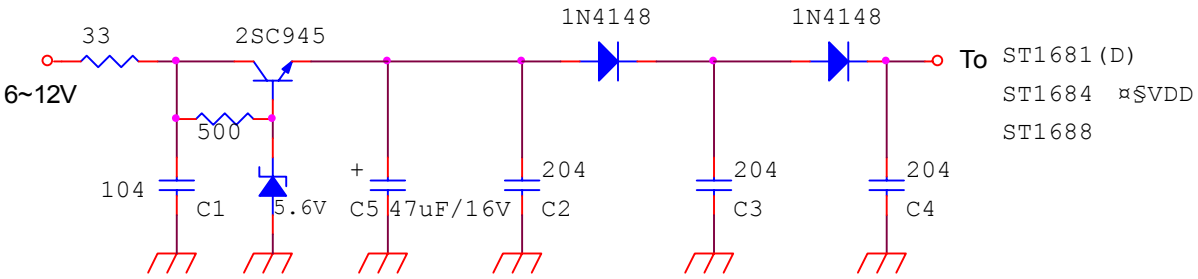
Keep the inductor far away from Tuner, Antenna, and Amplifier, or cover the inductor by metallic shade and ground the shade.

Apply to mobile phone of EL application circuit



***EL must to stay close tight**

Apply to Audio machine to reduce interference application circuit



C1~C4:³³²¡¹q®e

C5: ¹q¸Ñ¹q®e

Order information

Type	Package Type
ST1681	SOP8
ST1681M	MSOP8
ST1681D	SOP8
ST1681DM	MSOP8

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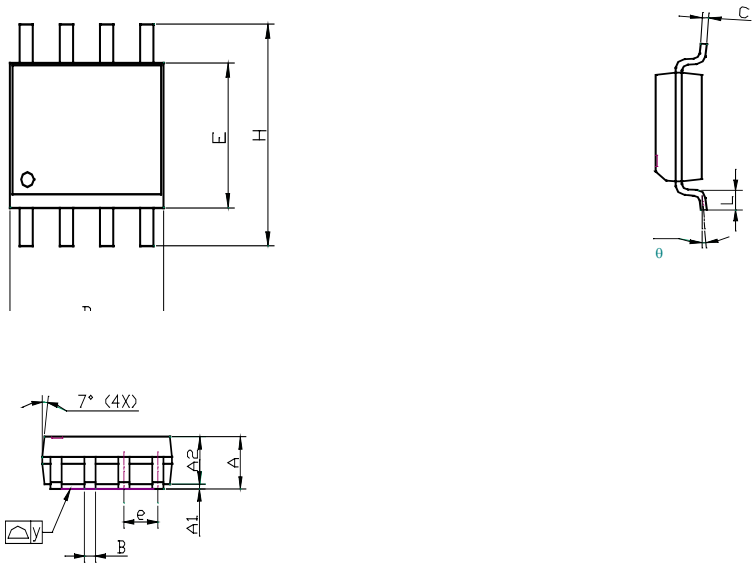
Package Outline Drawing (SOP-8)



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Min	Nom	Max	Min	Nom	Max
A	1.40	---	1.57	0.055	---	0.062
A1	0.00	---	0.10	0.000	---	0.004
A2	1.40	---	1.47	0.055	---	0.058
B	0.33	---	0.51	0.013	---	0.020
C	0.10	0.15	0.20	0.004	0.006	0.008
D	4.80	---	4.98	0.189	---	0.196
E	3.80	---	4.00	0.150	---	0.157
e	---	1.27	---	---	0.050	---
H	5.85	---	6.20	0.228	---	0.244
L	0.41	---	1.02	0.016	---	0.040
y	---	---	0.10	---	---	0.004
θ	0 X	---	6 X	0 X	---	6 X

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