

YKW-06 - Step-down Switching Controller

GENERAL DESCRIPTION

The YKW-06 is a step-down DC-DC converter. It could drivers an external power transistor using the PWM control.

The IC incorporates the soft-start function with a proper capacitor connected between SS and ground pins. The soft-start function could ensure the PWM output pulse width starts from 0% duty cycle. The output voltage is controlled by the external sense resistor and FB pin. The output voltage are also adjustable by the external variable resistor connected through SS and BRT pins. Through changing this external resistor value, could tune the output current and voltage. It also has the over voltage detection function with debounce-timer check to prevent from the over voltage damage.

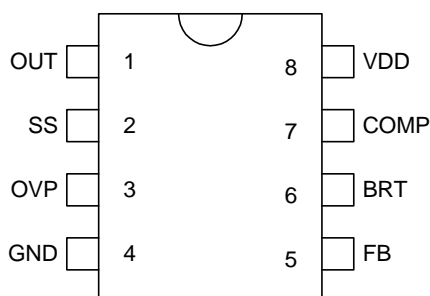
FEATURES

- Operation voltage range : 2.4V ~ 6.0V
- Adjustable output voltage
- Built-in oscillator
- Soft start function
- Over voltage protection with the debounce-timer check.
- 8-pin DIP/MSOP/SOP packages

APPLICATIONS

- White LED lighting controllers
- Step-down DC-DC converters
- Portable equipment

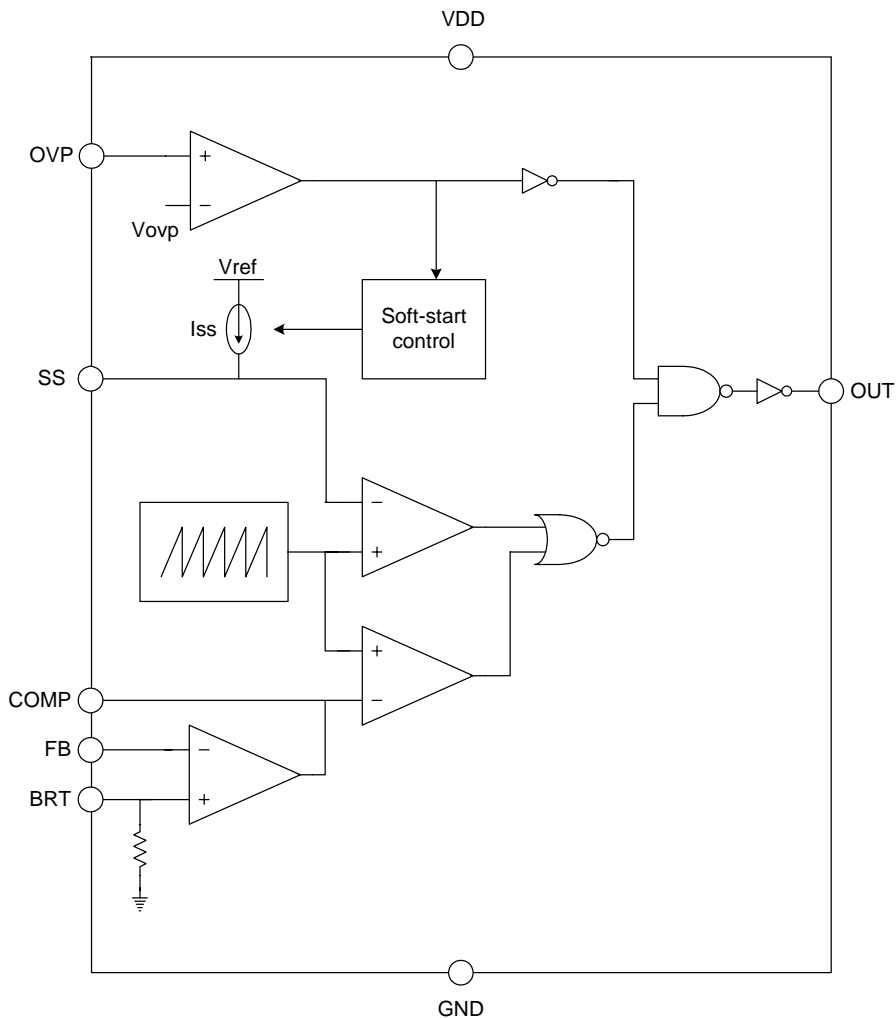
PIN CONFIGURATION



PIN DESCRIPTION

Pin No.	Pin Name	I/O	Description
1	OUT	O	PWM output (High : PWM on period)
2	SS	B	Soft-start timing Setting with external capacitor
3	OVP	I	Over voltage protection and Disable function
4	GND	P	Ground
5	FB	I	Output voltage feedback sense, error amplifier(-) input
6	BRT	I	Output current setting , error amplifier(+) input
7	COMP	O	Output voltage, error amplifier(o) output
8	VDD	P	Power supply

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Parameter	Min.	Max.	Units
DC Supply Voltage (VDD)	-0.3	6.0	V
Input and output voltage	-0.3	VDD+0.3	V

***Note: Stresses above those listed may cause permanent damage to the devices**



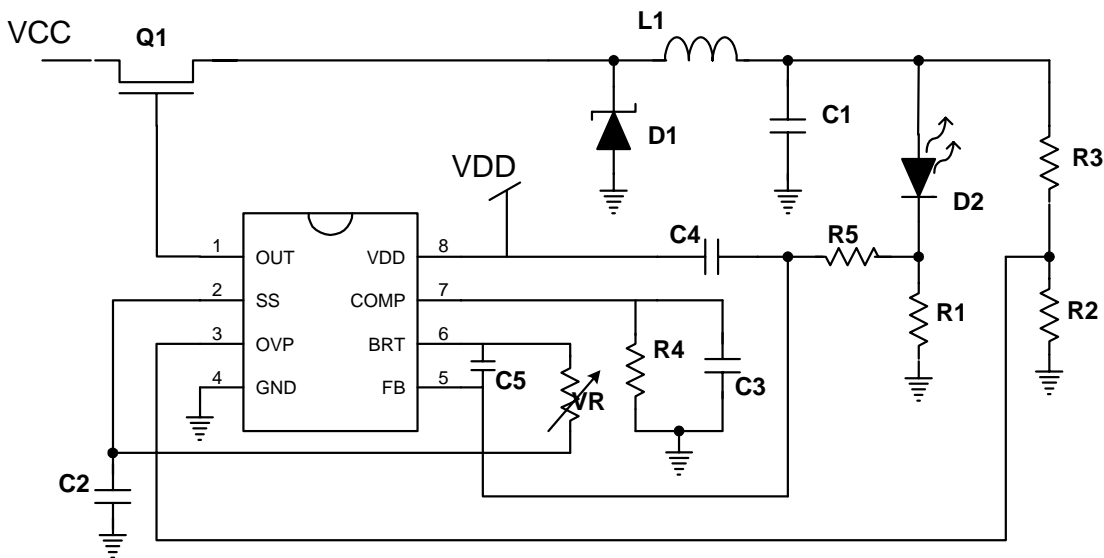
RECOMMENDED OPERATING CONDITIONS

Parameter	Min.	Typ.	Max.	Unit
Supply Voltage (VDD)	2.4	5	6	V
Storage temperature	-25	---	125	°C
Ambient temperature with power applied	0	---	70	°C

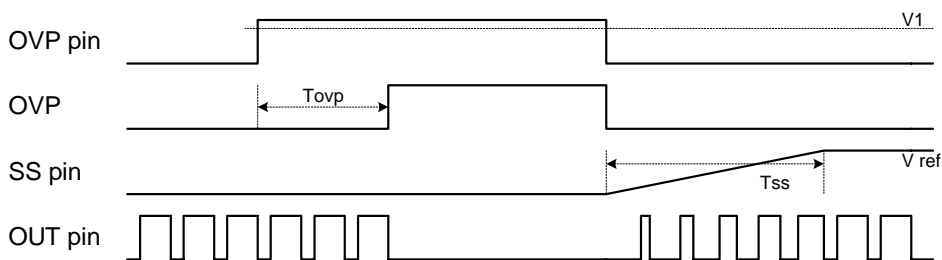
ELECTRICAL CHARACTERISTICS (AT Ta=25 , VDD=5V)

Parameter	Condition	Min.	Typ.	Max.	Unit
VDD SUPPLY CURRENT					
IDD normal supply current	EN=VDD, output no-load	---	750	---	uA
IDD enable supply current	EN=0V	---	150	---	uA
BUILT-IN OSCILLATOR					
Internal Frequency	f	---	168	---	KHz
REFERENCE VOLTAGE					
Internal reference voltage (Vref)		1.16	1.2	1.24	V
ERROR AMPLIFIER					
DC gain		---	70	---	dB
Gain bandwidth		---	350	---	KHz
Slew rate		---	6	---	V/us
SOFT-START FUNCTION					
Source current (Iss)		---	81	---	uA
Soft-start timing (Tss)	C2=0.01uF	---	110	---	us
OVER VOLTAGE PROTECTION AND DISABLE FUNTION					
Threshold voltage (Vovp)	Vovp > 1.0V, over voltage protection	0.9	1.0	1.1	V
Debounce time (Tovp)	15x(1 / f)	70	88	105	us
OUTPUT DRIVER					
Output source current	Voutb=4.6V	---	5	---	mA
Output sink current	Voutb=0.4V	---	5	---	mA
Rise time	Cload=1000pF	---	600	---	ns
Fall time	Cload=1000pF	---	500	---	ns
OUTPUT DUTY RATIO					
Maximum duty ratio		82	87	92	%

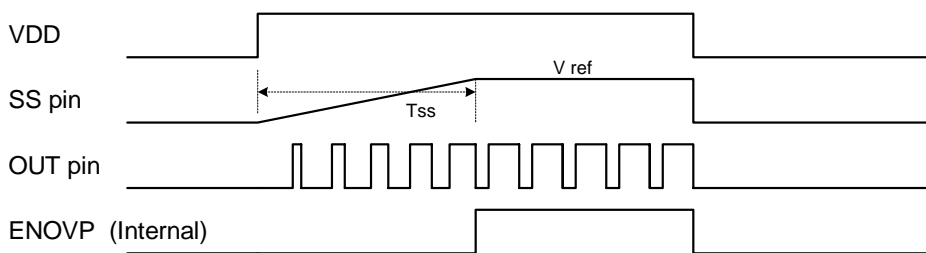
TYPICAL REFERENCE APPLICATION INFORMATION



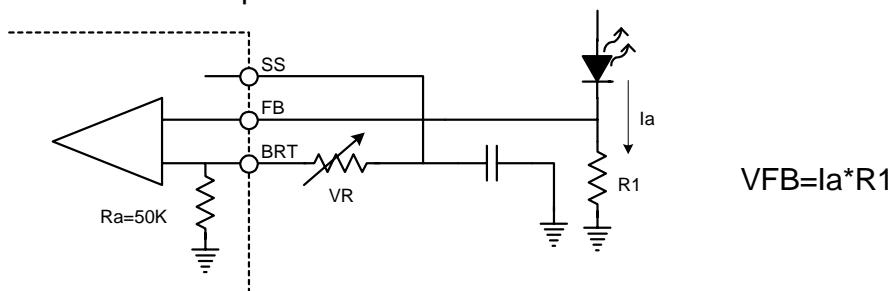
A. Over voltage protection



B. EN pin function

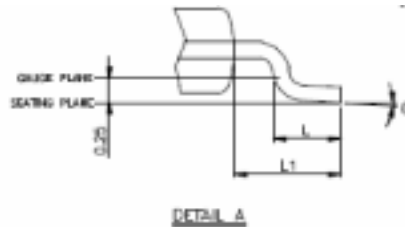
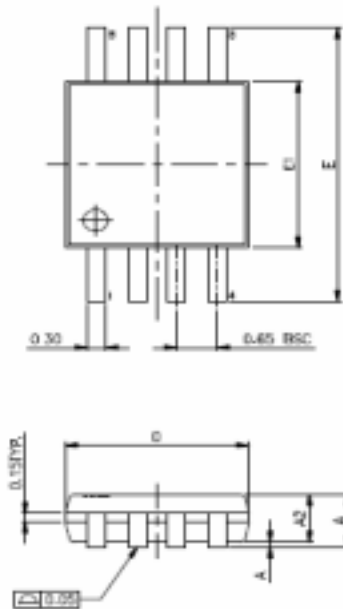


C. SS & BRT & FB pin function



PACKAGE DIMENSION

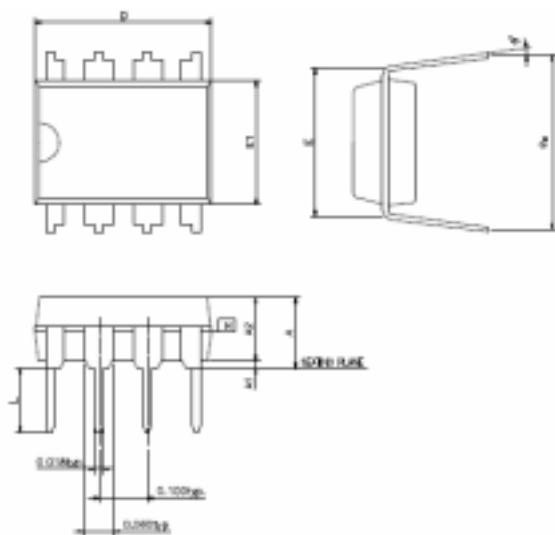
MSOP-8



SYMBOLS	MIN.	NOM.	MAX.
A	—	—	1.10
A1	0.00	—	0.15
A2	0.75	0.85	0.95
D	3.00 BSC		
E	4.90 BSC		
E1	3.00 BSC		
L	0.40	0.60	0.80
L1	0.95 REF		
θ'	0	—	B

UNIT : MM

DIP-8



SYMBOLS	MIN.	NOM.	MAX.
A	—	—	0.210
A1	0.015	—	—
A2	0.125	0.130	0.135
D	0.735	0.755	0.775
E	0.300 BSC		
E1	0.245	0.250	0.255
L	0.115	0.130	0.150
θ ₁	0.335	0.355	0.375
θ'	0	7	15

UNIT : INCH