

Data Sheet

**品 名：POWER SUPPLY SUPERVISOR
WITH PWM CONTROLLER**

奇高料號：CG8010

版 本：Rev 0.30

日 期：October 4, 2007

頁 數：8 頁

發文日期：2007/10/05

CG8010 POWER SUPPLY SUPERVISOR WITH PWM CONTROLLER

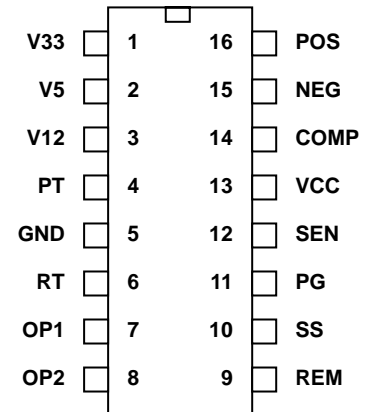


The CG8010 is designed with a pulse-width-modulation control circuit and a complete power supervisor for use in the switched mode power supply .
 It contains various functions, like under voltage protection (UVP), over voltage protection (OVP), power good output (PG) and ON/OFF control (REM).
 UVP(Under voltage protection) function is for +3.3V, +5V, +12V outputs.
 OVP(Over voltage protection) function is for +3.3V, +5V, +12V and PT is for extra protection input.
 PG(Power good signal) is a safe operation signal to inform the external parts.
 REM(Remote on/off) is used to control the SMPS on/off. The REM control signal has the on/off transferred debounce-time.

FEATURE

- 3-channel under voltage protection (UVP)
- 3-channel over voltage protection (OVP)
- 1-channel extra protection (PT)
- 1-channel sense input to control the PG (SEN)
- Remote on/off control function (REM)
- Dual output for push-pull operation (OP1/OP2)
- Soft start capability by external capacitor (SS)
- VCC under voltage lockout
- 16-Pin dual in-line package
- Pb-free Package are available

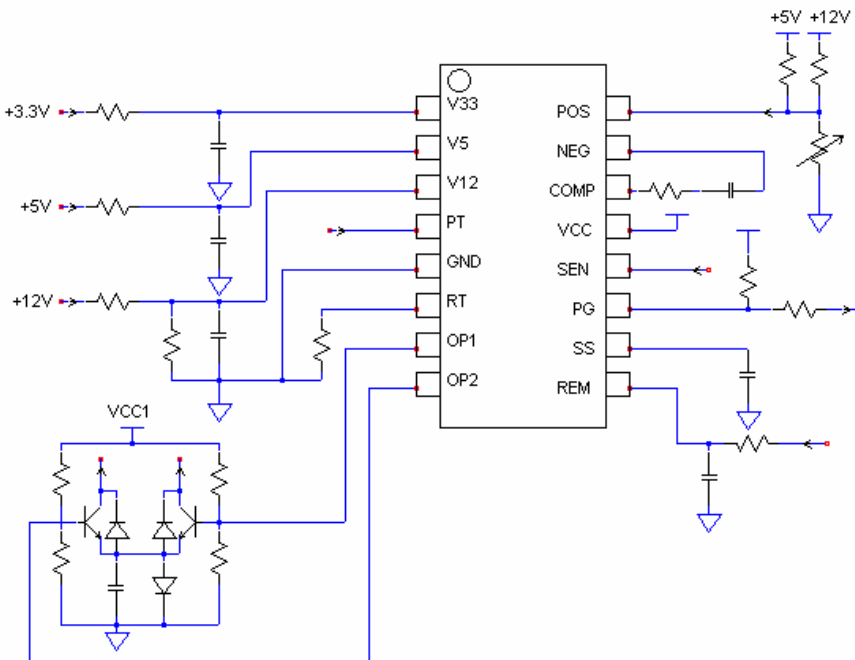
PIN CONFIGURATION (Top View)



ORDERING INFORMATION

ORDER NUMBER	Package	Shipping	Top Marking
CG8010DX16	DIP-16 (Pb-free)	Tube	CG8010DX16

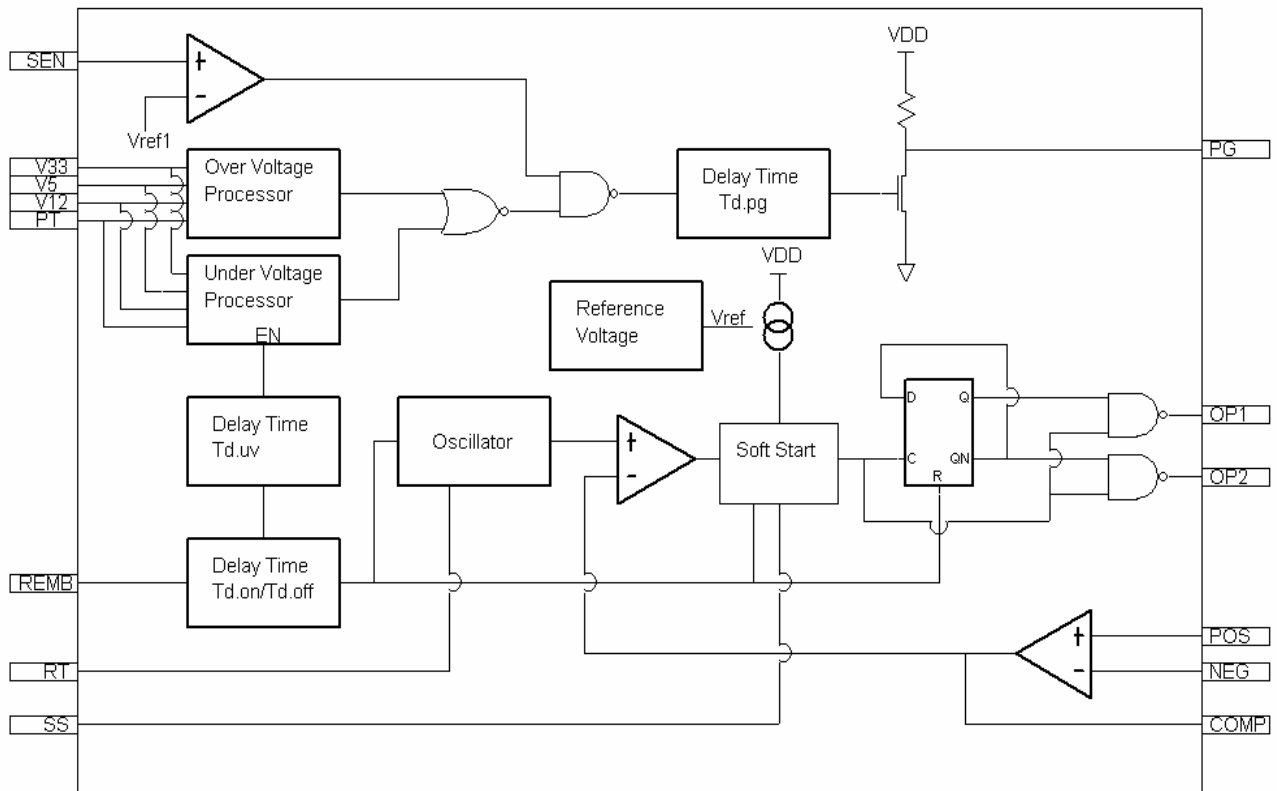
REFERENCE APPLICATION CIRCUIT



PIN DESCRIPTION

Pin	Symbol	Type	Function
1	V33	I	OVP, UVP for +3.3V
2	V5	I	OVP, UVP for +5V
3	V12	I	OVP, UVP for +12V
4	PT	I	Extra protection input
5	GND	-	Ground
6	RT	-	Oscillation frequency setting resistor
7	OP1	O	PWM output1
8	OP2	O	PWM output2
9	REM	I	Remote ON/OFF control input
10	SS	-	Soft start function setting capacitor
11	PG	O	Power good signal
12	SEN	I	Sense signal input
13	VCC	I	Supply voltage
14	COMP	O	Error amplifier output
15	NEG	I	Error amplifier (-) input
16	POS	I	Error amplifier (+) input

FUNCTION BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

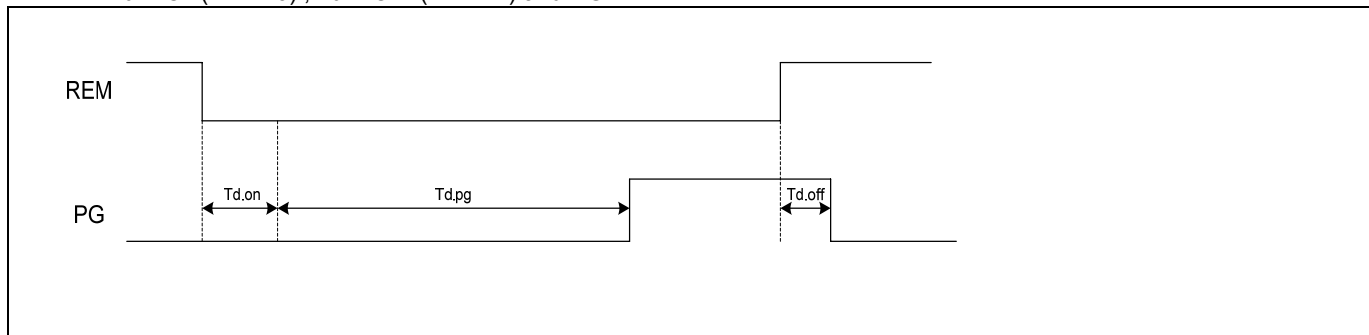
	PARAMETER	MIN	MAX	UNITS
Supply Voltage	VCC	-0.3	7	V
Input Voltage	V33,V5,V12,PT,REMB,SEN,POS,NEG	-0.3	7	V
Output Voltage	OP1,OP2,PG,COMP	-0.3	7	V
Operating Temperature Range	T _O	-20	+85	°C
Storage Temperature Range	T _S	-65	150	°C

ELECTRICAL CHARACTERISTICS (For VCC=5V and T_J=25°C)

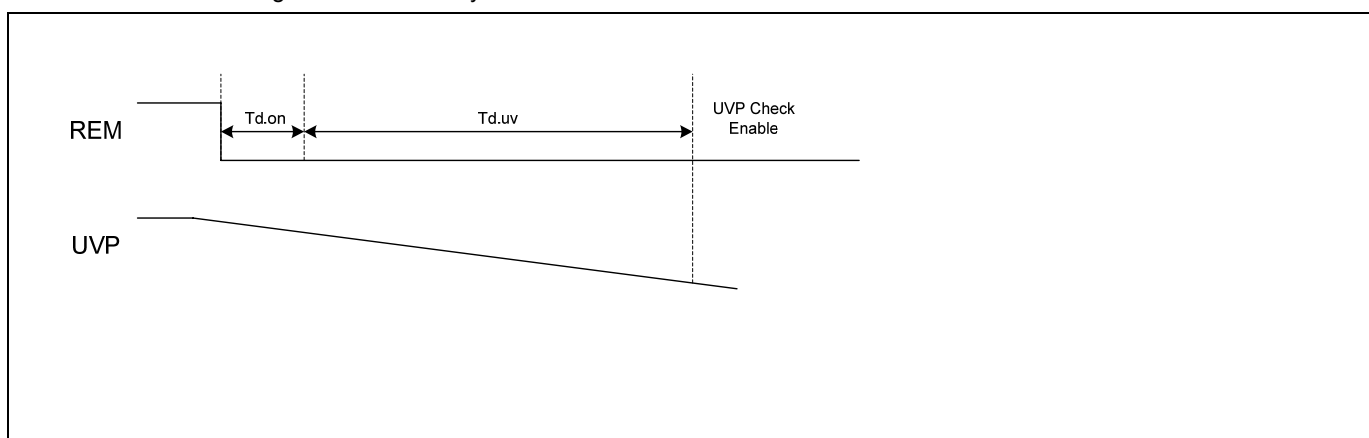
PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS	
Over Voltage Protection (OVP- V33,V5,V12,PT)						
Over voltage threshold	OV33	3.8	4.1	4.4	V	
	OV5	5.8	6.2	6.6	V	
	OV12	4.4	4.6	4.9	V	
	PT	1.23	1.28	1.33	V	
Noise debounce time	Tg.ov		510		us	
Under Volatge Protection (UVP- V33,V5,V12)						
Under voltage threshold	UV33	1.7	1.9	2.2	V	
	UV5	2.7	3.0	3.3	V	
	UV12	2.1	2.4	2.7	V	
Noise debounce time	Tg.uv		120		us	
PG check under voltage delay time	Td.uv	180	280	380	ms	
Soft Start (SS)						
Sink current	Isink	RT=100 KΩ	15		uA	
Source current	Isource		310		uA	
VCC Under Voltage Lockout (UVLO)						
Start-up voltage			4.2		V	
REM Input Pin (REM)						
High level input voltage	V _{IH}	1.8			V	
Low level input voltage	V _{IL}			0.7	V	
REM delay time	Td.on/off		40		ms	
Power Good (PG)						
PG delay time	Td.pg	180	280	380	ms	
SEN voltage threshold			0.68		V	
Sink current	Ipg.sink	VPG=0.2V	10		mA	
Output load resistor	Rload	0.5	1	2	KΩ	
PG internal pull high resistor	Rpull.up		5		KΩ	
Oscillation Frequency						
PWM frequency	Fosc	RT=100 KΩ	70	75	80	KHz
Error Amplifier (POS,NEG,COMP)						
Reference voltage	Vref	Vneg	2.40	2.45	2.50	V
Open loop gain	Avo		75	85		dB
Unity gain bandwidth	BW	0dB		1		MHz
Power supply rejection ratio	PSRR		45			dB
Total Device						
Supply current	I _{cc}	REM = 5V	6			mA

TIMING DIAGRAM

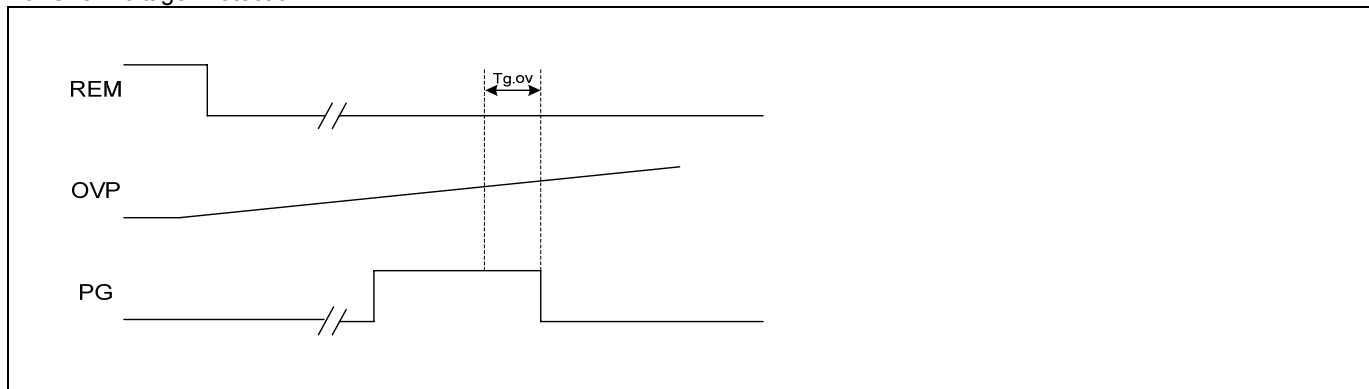
1. REM Turn ON(REM=0) , Turn OFF(REM=1) and PG



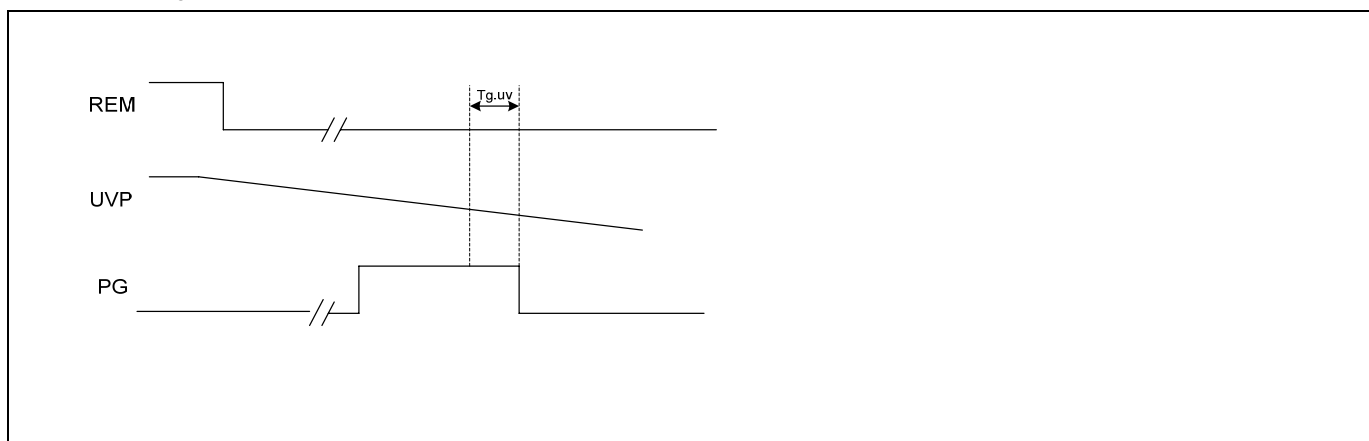
2. REM vs. Under Voltage Protection Delay time



3. Over Voltage Protection



4. Under Voltage Protection

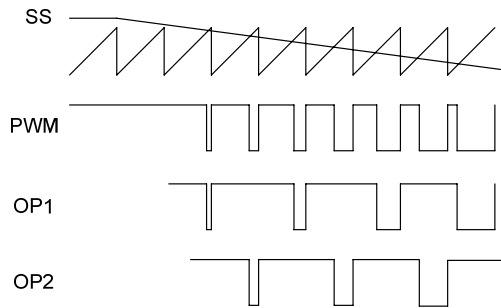


APPLICATION HINTS

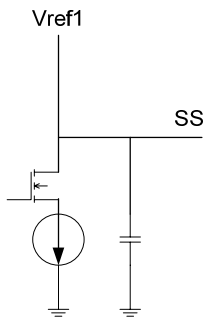
1. Input Impedence

Pin Name	Input Impedence
V33	52KΩ
V5	81KΩ
V12	52KΩ
PT	Pull-high to VCC= 24 KΩ Pull-low to GND= 4.7 KΩ

2. Soft Start



$I_{ss} = 15\mu A \quad (R_T=100K\Omega)$



3. PWM Frequency

$T_{pwm} = K2 \cdot RT$
 $K2 = 1.3 \cdot 10^{-10}$

Example.

$RT = 100K\Omega$
 $T_{pwm} = (1.33 \cdot 10^{-10}) \cdot (100 \cdot 10^3) = 13.3\mu s$
 $F_{pwm} = 75KHz$

4.PT

PT Voltage Level	Function
PT>1.25V	Over voltage protection
PT<0.62V	Disable under voltage check function

5.REM

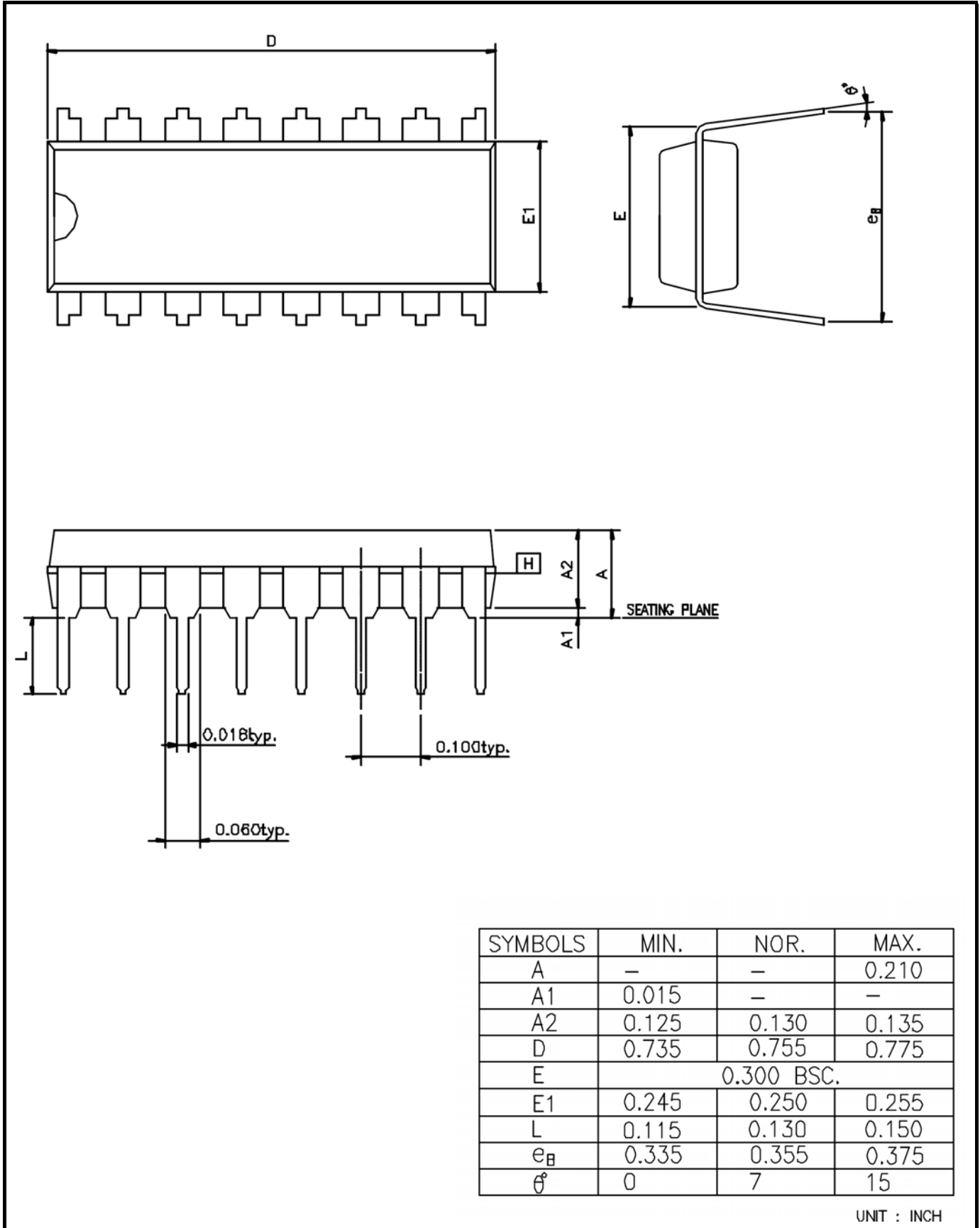
In some application circuits, adding a resistor in series with the REM pin could reduce the noise spike and avoid the pin from damage.

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PACKAGE DIMENSIONS
 PDIP-16
 P SUFFIX

PLASTIC DUAL IN LINE PACKAGE
 JEDEC OUTLINE : MS - 001
 UNIT : INCH



CG8010

POWER SUPPLY SUPERVISOR WITH PWM CONTROLLER



Last Modified: October 4, 2007

Document Version: 0.3

Revision Number	Revision
0.1	1.Preliminary
0.2	1.Modify the data value by the measurement
0.3	1.Modify Reference voltage (Typ. 2.45V ...) on page 3