KA3501

PC SMPS Supervisory IC

Features

- Complete House Keeping Circuit
- Few External Components
- Positive Voltage Protection
- Negative Voltage Protection
- High Current Drive Output for SCR
- Precision Voltage Reference for 5V/12V Outputs
- Power Good Signal Generator with Hysteresis

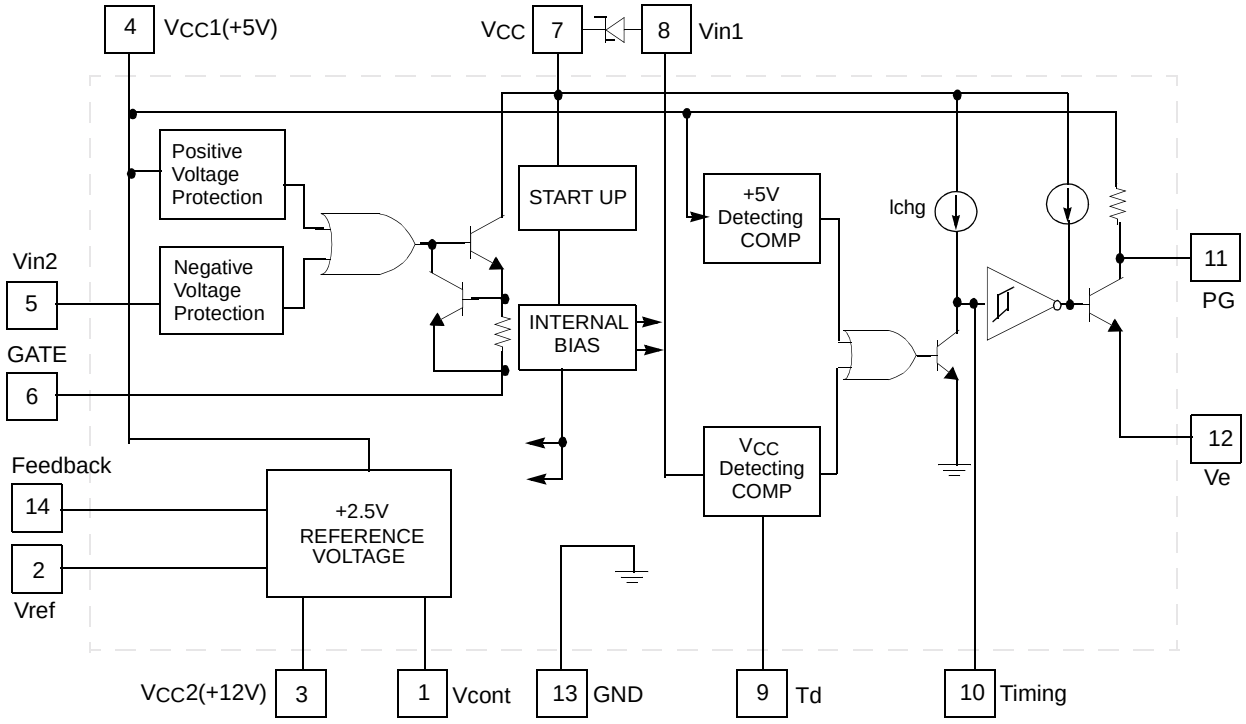
Description

The KA3501 is complete housekeeping circuits for use in the secondary side of SMPS(Switched Mode Power Supply). This IC(Integrated Circuit) contains a precision voltage reference, protection circuits and a power good signal generator. It also has a high current drive output for use in conjunction with an external "crowbar" SCR. The reference voltage is trimmed to ±2% for correct output voltages(+5V/ +12V) and power good signal generator is to monitor the voltage level of power good supply for safe operation in a microprocessor circuit. Using the KA3501 requires few external components to accomplish a complete housekeeping circuit for SMPS(Switched Mode Power Supply). The KA3501 is available in an 14-pin DIP.

14-DIP

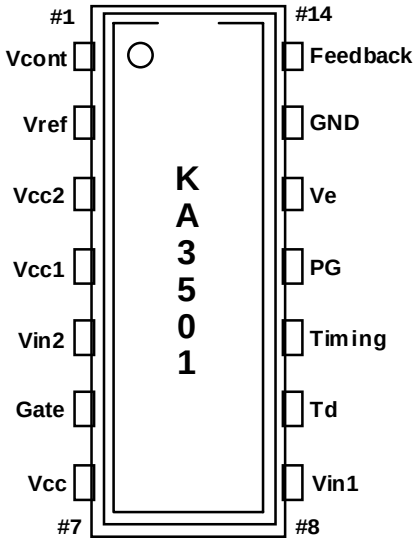
1

Internal Block Diagram



Rev. 1.0.2

Pin Assignments



Pin Number	Pin Name	Pin Function Description
1	Vcont	Reference Voltage Control
2	Vref	Precision Reference Voltage
3	Vcc2	+12V Output Voltage
4	Vcc1	+5V Output Voltage
5	Vin2	UVP Input (Negative)
6	Gate	Gate Drive Input for SCR
7	Vcc	Supply Voltage
8	Vin1	PG Input
9	Td	Reference Voltage Delay for PG
10	Timing	PG Delay
11	PG	PG Output
12	Ve	PG Ground (Open Emitter)
13	GND	Ground
14	Feedback	Feedback for Precision Reference

Absolute Maximum Rating (Ta = 25°C)

Parameter	Symbol	Value	Unit
Supply Minimum Voltage	Vcc(min)	5	V
Supply Maximum Voltage	Vcc(max)	35	V
UV Input Voltage	Vuv	24	V
Minimum Gate Drive Current	I_{DR}	-25	V
Operating Cathode Current	I_K	1 to 30	A
Power Dissipation	Pd	1	W
Operating Temperature Range	Topr	0 to 70	°C

Electrical Characteristic

(Refer to the test circuit , Vcc=20V, Ta=25°C, unless otherwise stated)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Temperature Stability for V_{REF}	ΔV_{REF}	-	-	17	-	mV
PROTECTION SECTION						
Positive Protection Voltage	V_{POSI}	-	5.7	6.0	6.4	V
Negative Protection Voltage	V_{NEGA}	Vcc1 = 5V	-1.5	-2.5	-3.5	V
Negative Input Resistor	R_{NEGA}	Pin 4 to Pin 5	8.5	10	11.5	kΩ
Gate Drive Current	I_{DR}	V_{GATE} = 0.7 V	-25	-50	-	V
REFERENCE SECTION						
Reference Input Voltage	V_{REF}	I_K = 10mA	2.44	2.50	2.56	V
Current Stability	ΔV_{REF}	I_K=1mA to 10mA	-	5	20	mV
Absolute Precision of Internal Three Resistors	Rint	-	-	-	±20	%
Relative Deviation of Three Resistors	Rrate	-	-	±0.5	±3	%
Temperature Stability (Note1)	ΔV_{REF}	Ta = 0 to 70 °C	-	13	17	mV
Gain Bandwidth (Note1)	GBW	GV = 1	-	1	-	MHz
POWER GOOD SECTION						
Detecting Input Voltage	V_{IN1}	-	1.23	1.28	1.33	V
Detecting PG Voltage	V_{DET}	-	4.1	4.3	4.5	V
Hysteresis Voltage 1	HY1	-	10	20	40	mV
Hysteresis Voltage 2	HY2	-	200	250	-	mV
Charging Current for PG Delay	I_{CHG}	-	-8	-14	-20	uA
PG Output Resistor	R_{PG}	-	7.7	9.0	10.3	kΩ
PG Output Saturation Voltage	V_{SAT}	I_{SINK} = 6mA	-	0.2	0.4	V
PG Output Leakage Current	$I_{O(LKG)}$	-	-	0.01	1	uA
TOTAL STANDBY CURRENT						
Supply Current	Icc	V_{CC} = 20V , V_{CC1} = 5V	-	3	5	mA

Note:

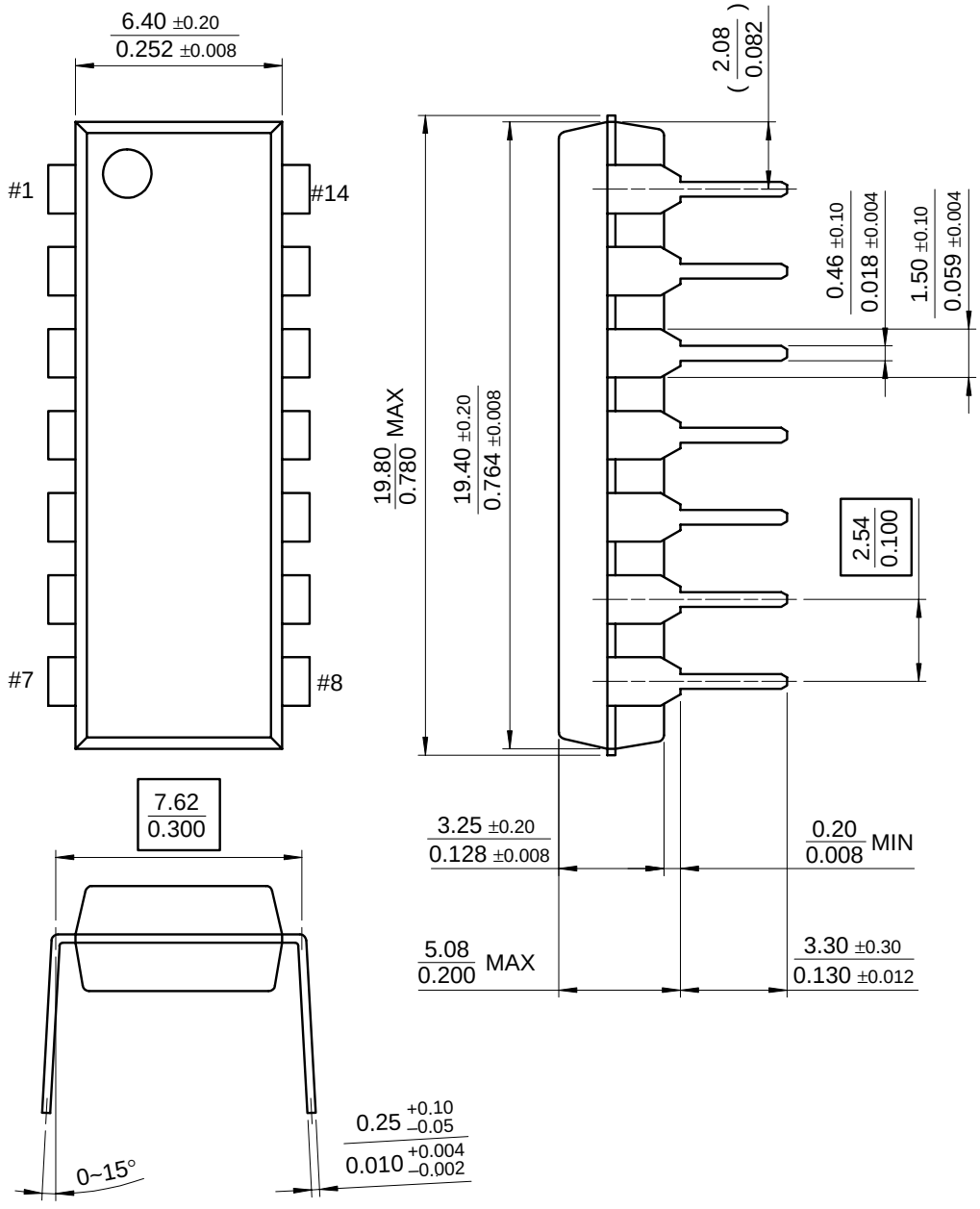
1.These parameters, although guaranteed, are not 100% tested in production

Mechanical Dimensions

Package

Dimensions in millimeters

14-DIP



Ordering Information

Product Number	Package	Operating Temperature
KA3501	14-DIP	0°C ~ +70°C

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