

Data Sheet

Type Description : POWER SUPPLY SUPERVISOR
WITH PWM CONTROLLER

Product Name : EST.7505/7505S

Reversion : Rev1.0

Reversion Date : 08, 2020

Page : 9 Pages

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EST7505/EST7505S POWER SUPPLY SUPERVISOR WITH PWM CONTROLLER



Description

The 7505 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.

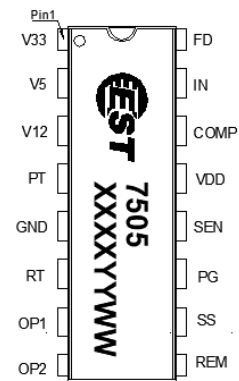
OVP (Over voltage protection) function is for +3.3V, +5V, +12V outputs.

PG (Power good signal) is a good operation signal to inform the external parts.

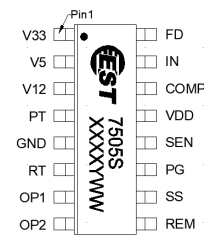
REM (Remote on/off) is used to control the SMPS on/off.

FD can control the FAN speed for the efficiently thermal dissipation

PIN CONFIGURATION (Top View)



DIP-16L



SOP-16L

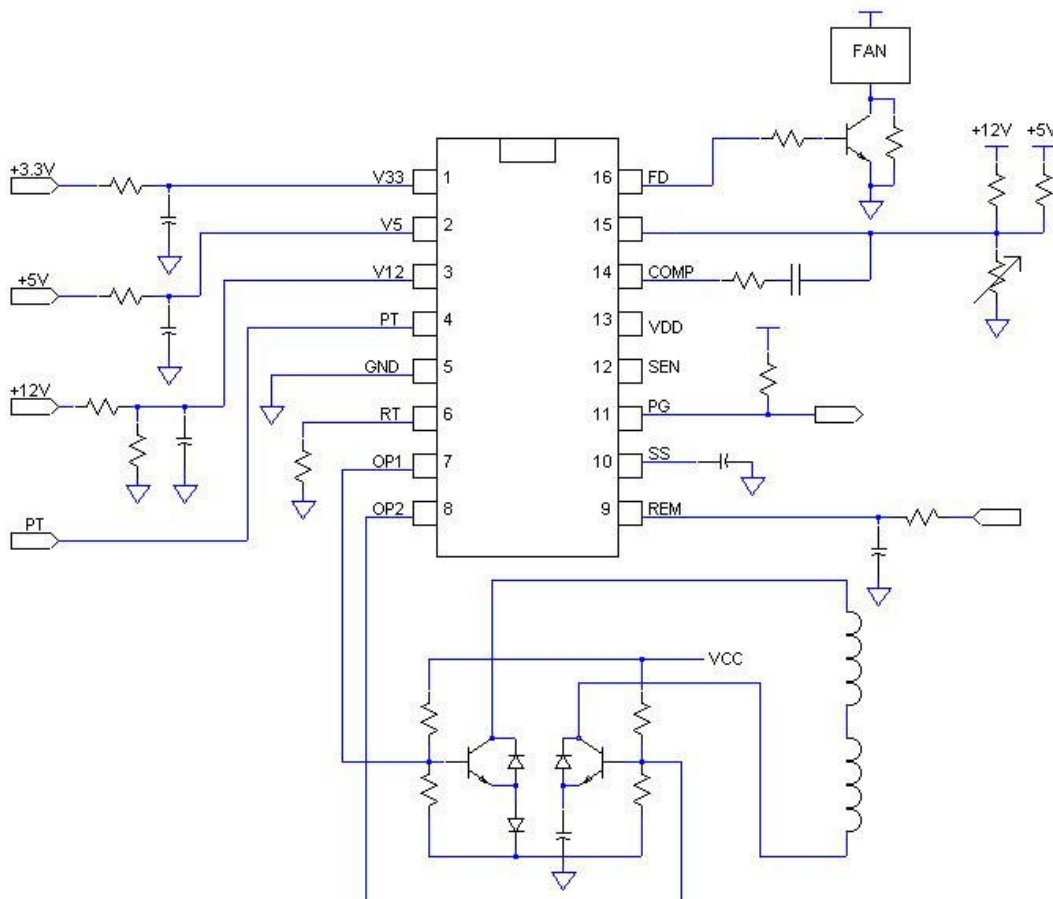
FEATURE

- ◆ 3-channel under voltage protection (UVP)
- ◆ 3-channel over voltage protection (OVP)
- ◆ 1-channel extra protection (PT)
- ◆ Remote on/off control function (REM)
- ◆ Dual output for push-pull operation (OP1/OP2)
- ◆ FAN speed control (FD)
- ◆ 16-Pin dual in-line package
- ◆ Pb-free Package are available

ORDERING INFORMATION

ORDER NUMBER	Package	Shipping	Top Marking
EST.7505	DIP-16 (Pb-free)	Tube	EST.7505
EST.7505S	SOP-16(Pb-free)	Tube	EST.7505S

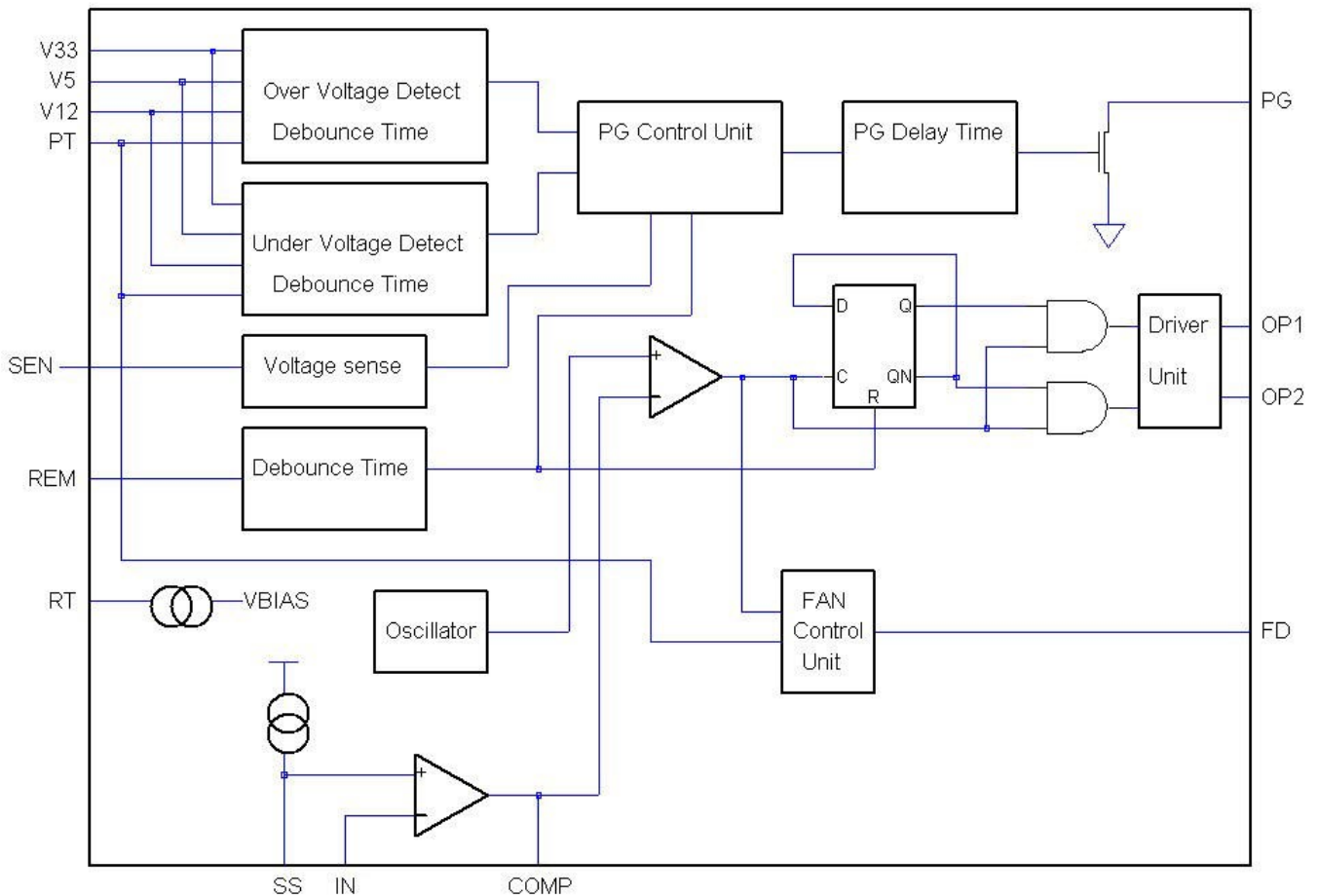
REFERENCE APPLICATION CIRCUIT



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	Voltage detect protection input
5	GND	-	Ground
6	RT	-	Connect external resistor
7	OP1	O	PWM output1
8	OP2	O	PWM output2
9	REM	I	Remote ON/OFF control input
10	SS	O	Internal setting voltage
11	PG	O	Power good signal
12	SEN	I	Signal input
13	VDD	-	Supply voltage
14	COMP	O	Error amplifier output
15	IN	I	Error amplifier input
16	FD	O	Fan drive output

FUNCTION BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

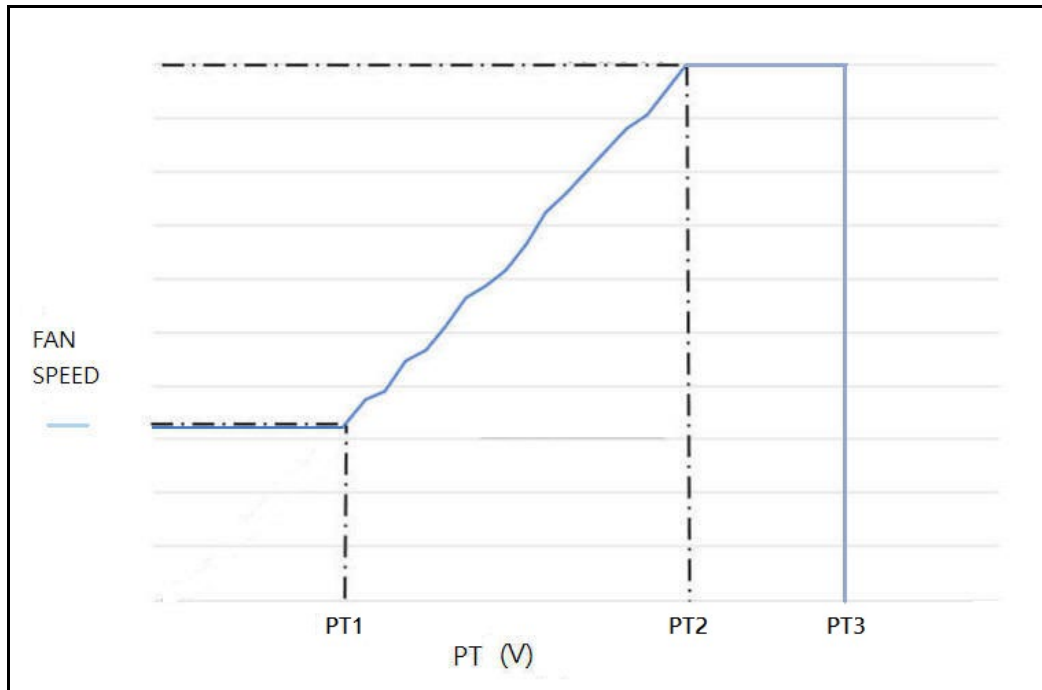
PARAMETER		MIN	MAX	UNITS
Supply Voltage	VCC	-0.3	7	V
Input Voltage	V33,V5,V12,PT,REMB,SEN,POS,NEG	-0.3	7	V
Output Voltage	OP1,OP2,PG,COMP	-0.3	7	V
Operating Temperature Range	T _O	-20	+85	°C
Storage Temperature Range	T _S	-65	150	°C

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

PARAMETER		CONDITIONS	MIN	TYP	MAX	UNITS
Over Voltage Protection						
Voltage threshold	OV33		4.0	4.3	4.6	V
	OV5		6.0	6.4	6.8	V
	OV12		4.4	4.8	4.9	V
Noise debounce time	Tg.ov		510			us
Under Voltage Protection						
Voltage threshold	UV33		1.8	2.0	2.3	V
	UV5		2.7	3.0	3.3	V
	UV12		2.1	2.4	2.7	V
	PT		2.1	2.2	2.3	V
Noise debounce time	Tg.uv		110			us
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
SEN						
SEN voltage threshold				0.62		V
Power Good (PG)						
PG delay time	Td.pg		180	280	380	ms
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
PWM Frequency						
PWM frequency OP1, OP2	Fosc	RT=100KΩ	50	55	60	KHz
RT current	Irt	RT=100KΩ		12.5		uA
Internal Setting Voltage						
VINT voltage	VVINT		2.45	2.50	2.55	V
VINT current	IVINT			8		uA
Error Amplifier (IN, COMP)						
Open loop gain	Avo			65		dB
Unity gain bandwidth	BW	0dB		1		MHz
Power supply rejection ratio	PSRR		45			dB
FD						
PWM OUTPUT	PWM Range1	PT1		1.40		V
	PWM Range2	PT2		1.85		V
	PWM Range3	PT3		2.10		V
PWM Frequency	Ffan		17	21	25	KHz
Total Device						
Supply current	I _{CC}	REM = 5V		6		mA

Simplified figure of FD output control fan speed Note*1,Note*2

Range	PT voltage (V)	FAN speed
1	0 ~ 1.40	Low fan speed
2	1.40~ 1.85	Increasing fan speed
3	1.85~ 2.10	High fan speed
4	2.10 ~ VDD	Stop fan speed



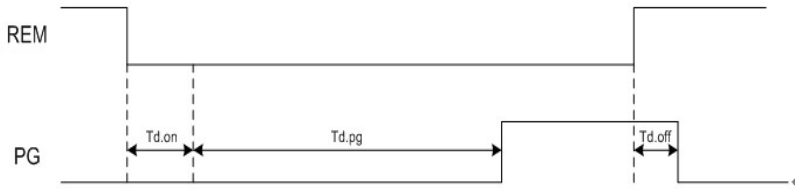
Note:

Note*1: Actual fan speed needs to be adjusted with different external circuits and different fans

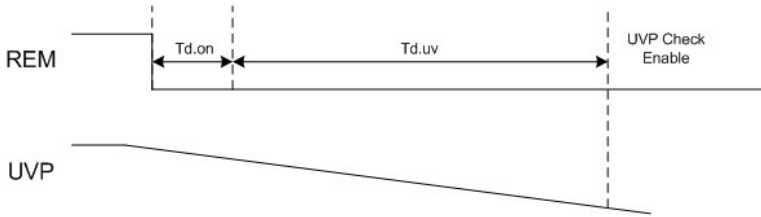
Note*2: Different fan speed is subject to actual use

TIMING DIAGRAM

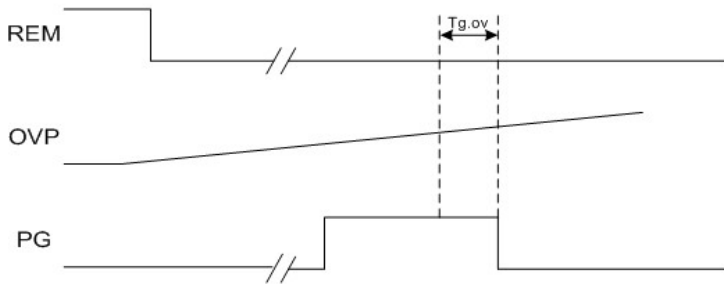
1. REM Turn ON(REM=0) , Turn OFF(REM=1) and PG



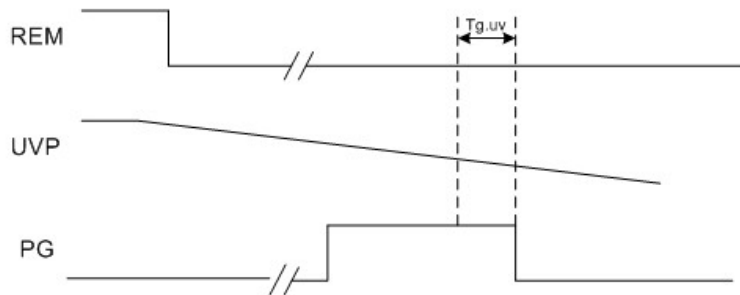
2. REM vs. Under Voltage Protection Delay time



3. Over Voltage Protection



4. Under Voltage Protection



APPLICATION HINTS

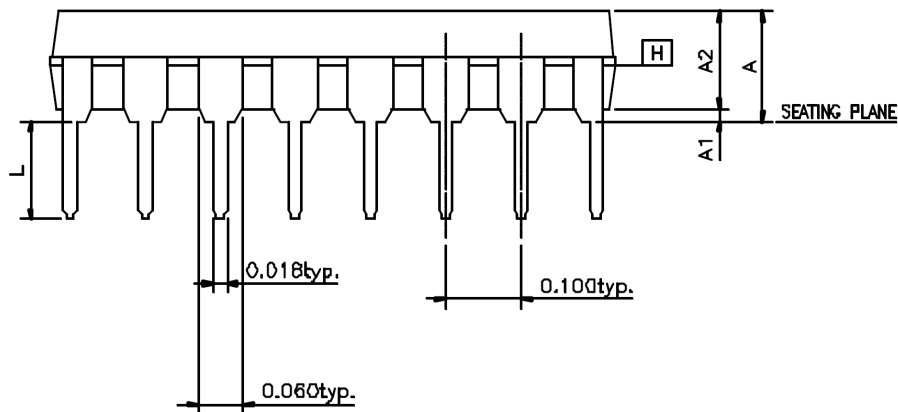
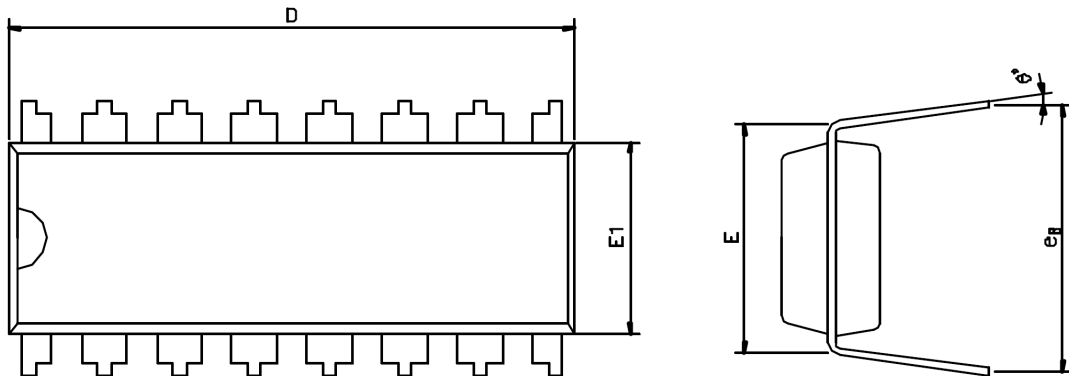
1. Input Impedance

Pin Name	Input Impedance
V33	58KΩ
V5	89KΩ
V12	58KΩ
PT	Pull-high to VCC= 33 KΩ Pull-low to GND= 5.4 KΩ

PACKAGE DIMENSIONS

PLASTIC DUAL IN LINE PACKAGE
PDIP-16

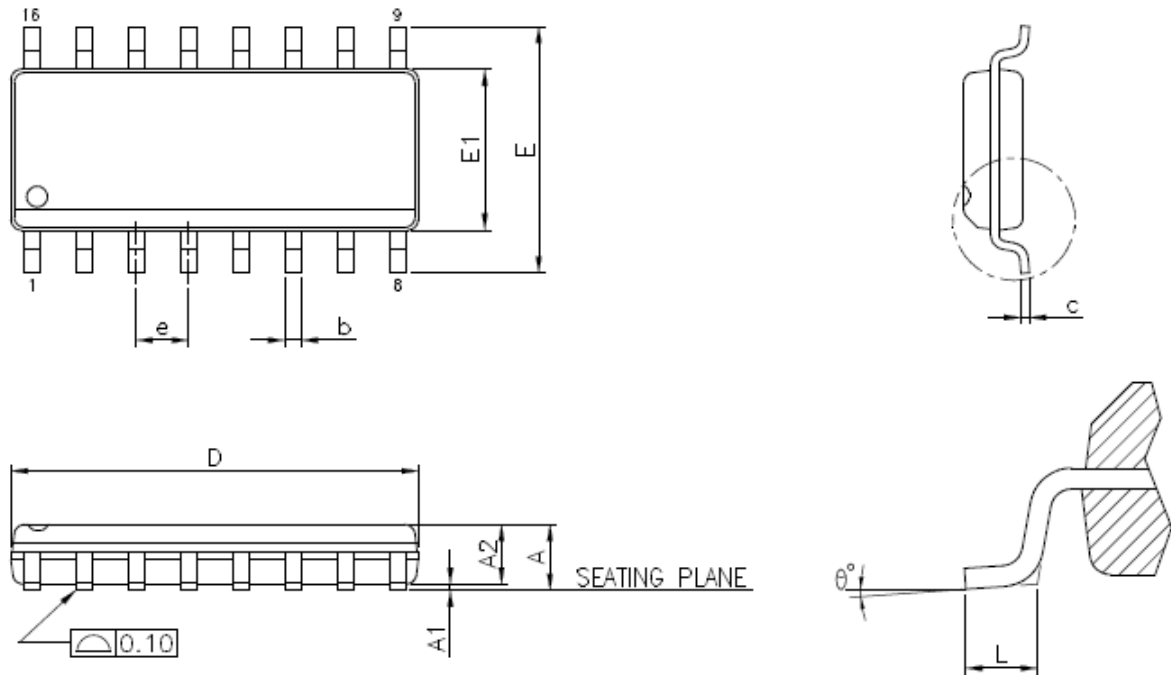
Unit : inch / mm



Symbols	Dimensions in inches			Dimensions in millimeters		
	MIN.	NOR.	MAX.	MIN.	NOR.	MAX.
A	---	---	0.215	---	---	5.461
A1	0.010	---	---	0.254	---	---
A2	0.120	0.133	0.145	3.048	3.378	3.683
D	0.730	0.755	0.780	18.542	19.177	19.812
E	0.300 BSC			7.620 BSC		
E1	0.240	0.253	0.265	6.096	6.426	6.731
L	0.110	0.133	0.155	2.794	3.378	3.937
eB	0.320	0.350	0.380	8.128	8.890	9.652
θ	0°	7°	15°	0°	7°	15°

Package Dimensions
 SOP-16 (Standard)

Small Outline Package
 UNIT : inch / mm



Symbols	Dimensions In inch		Dimensions In millimeters	
	Min.	Max.	Min.	Max.
A	-----	0.072	-----	1.837
A1	0.004	0.010	0.095	0.263
A2	0.047	-----	1.187	-----
b	0.012	0.021	0.294	0.535
c	0.004	0.010	0.095	0.263
D	0.390 BSC		9.900 BSC	
E	0.236 BSC		6.000 BSC	
E1	0.154 BSC		3.900 BSC	
e	0.050 BSC		1.270 BSC	
L	0.015	0.052	0.380	1.333
θ	0°	8°	0°	8°



Revision History

REVISION	DESCRIPTION	PAGE	DATE
1.0	Primarily		2020/08/01

