

GENERAL DESCRIPTION

The EST7630X provides protection circuits, power good output (PGO), fault protection latch (FPOB), and a protection detector function (PSONB) control. It can minimize external components of switching power supply systems in personal computer.

The Over / Under Voltage Detector (OVD / UVD) monitors V33, V5, V12A, V12B and V12C input voltage level. The Over Current Detector (OCD) monitor IS33, IS5, IS12A, IS12B and IS12C input current sense. When OVD or UVD or OCD detect the fault voltage level, the FPOB is latched HIGH and PGO go low. The latch can be reset by PSONB go HIGH. There is 3.5 ms delay time for PSONB turn off FPOB.

When OVD and UVD and OCD detect the right voltage level, the power good output (PGO) will be issue.

FEATURES

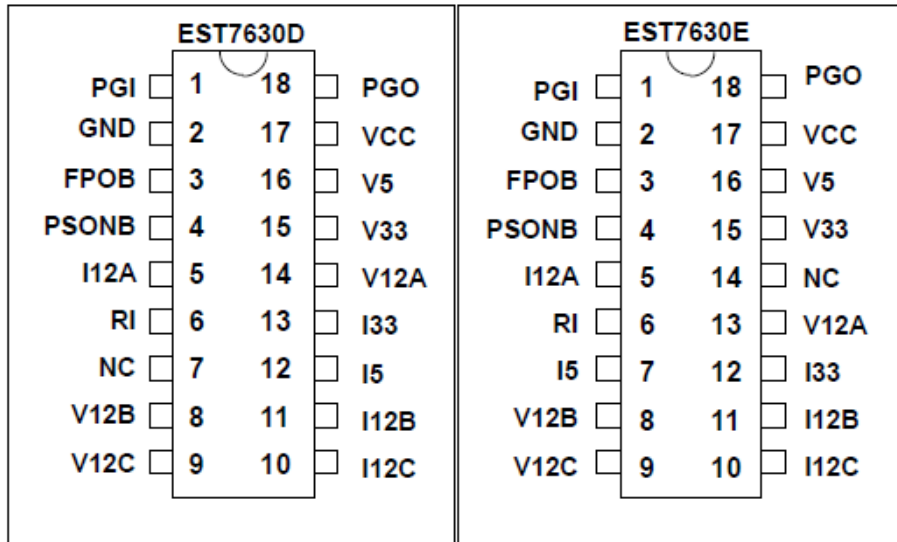
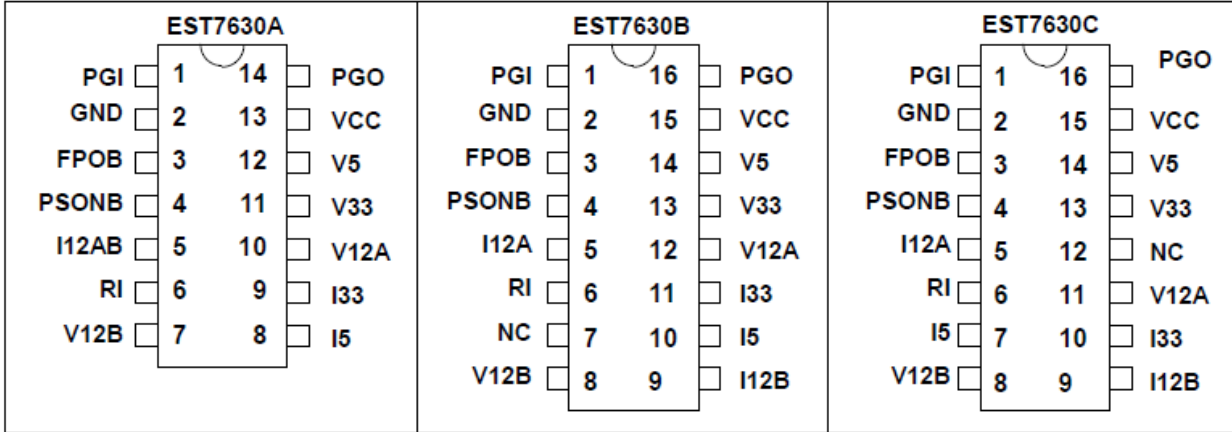
- The Over/Under Voltage Detector (OVD / UVD) monitors V33, V5, V12A, V12B and V12C input voltage.
- The Over Current Detector (OCD) monitors IS33, IS5, IS12A, IS12B and IS12C input current sense.
- Both of the power good output (PGO) and fault protection latch (FPOB) are Open Drain Output.
- 75 / 300 ms time delay for UVD.
- 300 ms time delay for PGO.
- 38 ms for PSONB input signal De-bounce.
- 73 us for PGI/OVD/UVD internal signal De-glitches.
- 1.2 ms for OCD internal signal De-glitches.
- 3.5 ms time delay for PSONB turn-off FPOB.

PIN DESCRIPTION

Pin Name	TYPE	Description
PGI	I	Power good input signal pin
GND	P	Ground
FPOB	O	Fault protection output pin, open drain output
PSONB	I	On/Off switch input
I12A	I	12VA over current protection sense input
I12AB	I	12VA / 12VB over current protection sense input (only for 7630A)
RI	I	Current sense adjust input
V12B	I	12VB over/under voltage input pin
V12C	I	12VC over/under voltage input pin
I12C	I	12VC over current protection sense input
I12B	I	12VB over current protection sense input
I5	I	5V over current protection sense input
I33	I	3.3V over current protection sense input
V12A	I	12VA over/under voltage input pin
V33	I	3.3V over/under voltage input pin
V5	I	5V over/under voltage input pin
VCC	I	Power supply

PGO	O	Power good output signal pin, open drain output
-----	---	---

PIN ASSIGNMENT AND PACKAGE TYPE

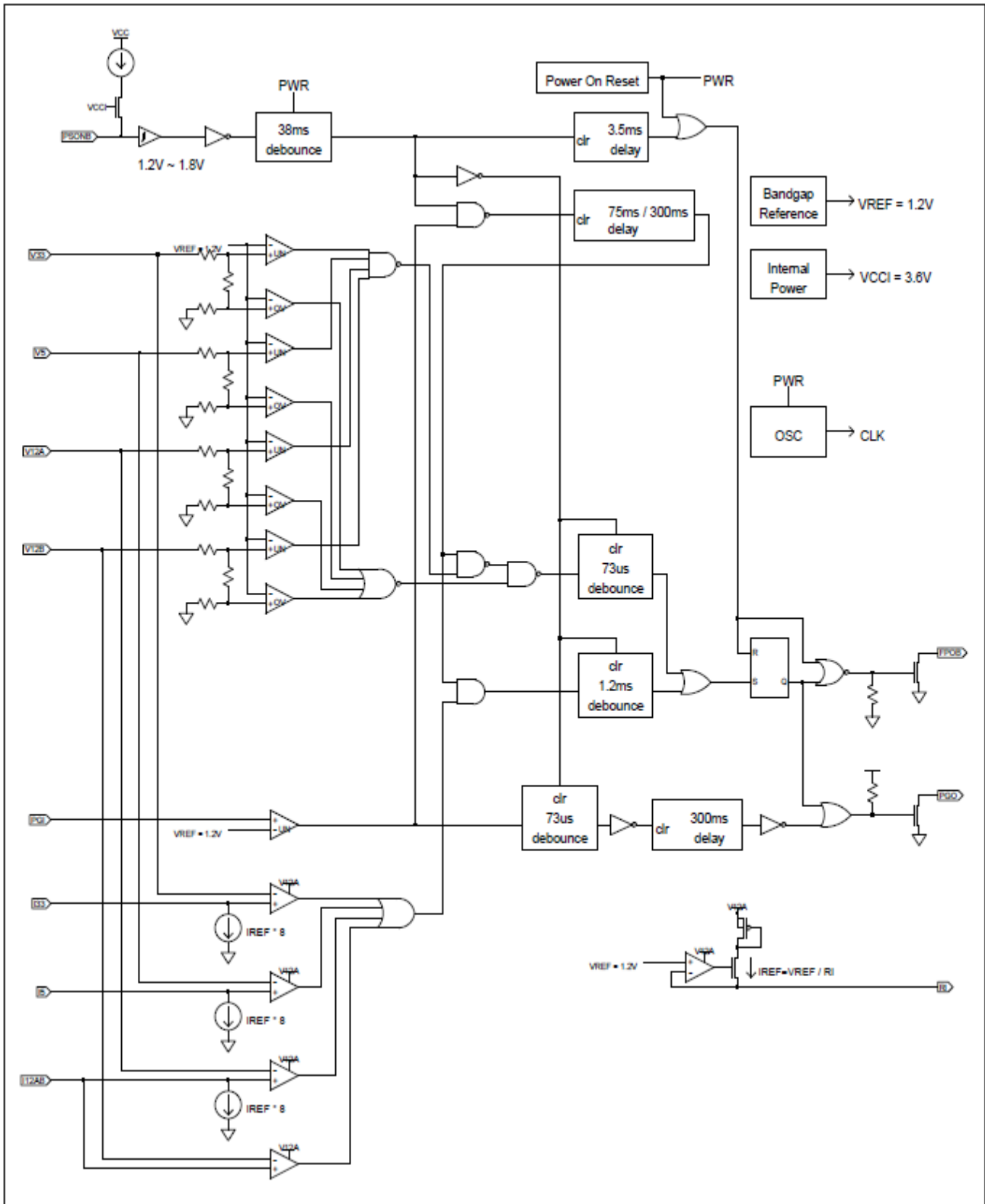


ORDERING INFORMATION

PACKAGE	14-Pin Plastic DIP	14-Pin Plastic SOP
Device	EST7630A	EST7630AS
Packing	Tube	Tube or Tape&Reel
PACKAGE	16-Pin Plastic DIP	16-Pin Plastic SOP
Device	EST7630B EST7630C	EST7630BS EST7630CS
Packing	Tube	Tube or Tape&Reel
PACKAGE	18-Pin Plastic DIP	18-Pin Plastic SOP
Device	EST7630D EST7630E	EST7630DS EST7630ES
Packing	Tube	Tube or Tape&Reel

BLOCK DIAGRAM

EST7630A



ABSOLUTE MAXIMUM RATINGS

Parameter		Min	Max	Unit
Supply voltage, VCC, V12A		-0.3	16	
Input voltage	PGI, PSONB	-0.3	VCC + 0.3 (Max. 7V)	V
	V5, V33, I5, I33	-0.3	V12A + 0.3 (Max. 7V)	V
	V12B, I12A, I12B, I12AB V12C, I12C	-0.3	V12A + 0.3 (Max. 16V)	V
Output voltage	PGO	-0.3	7	V
	FPOB	-0.3	16	V
Operating temperature		-40	125	°C
Storage temperature		-55	150	°C

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

RECOMMENDED OPERATING CONDITIONS

Parameter		Conditions	Min	Typ	Max	Unit
Supply voltage, VCC			4	12	15	V
Input voltage	PGI, PSONB, V5, V33				7	V
	V12A, V12B, V12C				15	V
Output voltage	PGO				7	V
	FPOB				15	V
Output sink current	FPOB	0.3V			10	mA
	PGO	0.3V			10	mA
Supply voltage rising time			1			ms
Output current for RI	RI		10		65	uA

ELECTRICAL CHARACTERISTICS, at Ta=25°C and VCC=5V.

Parameter		Condition	Min	Typ	Max	Unit
Over Voltage Detection						
Over voltage threshold	V33		3.7	3.9	4.1	V
	V5		5.7	6.1	6.2	V
	V12ABC		13.3	13.8	14.3	V
I _{LEAKAGE} Leakage current (FPOB)		V(FPOB) = 5V	5			uA
V _{OL} Low level output voltage (FPOB)		I _{sink} = 10mA			0.3	V
PGI and PGO						
Under voltage threshold	V33		2.55	2.69	2.83	V
	V5		4.1	4.3	4.47	V
	V12ABC		9.5	10	10.5	V
Input threshold voltage(PGI)			1.16	1.20	1.24	V
I _{LEAKAGE} Leakage current(PGO)		PGO = 5V	5			uA
V _{OL} Low level output voltage(PGO)		I _{sink} = 10mA			0.3	V

Offset Voltage of OCP comparators		-6		6	mV
-----------------------------------	--	----	--	---	----

PSONB

Input pull-up current	PSONB= 0V		150		uA
High-level input voltage		1.8			V
Low-level input voltage				1.2	V

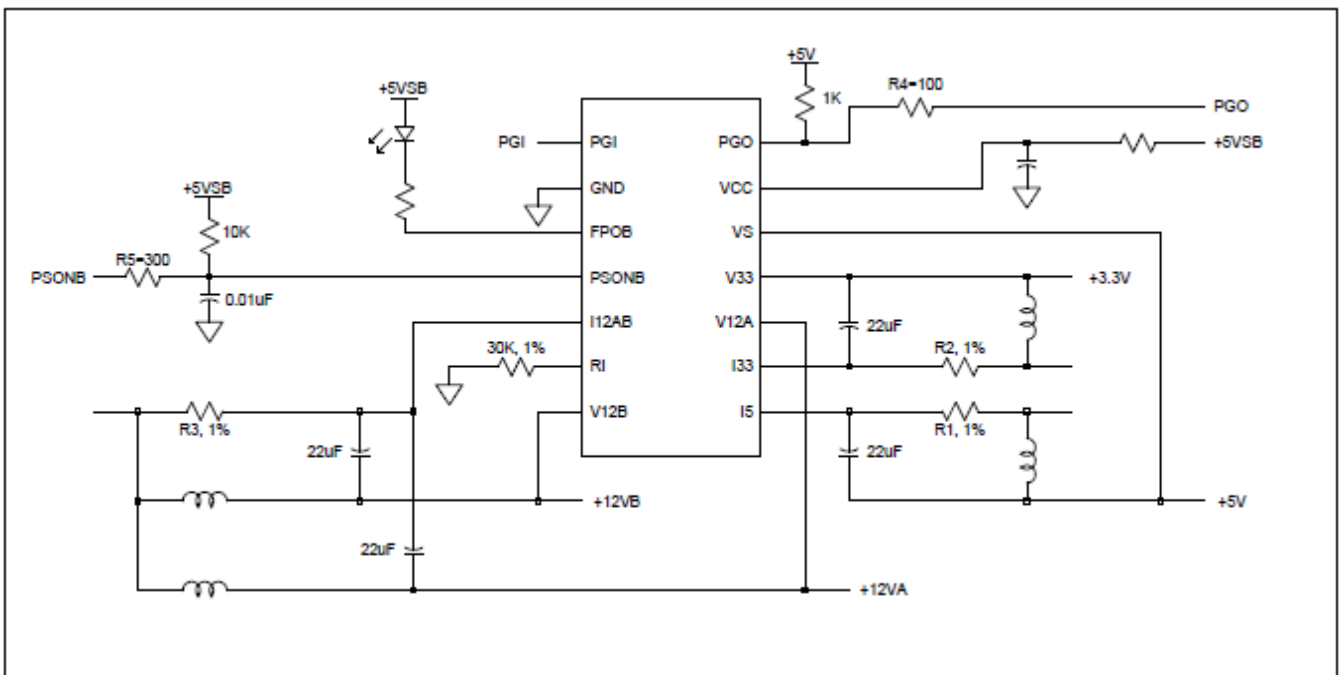
TOTAL DEVICE

Icc Supply current	PDON _N= 5V			1	mA
Vcc start-up voltage			3.6		V
Vcc stop voltage after start-up			2.0		V

SWITCHING CHARACTERISTICS, Vcc=5V

t _{db1} De-bounce time (PSONB)		24	38	52	mS
t _{delay1} Delay time (PGI to PGO)		200	300	400	mS
t _{db2} De-bounce time (PSONB)		24	38	52	mS
t _{g1} De-glitch time for PGI		47	73	100	uS
t _{g2} De-glitch time for OVD / UVD		47	73	100	uS
t _{g3} De-glitch time for OCD		0.8	1.2	1.5	mS
t _{delay2} PSONB to FPOB delay time		t _{db2} +2.0	t _{db2} +3.5	t _{db2} +5.0	mS
t _{delay3} Internal UVD/OCD delay time	after FPOB go low & PGI > 1.2V	49	75	100	mS
	after FPOB go low & PGI < 1.2V	200	300	400	mS

APPLICATION CIRCUIT

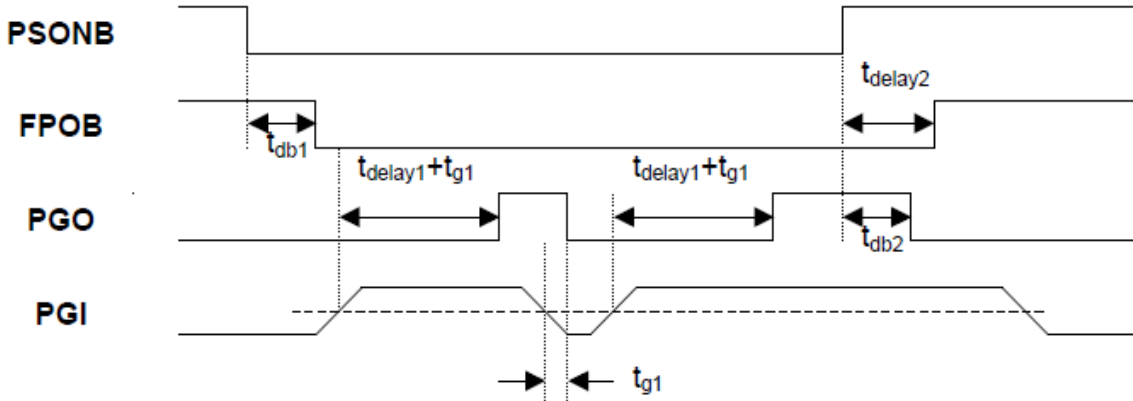


NOTE1 : The series resistor R5 at PSONB can not be omitted. (R0 = 300Ω is suggested)

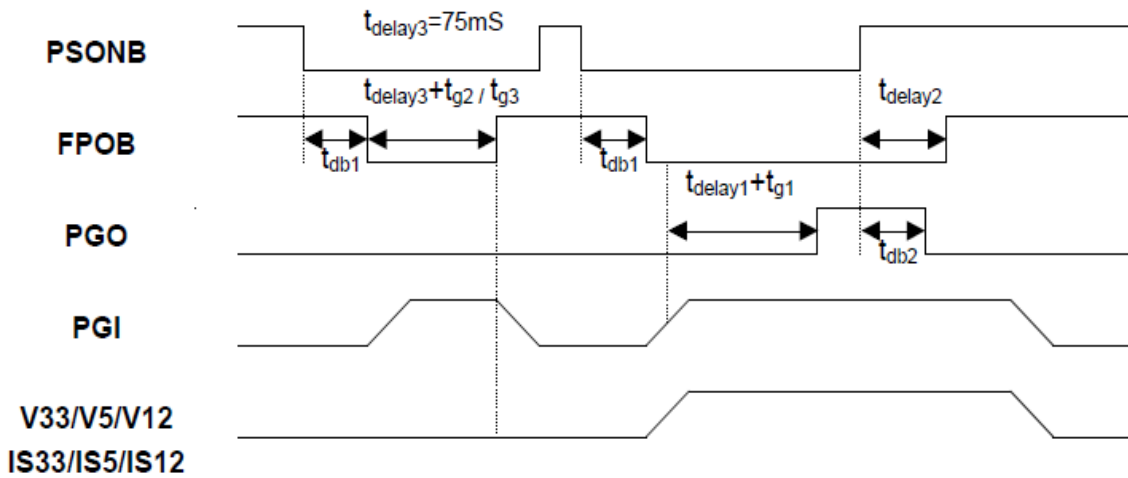
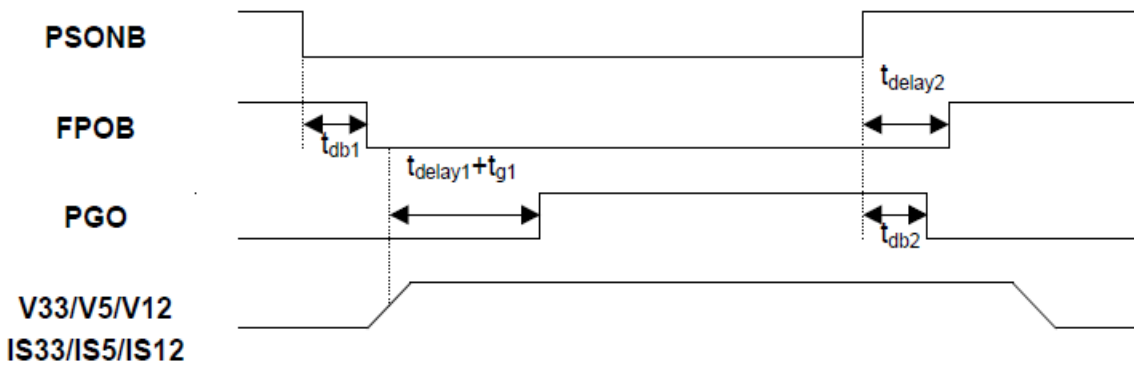
NOTE2 : The series resistor R4 = 100Ω at PGO is suggested.

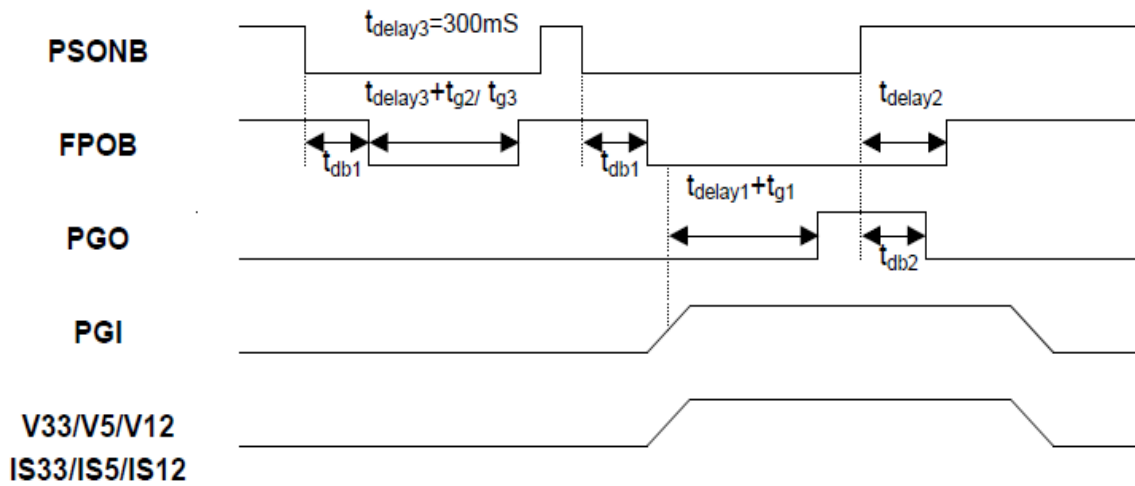
APPLICATION TIMMING

1.) PGI (UNDER_VOLTAGE) :

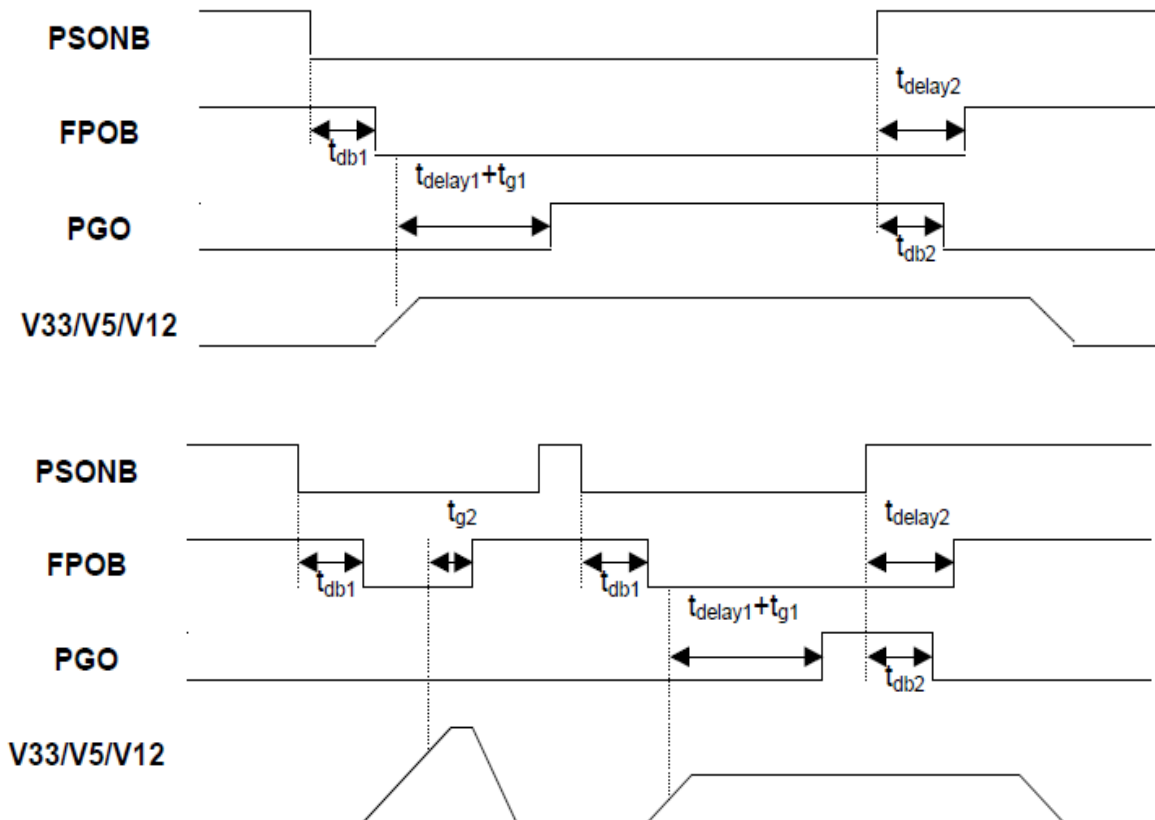


2.) V33, V5, V12 (UNDER_VOLTAGE) or IS33 , IS5 , IS12 (OVER_CURRENT) :



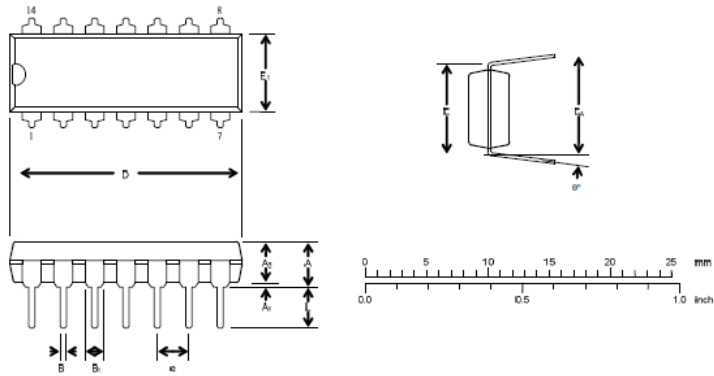


3.) V33, V5, V12 (OVER_VOLTAGE) :



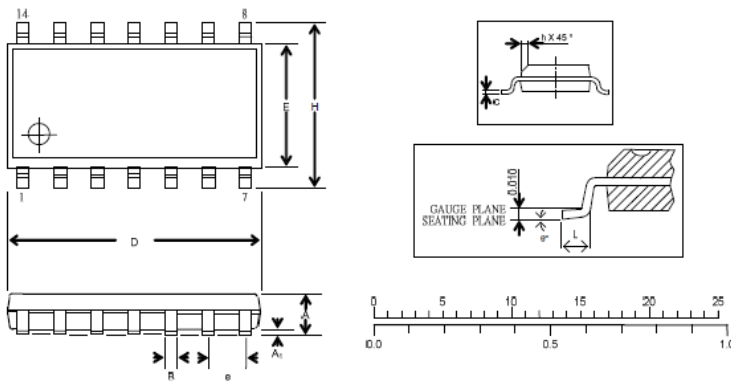
MECHANICAL INFORMATION

DIP-14L



Symbol	Dimension in mm		Dimension in inch	
A	4.318	(MAX)	0.170	(MAX)
A ₁	0.381	(MIN)	0.015	(MIN)
A ₂	3.302	±0.127	0.130	±0.005
B	0.457	(TYP)	0.018	(TYP)
B ₁	1.524	(TYP)	0.060	(TYP)
D	19.101	± 0.127	0.752	± 0.005
E	7.620	± 0.254	0.300	± 0.010
E ₁	6.401	± 0.127	0.252	±0.005
e	2.540	(TYP)	0.100	(TYP)
E _A	9.017	± 0.508	0.355	± 0.020
L	3.302	± 0.254	0.130	±0.010
θ°	0° ~ 15°		0° ~ 15°	

SOP-14L



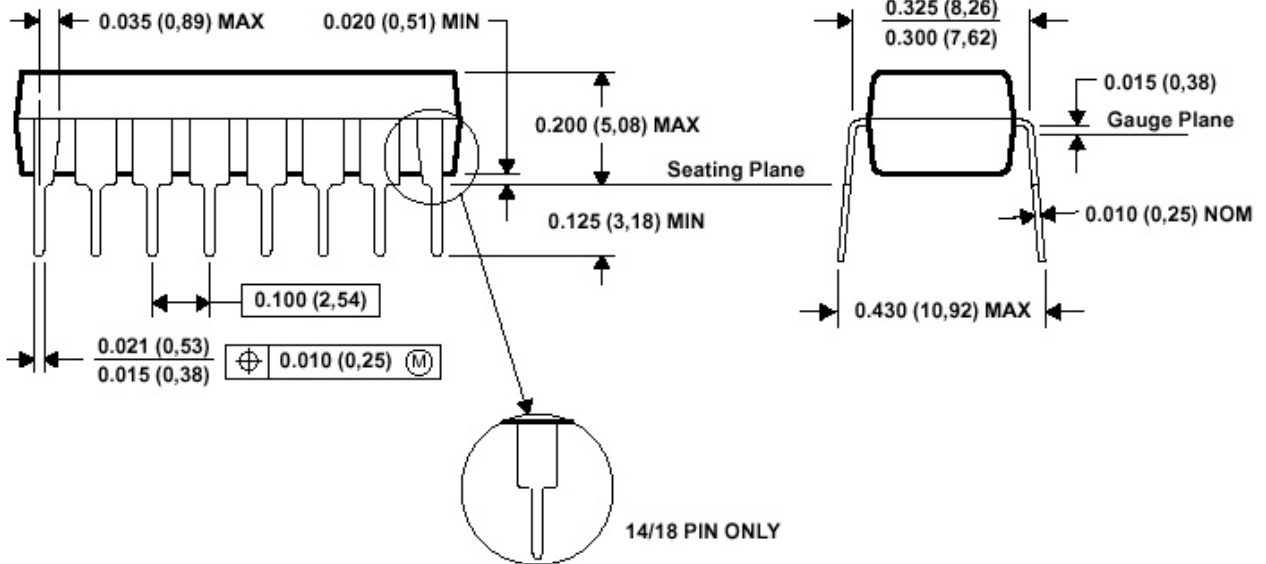
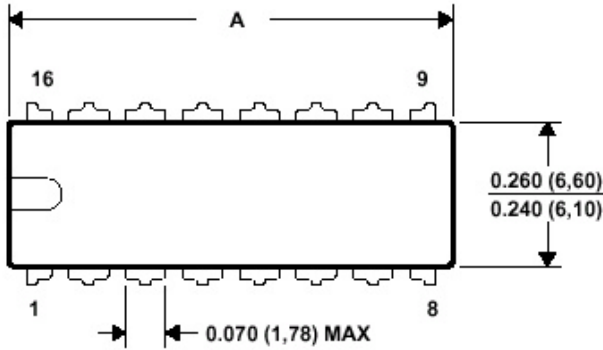
Symbol	Dimension in mm		Dimension in inch	
A	1.750	(MAX)	0.069	(MAX)
A ₁	0.100	0.25	0.004	0.01
B	0.330	0.51	0.013	0.02
C	0.100	0.25	0.004	0.010
e	1.270	(TYP)	0.050	(TYP)
D	8.650	(TYP)	0.340	(TYP)
H	6.000	(TYP)	0.236	(TYP)
E	3.900	(TYP)	0.154	(TYP)
L	0.400	1.27	0.016	0.05
h	0.250	0.50	0.010	0.020
θ°	0° ~ 8°		0° ~ 8°	

EST. 7630X PC Power Supply Supervisor



DIP- 14/16 / 18 / 20 PACKAGE

DIM \ PINS **	14	16	18	20
	A MAX	0.775 (19,69)	0.775 (19,69)	0.920 (23,37)
A MIN	0.745 (18,92)	0.745 (18,92)	0.850 (21,59)	0.940 (23,88)



NOTE 1 : All linear dimensions are in inches (millimeters) .

NOTE 2 : This drawing is subject to change without notice.

NOTE 3 : Falls within JEDEC MS-001