UNISONIC TECHNOLOGIES CO., LTD

S3527

CMOS IC

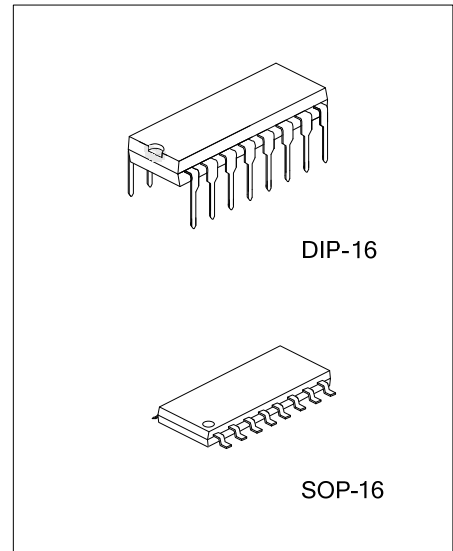# PC POWER SUPPLY SUPERVISOR

DIP-16

SOP-16

■ DESCRIPTION

The UTC **S3527** is designed for switch power supply system. Four important functions of UTC **S3527** are the following: the Over Voltage Detector (OVD), the Under Voltage Detector (UVD), the Over Current Detector (OCD) and power good signal generating.

OVD/UVD monitor 3.3V, 5V and dual 12V to protect our power supply and PC, FPO goes to high when one of these supply voltages exceeds their normal operation voltage range.

OCD monitors I33, I5, I12 input current sense. An adjustable over-current condition composed of Iref and "protection current range resistor" helps users design OCD easily.

Power good signal generating notifies personal computer when power supply is ready or power supply is going to shutdown, therefore it can provide a reliable power supply environment.
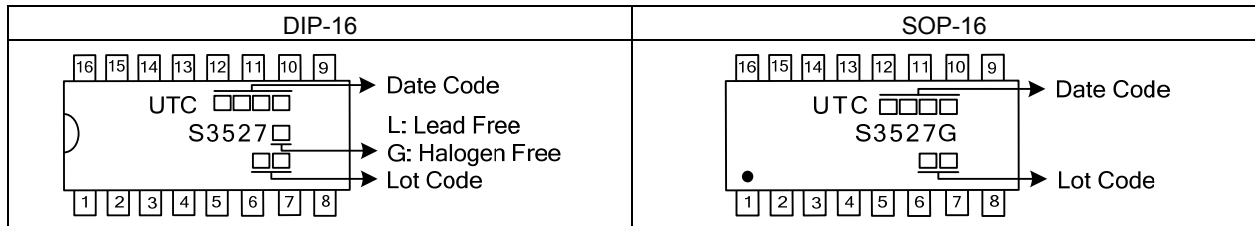
■ FEATURES

* The Over Voltage Detector (OVD) monitors VX, V33, V5, V12A and V12B input voltage.
* The Under Voltage Detector (UVD) monitors V33, V5, V12A and V12B input voltage.
* The Over Current Detector (OCD) monitors I33&V33, I5&V5, I12A&V12A and I12B&V12B input pins.
* The VX>1.2V provide an extra protection.
* Both of the power good output (PGO) and fault protection latch (FPOB) are Open Drain Output.

* 75/600ms time delay for UVD/OCD/VX.
* 300ms time delay for PGO.
* 38ms for PSONB input signal De–bounce.
* 14us for OVD internal signal De–glitch.
* 1ms for UVD/VX internal signal De–glitch.
* 20ms for OCD internal signal De–glitch.
* 73us for PGI internal signal De–glitch.
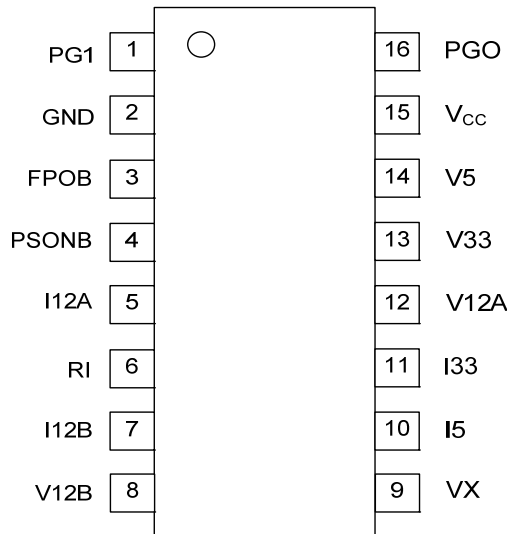* 4ms for PSONB turn-off FPOB.

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
S3527L-D16-T	S3527G-D16-T	DIP-16	Tube
-	S3527G-S16-R	SOP-16	Tape Reel

S3527L-D16-T

— (1) Packing Type
— (2) Package Type
— (3) Green Package

(1) T: Tube, R: Tape Reel

(2) D16: DIP-16, S16: SOP-16

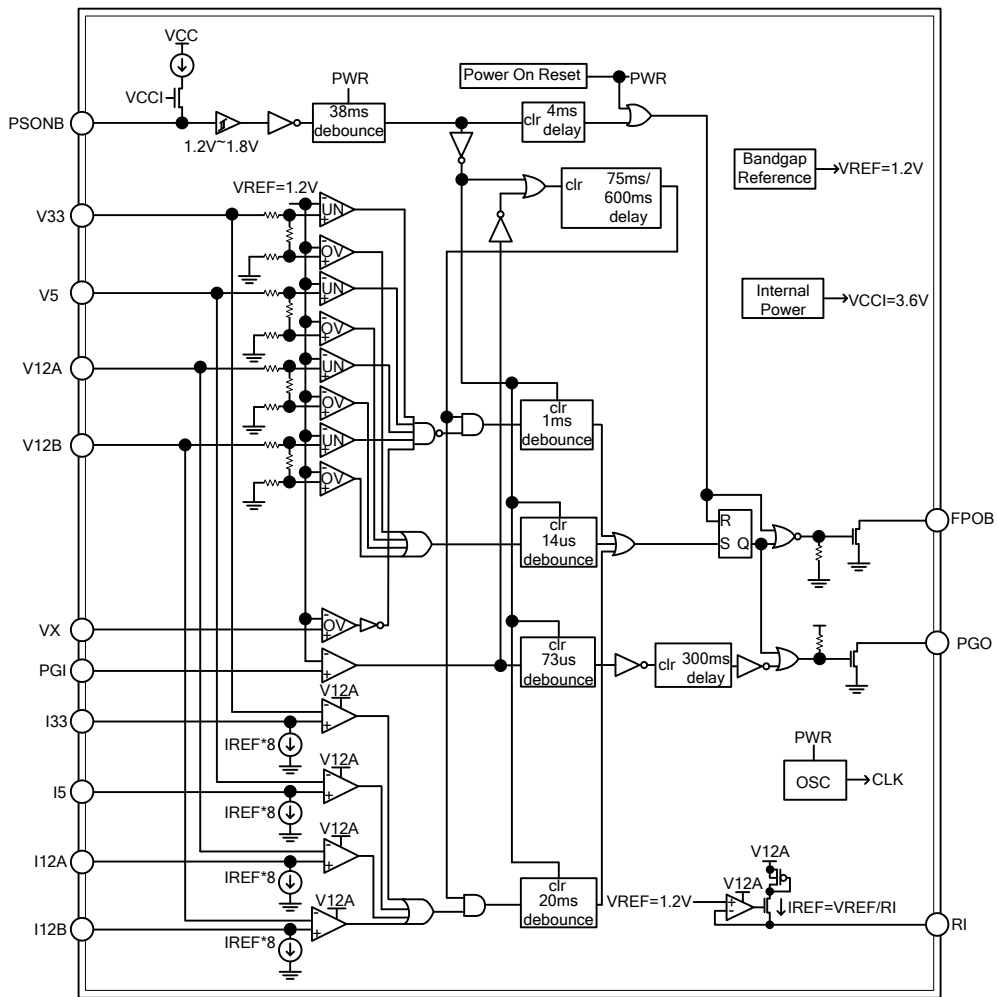(3) L: Lead Free, G: Halogen Free and Lead Free

■ **MARKING**

DIP-16	SOP-16

■ **PIN CONFIGURATION**

PG1	1	○	16	PGO
GND	2		15	V$_{CC}$
FPOB	3		14	V5
PSONB	4		13	V33
I12A	5		12	V12A
RI	6		11	I33
I12B	7		10	I5
V12B	8		9	VX

■ **PIN DESCRIPTION**

PIN NO.	PIN NAME	DESCRIPTION
1	PGI	Power good input signal pin
2	GND	Ground
3	FPOB	Fault protection output pin, open drain output
4	PSONB	On/Off switch input
5	I12A	12VA over current protection sense input
6	RI	Current sense adjust input
7	I12B	12VB over current protection sense input
8	V12B	12VB over voltage & under voltage & over current sense input pin
9	VX	Extra protection sense input
10	I5	5V over current protection sense input
11	I33	3.3V over current protection sense input
12	V12A	12VA over voltage & under voltage & over current sense input pin
13	V33	3.3V over voltage & under voltage & over current sense input pin
14	V5	5V over voltage & under voltage & over current sense input pin
15	V$_{CC}$	Power supply
16	PGO	Power good output signal pin, open drain output

■ BLOCK DIAGRAM

S3527

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}, V12A	-0.3~16	V
Input Voltage	PGI, PSONB	-0.3~V_{CC}+0.3（Max. 7V）	V
	V5, I5, V33, I33	-0.3~V12A+0.3（Max. 7V）	
	I12A, V12B, I12B	-0.3~V12A+0.3（Max. 16V）	
Output Voltage	PGO	-0.3~V_{CC}+0.3（Max. 7V）	V
	FPOB	-0.3~16	
Operating Temperature		–40~125	°C
Storage Temperature		-55~150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

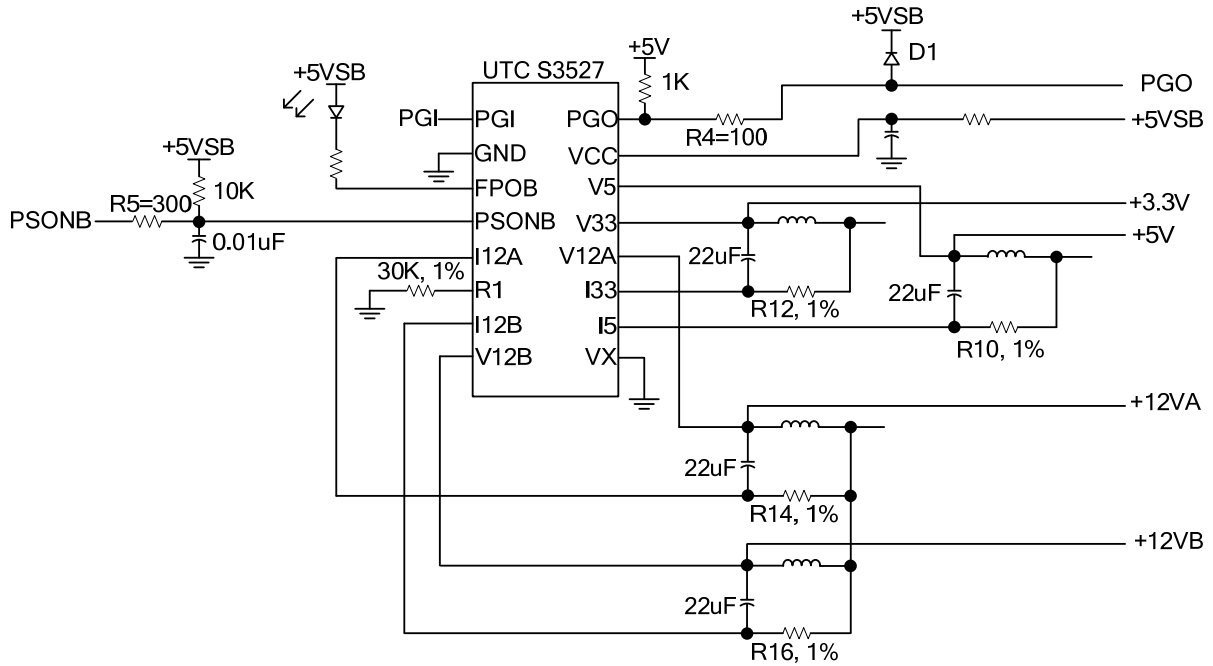| PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		3.8	5	16	V
Input Voltage	PGI, PSONB, V5, V33				7	V
	V12A, V12B				16	V
Output Voltage	PGO				7	V
	FPOB				16	V
Output Sink Current	FPOB	0.3V			10	mA
	PGO	0.3V			10	mA
Output Current For RI	RI		10		65	uA

■ ELECTRICAL CHARACTERISTICS (V_{CC}=5V, T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OVER VOLTAGE DETECTION						
Over Voltage Threshold	V33		3.8	3.9	4.0	V
	V5		5.6	5.8	6.0	V
	V12AB		13.5	13.85	14.2	V
	VX	Use UVD Timing	1.176	1.20	1.224	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		2.6	2.9	3.0	V
	V5		4.0	4.4	4.6	V
	V12AB		9	10.65	11.0	V
Input Threshold Voltage	PGI			1.2		V
$I_{LEAKAGE}$ Leakage Current	PGO	PGO=5V		5		uA
V_{OL} Low level Output Voltage	PGO	I_{SINK}=10mA			0.5	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						
I_{CC} Supply Current		PSONB=5V			1	mA
V_{CC} Operation Start Up Voltage			3.2	3.4	3.6	V
V_{CC} Under Lockout Voltage			2.8	3.0	3.2	V

■ **ELECTRICAL CHARACTERISTICS** (V_{CC}=5V, T_A=-40°C~125°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SWITCHING CHARACTERISTICS						
PGI To PGO Delay Time	Td1		100	300	400	mS
Short Circuit Delay Time	Td2		20	75	100	mS
	Td2-1	For 160	392	600	800	mS
		For 161		∞		mS
PGO To FPOB Delay Time	Td3		2	4	6	mS
Under Voltage Delay Time	Td4		40	60	81	µS
Over Current Delay Time	Td5		13	20	27	mS
Over Voltage Delay Time	Td6		9	14	19	µS
VX Delay Time	Td7		40	60	81	µS
PSONB De-bounce Time	Tb1		24	38	52	mS
PGI De-bounce Time	Tb2		47	73	100	µS

■ **TYPICAL APPLICATION CIRCUIT**