

### General Description

The EST2600 series is an excellent primary side feedback controller. It can meet the Energy-Star® specification for AC/DC single output power supplies with no-load power consumption less than 100mW. It minimizes the components counts and is available in a tiny SOT-23-6 package. Those make it an ideal design for low cost applications.

It provides constant voltage, constant current and cable compensation, Also, the EST2600 series is built-in the VCC over-voltage protection and FB pins to prevent the circuit being damaged from the abnormal conditions.

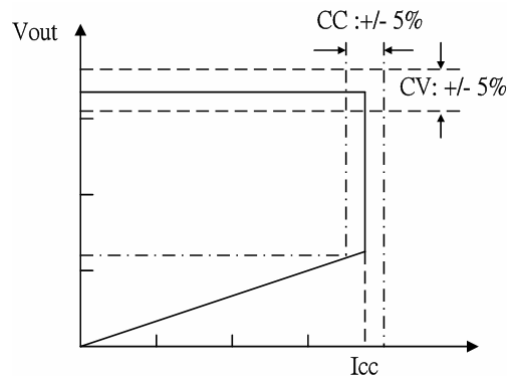
### Application

- Low power AC/DC offline SMPS for
- Cell phone charger
- Replacement for Linear adapter
- Lower power adapter
- Tablet PC

### Features

- Primary-Side Control, No Opto-Coupler Needed
- Very low startup current (<6uA)
- Directly drive MOSFET
- Constant-Voltage(CV) and constant-current (CC)
- LEB (Leading-edge blanking) on CS Pin
- Non-audible-noise Green mode control
- VCC OVP-voltage Protection
- Output OVP-voltage Protection
- Cable Compensation for CV regulation
- Over Temperature Protection
- SOT-23-6 package
- RoHS compliant and Halogen free

Fig 1. Typical CC/CV Curve



### Ordering Information

Order Number	Package Type	Packing	Top Marking	Note
EST2600A	SOT-23-6	Tape & Reel	26AX	Green Package
EST2600H	SOT-23-6	Tape & Reel	26HX	Green Package

### Application Circuit

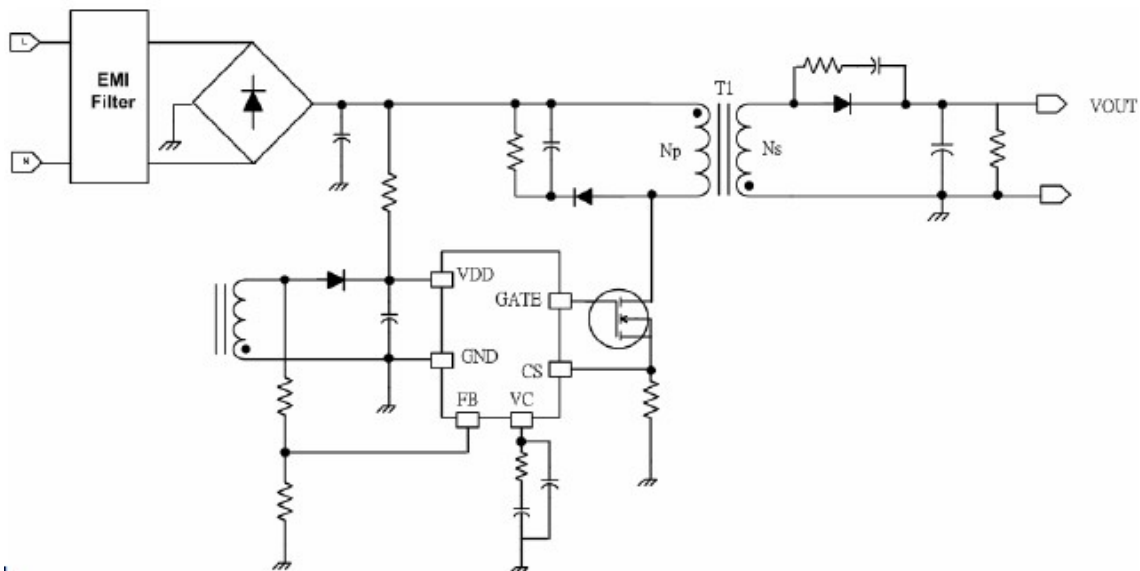


Fig 2.

**Pin Assignments and Package Type**

Pin Number	Pin Name	Description
1	GND	Ground
2	CS	Current sense pin.
3	GATE	Driver output to driver the external MOSFET
4	FB	Sense the transformer winding voltage waveform.
5	VC	Output of the error amplifier for voltage loop compensation.
6	VDD	Power supply pin

**Pin connection and Marking (Top View)**

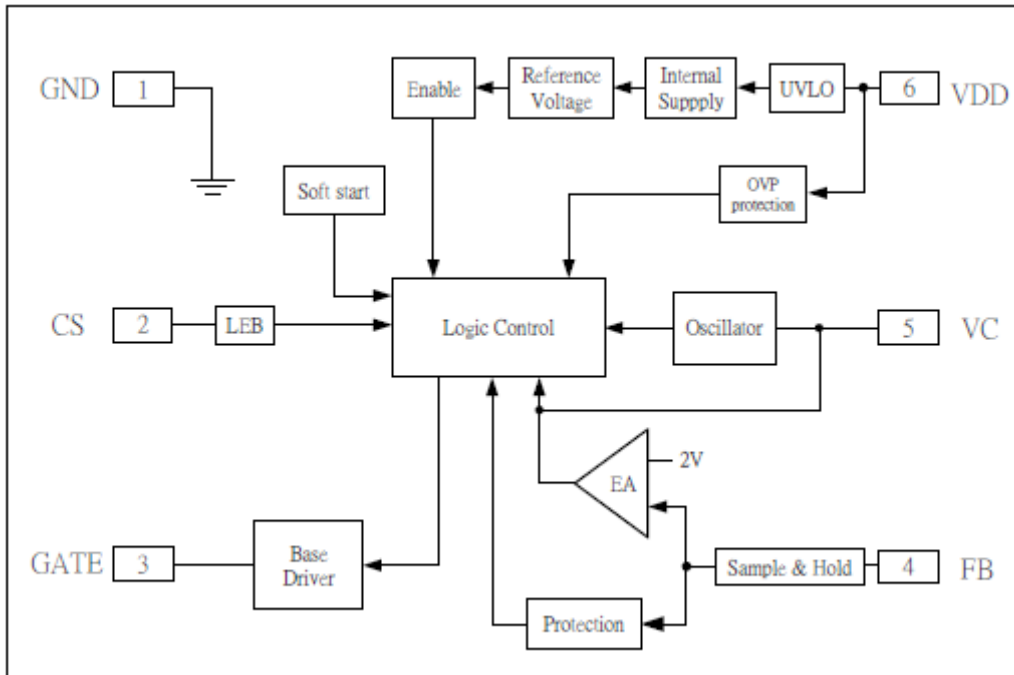
Part Number	Freq.	<p><b>SOT-23-6L</b></p>
26AX	A=65 KHz	
26HX	H=100 KHz	

**Absolute Maximum Ratings**

Parameter	Symbol	Limit Values		Unit
		Min.	Max	
VDD Voltage	VDD	-0.3	30	V
VC Voltage	VC,	-0.3	7	
FB Voltage	FB	-0.3	7	V
CS Voltage	CS	-0.3	7	
GATE Voltage	GATE	-0.3	30	V
Junction Temperature	T <sub>j</sub>	-40	150	°C
Operation Ambient Temperature	T <sub>opr</sub>	-20	85	°C
Storage Temperature	T <sub>stg</sub>	-65	150	°C
Package Thermal Resistance (SOT-23-6)	θ <sub>JA</sub>	-	250	°C/W
Power Dissipation @TA=85°C (SOT-23-6)	P <sub>D</sub>	-	0.25	W
Lead temperature (Soldering, 10 sec)		-	260	°C
ESD(Human Body Mode)	V <sub>ESD-HBM</sub>	-	3.0	KV
ESD(Machine Model)	V <sub>ESD-MM</sub>	-	300	V

Stress beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability

**Block Diagram**



**Fig. 3**

**Recommended Operating Conditions**

Parameter	Symbol	Min.	Max	Unit
Supply Voltage VDD	$V_{CC}$	10	24	V
Startup Resistor Value	$R_{star}$	0.6	4	MΩ
Junction temperature range	$T_j$	-40	150	°C
Ambient temperature range	$T_{opr}$	-40	85	°C

**DC Electrical Characteristics** (VDD = 15V, TA = 25°C, unless otherwise specified.)

**VDD SECTION**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Continuously operating voltage	$V_{OP}$				25	V
Start-up current	$I_{Start-up}$	VDD = 9.5V	2	6	10	uA
On threshold voltage	$V_{CC-ON}$		9.8	10.8	11.8	V
Off threshold voltage	$V_{CC-OFF}$		6.3	6.8	7.3	V
Operating supply current	$I_{CC-OP}$	VDD = 15V, $F_S = F_{OSC}$	0.8	1.5	2.0	mA
VCC over voltage protection level	$V_{OVP}$		25	27	29.5	V

# EST2600A/H

## Green-Mode PWM Flyback (PSR) Controller



### CURRENT-SENSE SECTION

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Leading edge blanking	$T_{LEB}$			500		ns
Over current threshold	$V_{CS-TH}$		1.0	1.1	1.2	V

### FB SECTION

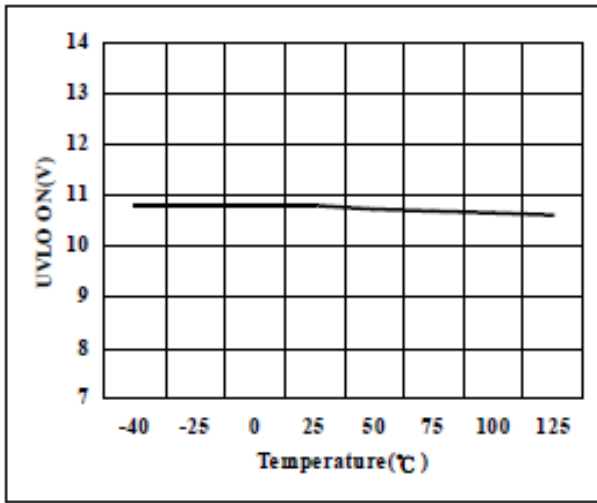
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Feedback input voltage	$V_{ref\_fb}$		1.97	2	2.03	v
Blanking time				2		uS

### OUT SECTION

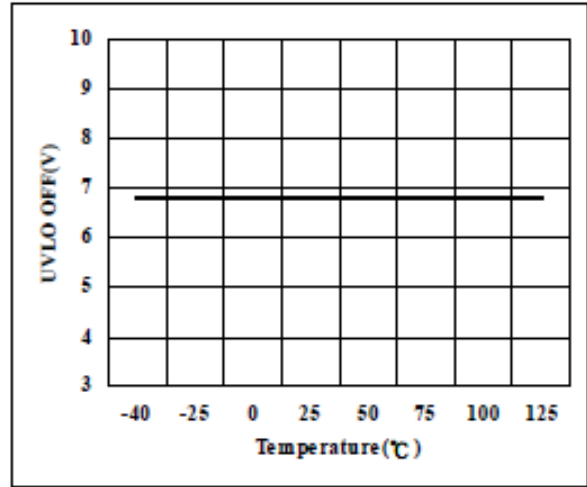
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Maximum frequency for A version	$F_{OSC}$		62	65	68	KHz
Maximum frequency for H version	$F_{OSC}$		96	100	104	KHz
Maximum duty cycle	$D_{MAX}$		65	70	75	%
Jitter range	$F_J$		$\pm 2$	$\pm 3$	$\pm 4$	%
Soft start	$T_{SS}$		3	4	5	mS
Over temperature protection	$T_{OTP}$			150		°C
OTP Hysteresis	$T_{OTP\_HYS}$			20		°C

**Typical Performance Characteristics**

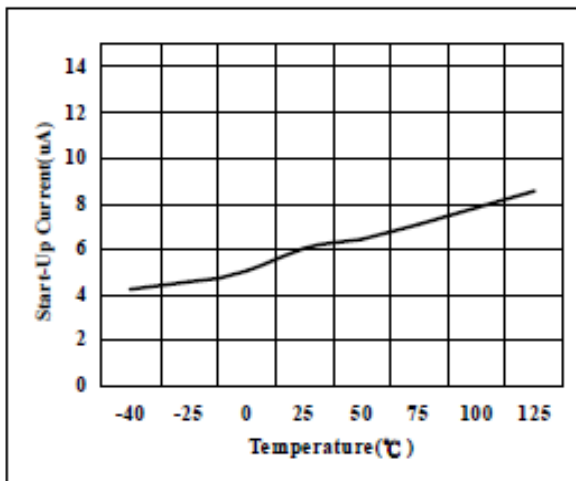
**Fig. 4 UVLO (ON) V.S TEMP**



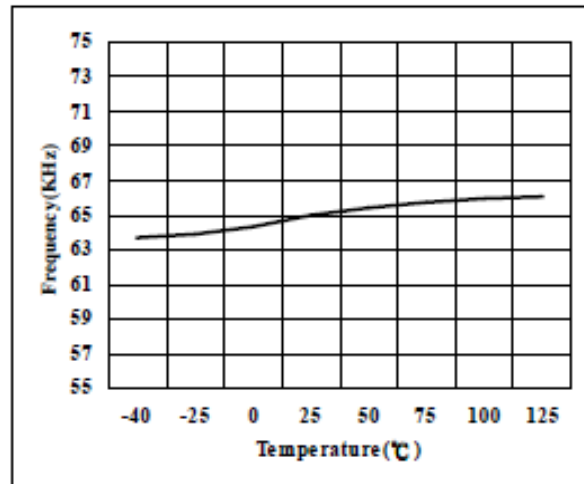
**Fig. 5 UVLO (OFF) V.S TEMP**



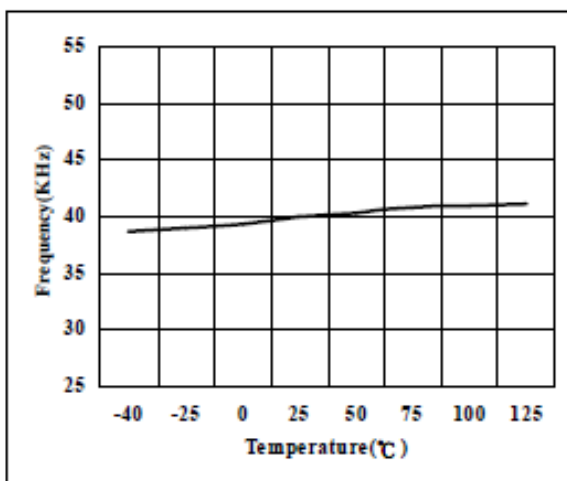
**Fig. 6 ISTARTUP VS TEMP**



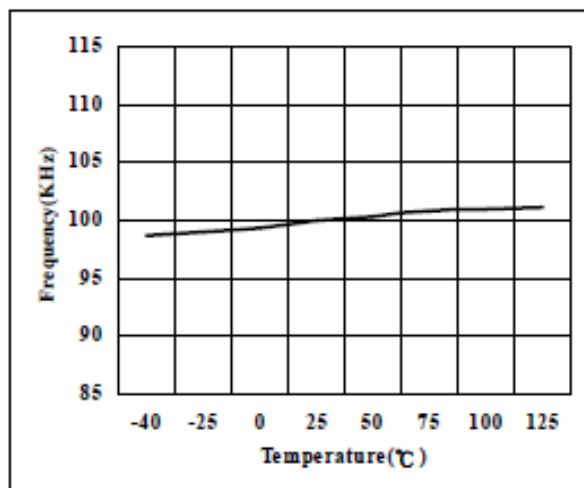
**Fig. 7 FREQUENCY VS TEMP**



**Fig. 8 F version FREQUENCY VS TEMP**

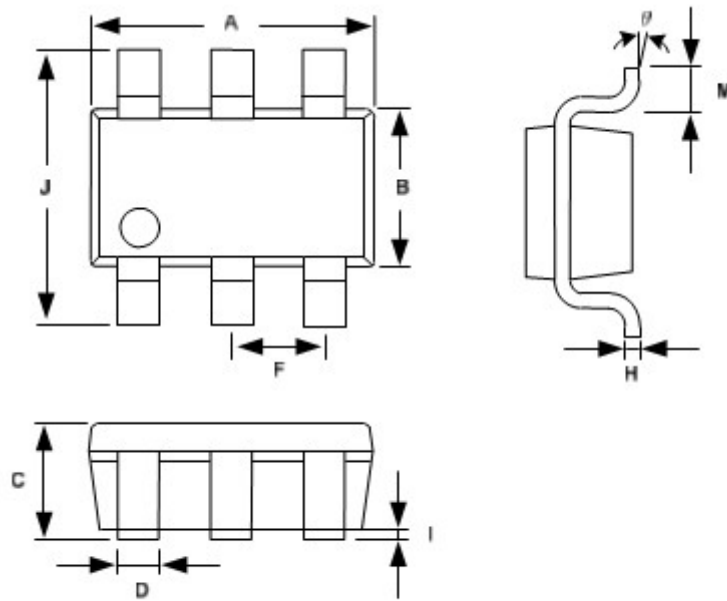


**Fig. 9 H version FREQUENCY VS TEMP**



**Package Information**

SOT-23-6L:



**Fig 8**

Symbol	Dimension in mm		Dimension in inch	
	MIN.	MAX.	MIN.	MAX.
A	2.692	3.099	0.106	0.122
B	1.397	1.803	0.055	0.071
C	-----	1.450	-----	0.057
D	0.300	0.550	0.012	0.022
F	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
I	0.050	0.150	0.002	0.006
J	2.600	3.000	0.102	0.118
M	0.300	0.600	0.012	0.024
θ	0°	10°	0°	10°

**Shipping packing**

1. 包裝量：3000ea/reel  
 2. 空包數：  
 前(內)空包min.40ea  
 後(外)空包min.40ea

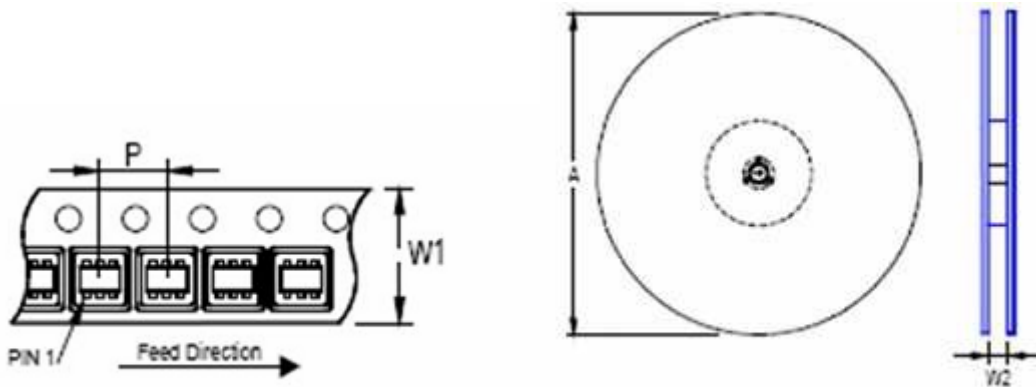
Reel上標籤貼於  
 camer tape圓孔同一邊

IC於carrier tape 方向如圖，  
 PIN1於左下角

將5捲reel裝入內箱中

包裝箱上貼上客戶標籤，  
 箱口以透明膠帶封箱

**Tape Reel Data**



Package Type SOT-26	Tape Size ( W1 ) (mm)	Pocket Pitch (P) (mm)	Reel Size (A) (mm)	Reel Width (W2) Min./Max. (mm)	Units Per Reel pcs.
6 Lead	8	4	180	8.4/9.9	3000

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## Green-Mode PWM Flyback (PSR) Controller

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### Update History

Revision	Date	Update
1.00	August 06, 2012	Preliminary version