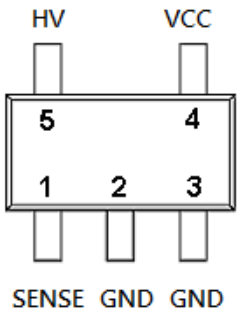
SP689
Ultra High Voltage Start Up

DESCRIPTION
The SP689 is a low cost version ultra high voltage start up IC. This IC is ideal to use in conjunction with any PWM to further reduce the standby power. By using SP689, it can eliminate the need for startup resistors and bleeder resistors in switching mode power supply design. It would provide the users a superior AC/DC power application with higher efficiency and lower standby power. With low external component counts, SP689 is a low cost solution for the applications.
SP689 is available in SOT-23-5L package.

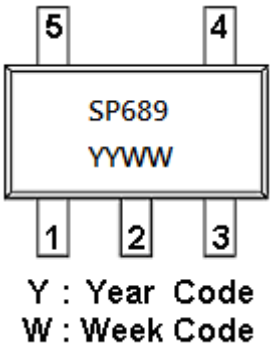
APPLICATIONS
- AC/DC Switching Power Adaptor
- Battery Charger
- Open-Frame Switching Power Supply
- LED Power Supply

FEATURES
- 700V CDMOS Process
- Auto Re-Start
- High-voltage start-up
- Low standby power circuits
- SOT-23-5L Package

PIN CONFIGURATION
SOT-23-5L



PART MARKING
SOT-23-5L



Y : Year Code
W : Week Code

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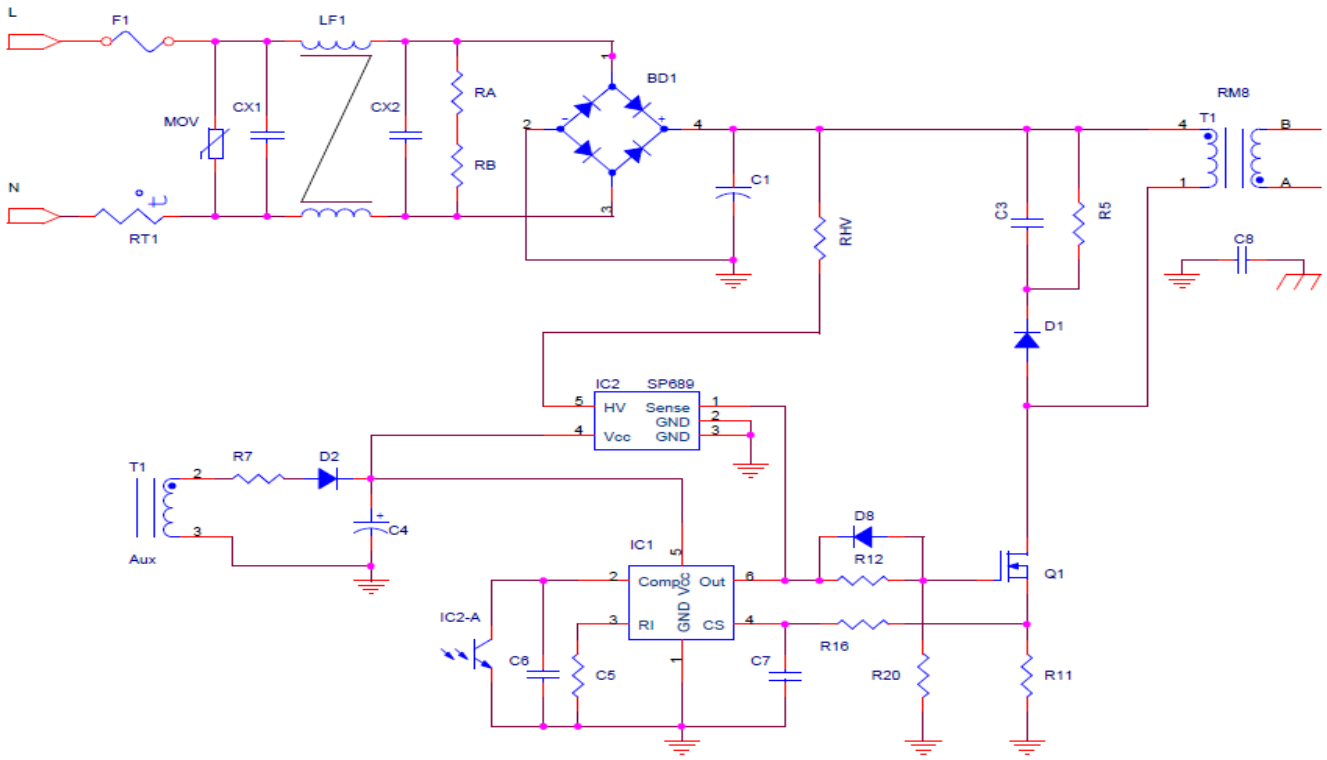
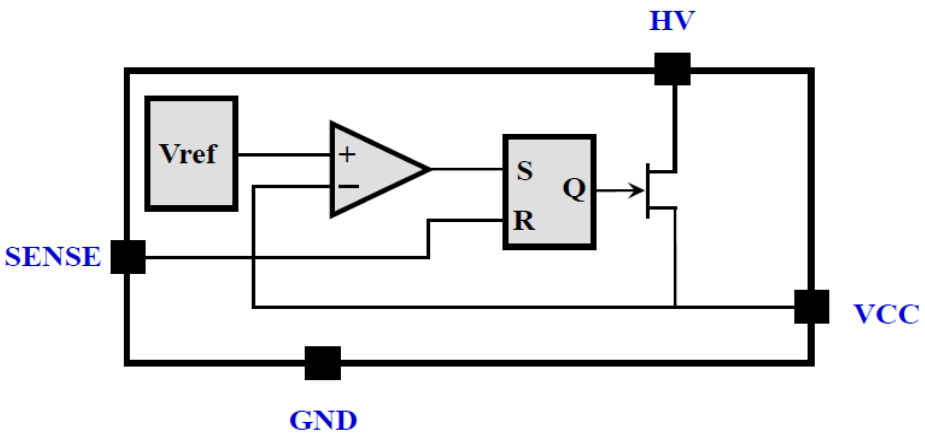
TYPICAL APPLCATION CIRCUIT



PIN DESCRIPTION

Pin	Symbol	Description
1	SENSE	Sense External Signal to Switch off HV MOSFET
2	GND	Ground
3	GND	Ground
4	VCC	Supply Voltage In
5	HV	Ultra High Voltage

BLOCK DIAGRAM



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ORDERING INFORMATION

Part Number	Package	Part Marking
SP689S25RGB	SOT-23-5L	SP689

※ SP689S25RGB : Tape Reel ; Pb – Free ; Halogen-Free

ABSOULTE MAXIMUM RATINGS (T_A=25℃, unless otherwise specified.)

The following ratings designate persistent limits beyond which damage to the device may occur.

Symbol	Parameter		Value	Unit
V_{HV}	HV Voltage		-0.3~700	V
$V_{CC\ /\ SENSE}$	VCC / SENSE Voltage		-0.3 ~ 40	V
P_D	Power Dissipation @ T_A=85℃ (*)		0.3	W
ESD	Human Body Model		4	KV
	Machine Model		300	V
T_J	Operating Junction Temperature Range		-40 ~ 150	℃
T_{STG}	Storage Temperature Range		-40 ~ 150	℃
$R_{\Theta JC}$	Thermal Resistance Junction – Case (*)	SOT-23-5L	210	℃/W

(*) The power dissipation and thermal resistance are evaluated under copper board mounted with free air conditions.

ELECTRICAL CHARACTERISTICS

(T_A=25℃, V_{HV}=30V, unless otherwise specified.)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
VHV	HV Voltage	Ir=50uA	650			V
Istartup	Start Up Current	VHV = 30V		100	140	uA
Ic	HV Current Source	VHV = 30V, VCC = 12V	1.5	2.5	5.0	mA
		VHV = 30V, VCC = 16V	1.0	2.0	4.0	mA
		VHV = 120V, VCC = 16V	2.0	3.0	4.5	mA
Vcc_RS	Vcc decreasing level at when the HV Voltage Re-start	VHV = 30V,		6.5		V
Iq	Quiescent Current, which HV turns-off	VHV = 30V, VCC = 16V		115	150	uA
VSENSE HI	Sense Voltage High(Logic level)		2.25		2.75	V
VSENSE LO	Sense Voltage Low(Logic level)				0.7	V

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