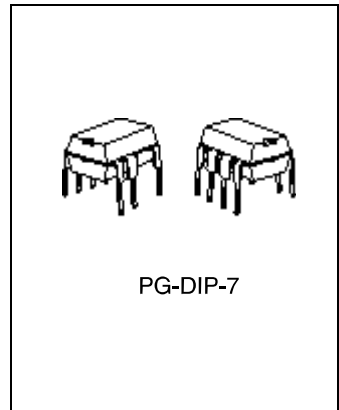


Off-Line SMPS Current Mode Controller with integrated 650V CoolMOS[®] and Startup cell (frequency jitter Mode) in DIP-7

Product Highlights

- Active Burst Mode to reach the lowest Standby Power Requirements < 50mW
- Auto Restart protection for overload, overtemperature, overvoltage
- External auto-restart enable function
- Built-in soft start and blanking window
- Extendable blanking Window for high load jumps
- Built-in frequency jitter and soft driving for low EMI
- Green Mould Compound
- Pb-free lead plating; RoHS compliant

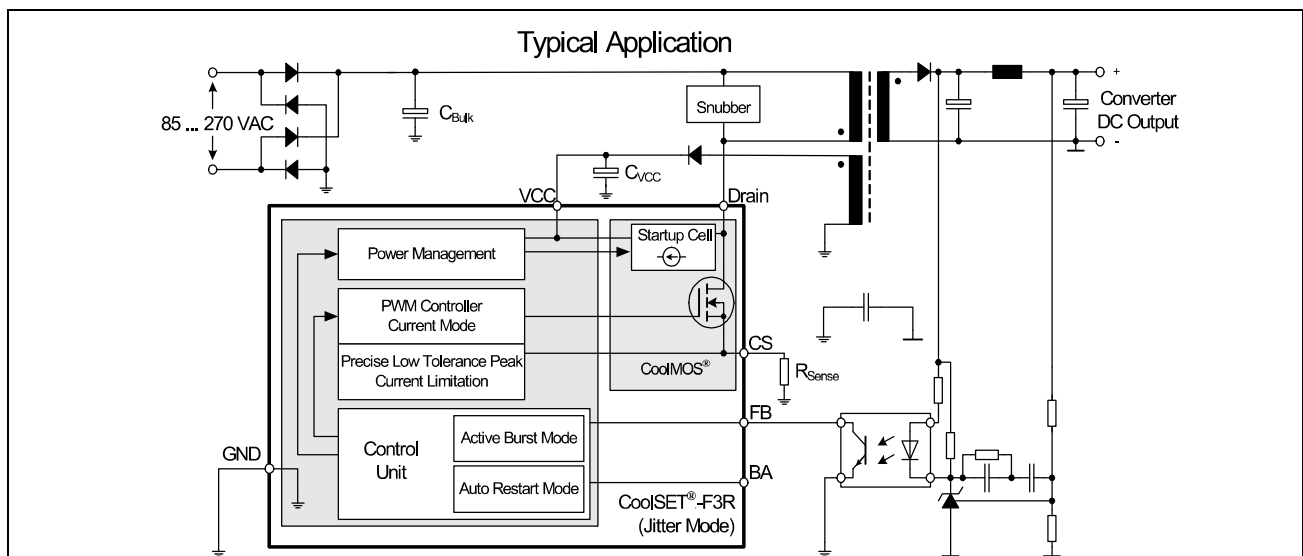


Features

- 650V avalanche rugged CoolMOS[®] with built-in Startup Cell
- Active Burst Mode for lowest Standby Power
- Fast load jump response in Active Burst Mode
- 65kHz internally fixed switching frequency
- Auto Restart Protection Mode for Overload, Open Loop, VCC Undervoltage, Overtemperature & Overvoltage
- Built-in Soft Start
- Built-in blanking window with extendable blanking time for short duration high current
- External auto-restart enable pin
- Max Duty Cycle 75%
- Overall tolerance of Current Limiting $\pm 5\%$
- Internal PWM Leading Edge Blanking
- BiCMOS technology provide wide VCC range
- Built-in Frequency jitter and soft driving for low EMI

Description

ICE3BR1765JZ is derived from ICE3BR1765J in DIP-7 package. The CoolSET[®]-F3R jitter series (ICE3BRxx65J) is the latest version of CoolSET[®]-F3. It targets for the Off-Line battery adapters and low cost SMPS for lower power range such as application for DVD R/W, DVD Combi, Blue ray DVD player, set top box, etc. Besides inherited the outstanding performance of the CoolSET[®]-F3 in the BiCMOS technology, active burst mode, auto-restart protection, propagation delay compensation, etc., CoolSET[®]-F3R series has some new features such as built-in soft start time, built-in blanking window, built-in frequency jitter, soft gate driving, etc. In case a longer blanking time is needed for high load application, a simple addition of capacitor to BA pin can serve the purpose. Furthermore, an external auto-restart enable feature can provide extra protection when there is a need of immediate stop of power switching.



Type	Package	Marking	V _{DS}	F _{OSC}	R _{DSon} ¹⁾	230VAC ±15% ²⁾	85-265 VAC ²⁾
ICE3BR1765JZ	PG-DIP-7	3BR1765JZ	650V	65kHz	1.70	44.5W	29.5W

¹⁾ typ @ T_j=25°C

²⁾ Calculated maximum input power rating at T_a=50°C, T_j=125°C and without copper area as heat sink. Refer to input power curve for other T_a.

1 Pin Configuration and Functionality

1.1 Pin Configuration with PG-DIP-7

Pin	Symbol	Function
1	BA	extended Blanking & Auto-restart
2	FB	FeedBack
3	CS	Current Sense/ 650V ¹⁾ CoolMOS [®] Source
4	n.c.	not connected
5	Drain	650V ¹⁾ CoolMOS [®] Drain
6	n.c.	Not connected
7	VCC	Controller Supply Voltage
8	GND	Controller GrouND

¹⁾ at $T_j=110^\circ\text{C}$

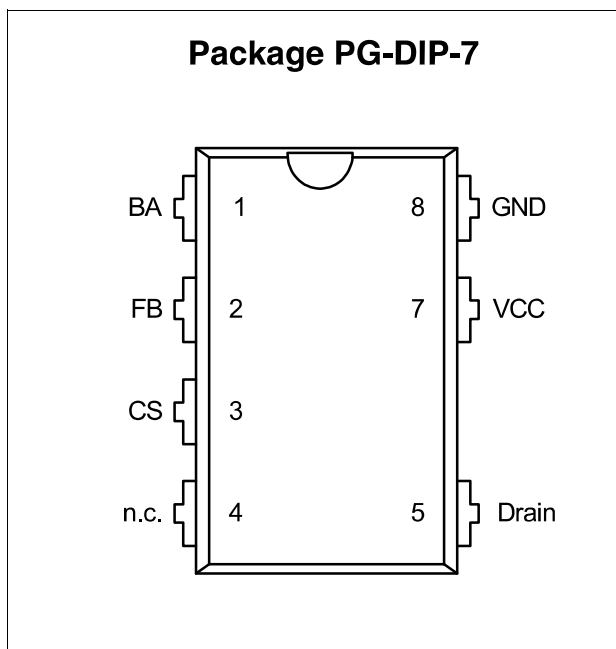


Figure 1 Pin Configuration PG-DIP-7 (top view)

1.2 Pin Functionality

BA (extended Blanking & Auto-restart)

The BA pin combines the functions of extendable blanking time for over load protection and the external auto-restart enable. The extendable blanking time function is to extend the built-in 20 ms blanking time by adding an external capacitor at BA pin to ground. The external auto-restart enable function is an external access to stop the gate switching and force the IC enter auto-restart mode. It is triggered by pulling down the BA pin to less than 0.33V.

FB (Feedback)

The information about the regulation is provided by the FB Pin to the internal Protection Unit and to the internal PWM-Comparator to control the duty cycle. The FB-Signal is the only control signal in case of light load at the Active Burst Mode.

CS (Current Sense)

The Current Sense pin senses the voltage developed on the series resistor inserted in the source of the integrated CoolMOS[®]. If voltage in CS pin reaches the internal threshold of the Current Limit Comparator, the Driver output is immediately switched off. Furthermore the current information is provided for the PWM-Comparator to realize the Current Mode.

Drain (Drain of integrated CoolMOS[®])

Drain pin is the connection to the Drain of the integrated CoolMOS[®].

VCC (Power Supply)

VCC pin is the positive supply of the IC. The operating range is between 10.5V and 25V.

GND (Ground)

GND pin is the ground of the controller.

2 Representative Blockdiagram

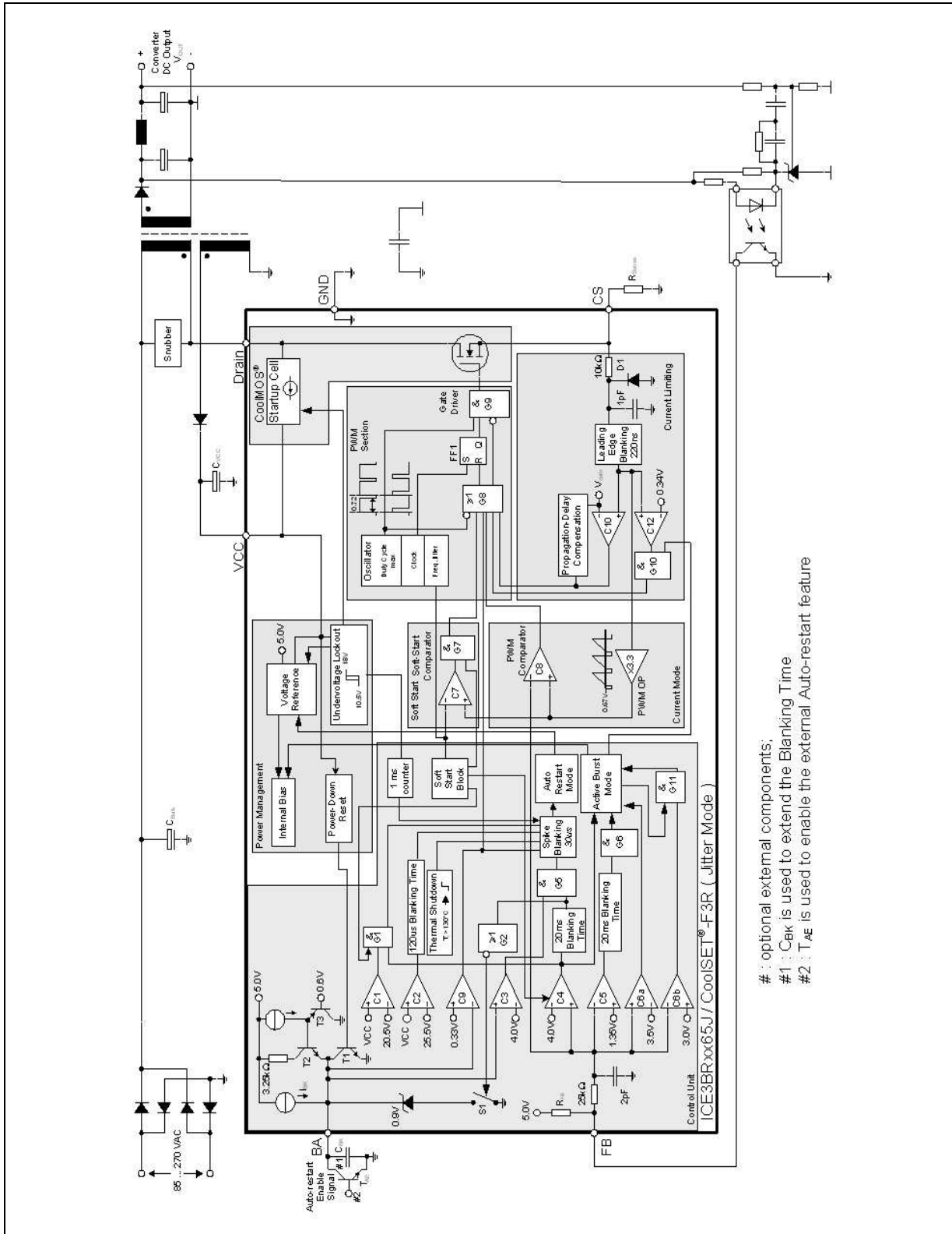


Figure 2 Representative Blockdiagram