58V Asynchronous Buck Controller

❖ GENERAL DESCRIPTION

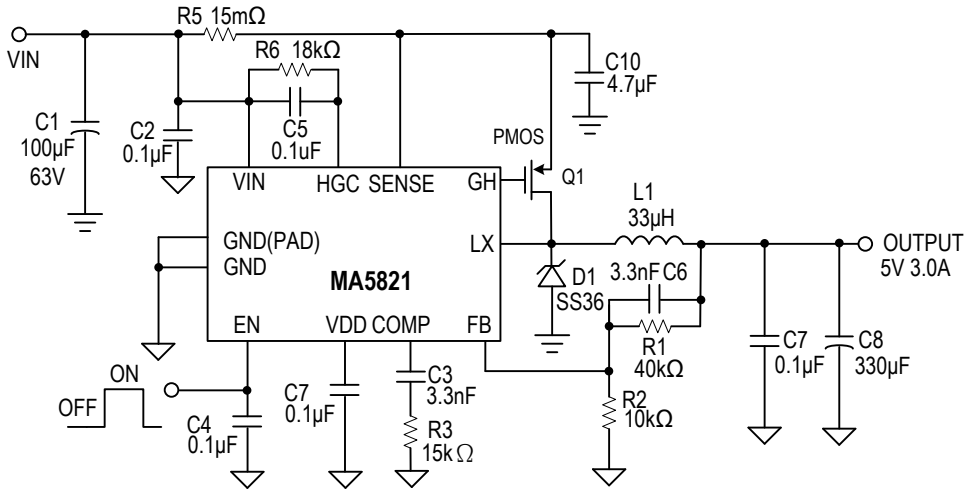
The MA5821 is an asynchronous buck controller. The device needs external high side power MOSFET and low side schottky diode, and provides 3A of continuous load current over a wide input voltage of 10V to 58V range. Current mode control provides fast transient response and cycle-bicycle current limit. An internal soft-start function prevents inrush current at turn-on.

This device is available in small MSOP-10L-EP package, and provides a very compact solution with minimal external components.

❖ FEATURES

- Wide 10V~ 58V Operating Input Range
- External High-Side P-channel MOSFET Switch
- Output Adjustable : VFB(1.00V±2%)
- Up to 93% Efficiency
- Internal Soft-Start / Thermal Shutdown Protection
- Fixed 240KHz Frequency
- Cycle-by-Cycle Over Current Protection
- Input Under/Over Voltage Lockout

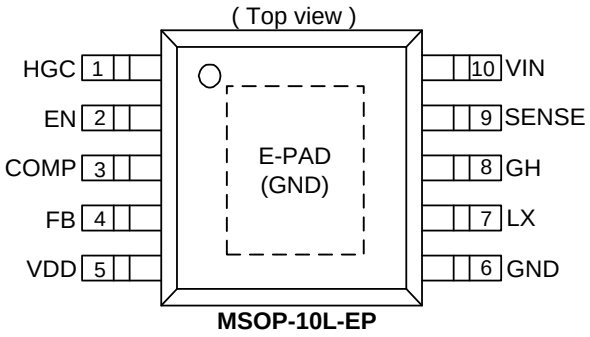
❖ APPLICATION CIRCUIT



$V_{OUT} = V_{FB} \times (1 + R1/R2)$, V_{FB} = 1.0V, R2 suggest 1K～30KΩ.

❖ PIN ASSIGNMENT

The package of MA5821 is MSOP10L-EP (Exposed pad); the pin assignment is given by:



Name	Description
HGC	Supply high-side gate driver. Decouple this pin to VIN pin with 0.1uf ceramic CAP (e.g. X5R) and 18kΩ
EN	Enable Control. (internal pull high).
COMP	Compensation Node. Connect a series RC network from COMP to GND.
FB	Feedback Input. FB senses the output voltage to regulate that voltage. Drive FB with a resistive voltage divider from the output voltage.
VDD	Internal Regulator Pin
GND	Ground.
LX	Switching node and Switching sense pin.
GH	Gate driver for external high-side PMOS.
SENSE	Power Input and Current Limit SENSE pin. Bypass SENSE (of High-side PMOS) to Ground with high capacitance 4.7uF ceramic MLCC (e.g. X5R) to eliminate noise. Ensure a very large SENSE area for high-side PMOS cooling.
VIN	Power Input. Bypass VIN to Ground with a suitably high capacitance E-CAP to eliminate noise, and bypass IC PIN10-VIN to pin6-GND with a 0.1uf ceramic MLCC (e.g. X5R.)
E-PAD	Exposed pad. Connect to GND.

❖ ORDER/MARKING INFORMATION

Order Information	Top Marking
MA5821XXX → Packing Blank: Tube A : Taping Package Type EM: MSOP10L-EP	MA5821 → Part number XXXXX → ID code:internal WW:01~52 Year:18=2018