

40V, 4A Synchronous Buck Converter with CC/CV MODE

❖ GENERAL DESCRIPTION

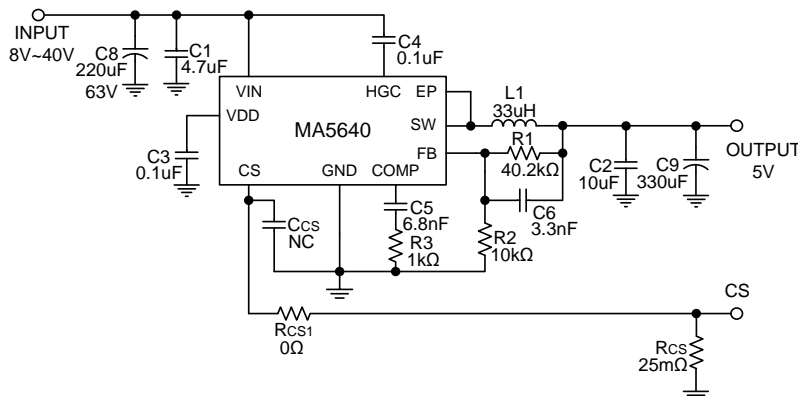
The MA5640 is a wide input voltage range synchronous buck converter which support CC/CV mode operating. This device integrates low $R_{DS(ON)}$ P-MOS + N-MOS architecture and can provide high efficiency, maximum 100% duty voltage conversion. The MA5640 drives up to 4A continuous output current at 240KHz switching frequency. Current mode control provides fast transient response and the internal soft-start function prevents inrush current at power on.

The internal protection functions include input under voltage lock-out(UVLO), input over voltage lock-out(OVLO), cycle-by-cycle current limit and thermal shutdown protection. The MA5640 is available in SOP8L-EP(Exposed Pad) package, provides a very compact solution with minimal external components.

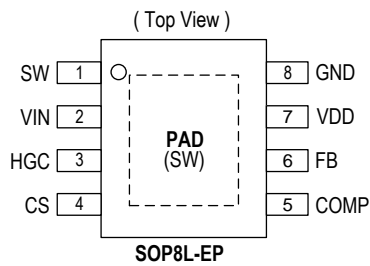
❖ FEATURES

- 8V to 40V Wide Operating Input Voltage Range
- Integrated 75mΩ P-type MOSFET + 45mΩ N-type MOSFET Switches
- Output Voltage Adjustable: $V_{FB}(1.00V \pm 2\%)$
- Up to 4A Output Current
- CC/CV Mode Control
- Maximum 100% Duty Operating
- Fixed 240KHz Frequency
- Cycle-by-Cycle Current Limit
- Input Under / Over Voltage Lock-Out (UVLO / OVLO)
- Thermal Shutdown Protection (OTP)
- Available in SOP8L-EP Package

❖ APPLICATION CIRCUIT



$$V_{OUT} = V_{FB} \times \left(1 + \frac{R1}{R2} \right), V_{FB} = 1.0V, R2 = 1K-30K\Omega, I_{CS} = \frac{V_{CS}}{R_{CS}} = \frac{100mV}{25m\Omega} = 4A$$



Name	Description
SW	Power Switching Output. SW is the switching node that supplies power to the output. Connect the output LC filter from SW node to output node.
VIN	Power Input. Connect VIN pin to GND pin with a high capacitance E-CAP and a 4.7uF MLCC to eliminate noise.
HGC	Supply High-Side Gate Driver. Decouple this pin to VIN pin with a 0.1uF ceramic capacitor.
CS	The Current Sense Pin.
COMP	Compensation Node. COMP is used to compensate the regulation control loop. Connect a series RC network from COMP to GND to compensate the regulation control loop.
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 Pin.
PAD	Exposed Pad. Connect to SW.

❖ ORDER/MARKING INFORMATION

Order Information	Top Marking
<p>MA5640XX X → Packing Blank: Tube Package Type A : Taping ES: SOP8L-EP</p>	<p>MA5640 → Part number XXXXX → ID code:internal WW:01~52 Year:18=2018</p>