

60V 2A 400KHz Switching Current Boost DC/DC Converter

Features

- Wide 3.6V to 24V Input Voltage Range
- Positive or Negative Output Voltage Programming With a Single Feedback Pin
- Current Mode Control Provides Excellent Transient Response
- 1.25V Reference Adjustable Version
- Fixed 400KHz Switching Frequency
- Maximum 2A Switching Current
- SW PIN Built-in Over Voltage Protection
- Excellent line and load regulation
- EN pin TTL Shutdown Capability
- Internal Optimize Power MOSFET
- High Efficiency up to 90%
- Built in Frequency Compensation
- Built in Soft-start Function
- Built in Thermal Shutdown Function
- Built in Current Limit Function
- Available in SOIC-8(SOP-8) Packages

General Description

The HCR6607 regulator is a wide input range, current mode, DC/DC converter which is capable of generating either positive or negative output voltages, It can be configured as either a boost, flyback, the SEPIC or inverting converter. The HCR6607 built in N-channel power MOSFET and fixed frequency oscillator, current-mode architecture results in stable operation over a wide range of supply and output voltages.

The HCR6607 regulator is special design for portable electronic equipment.

The HCR6607 is available in SOIC-8(SOP-8) ROHS compliant package. Its operating temperature range from -40°C to +125°C.

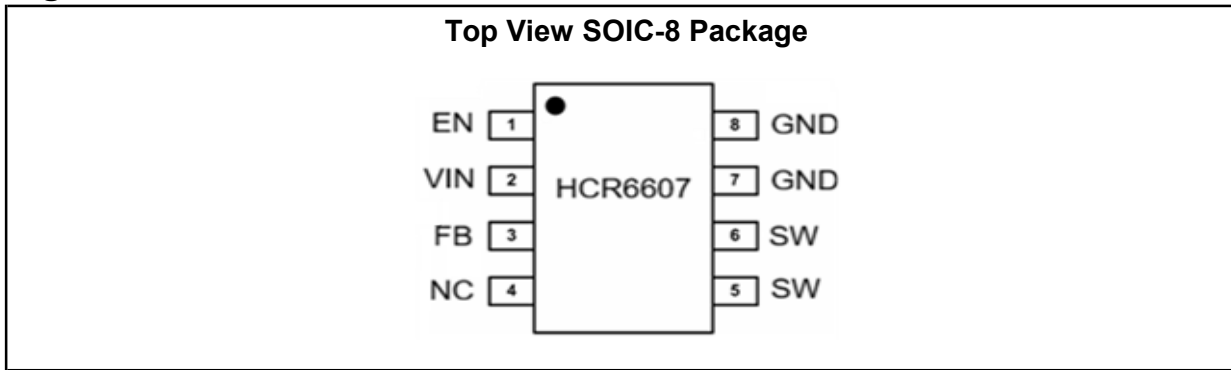
Applications

- Automotive and Industrial Boost /Buck-Boost / Inverting Converters
- Portable Electronic Equipment

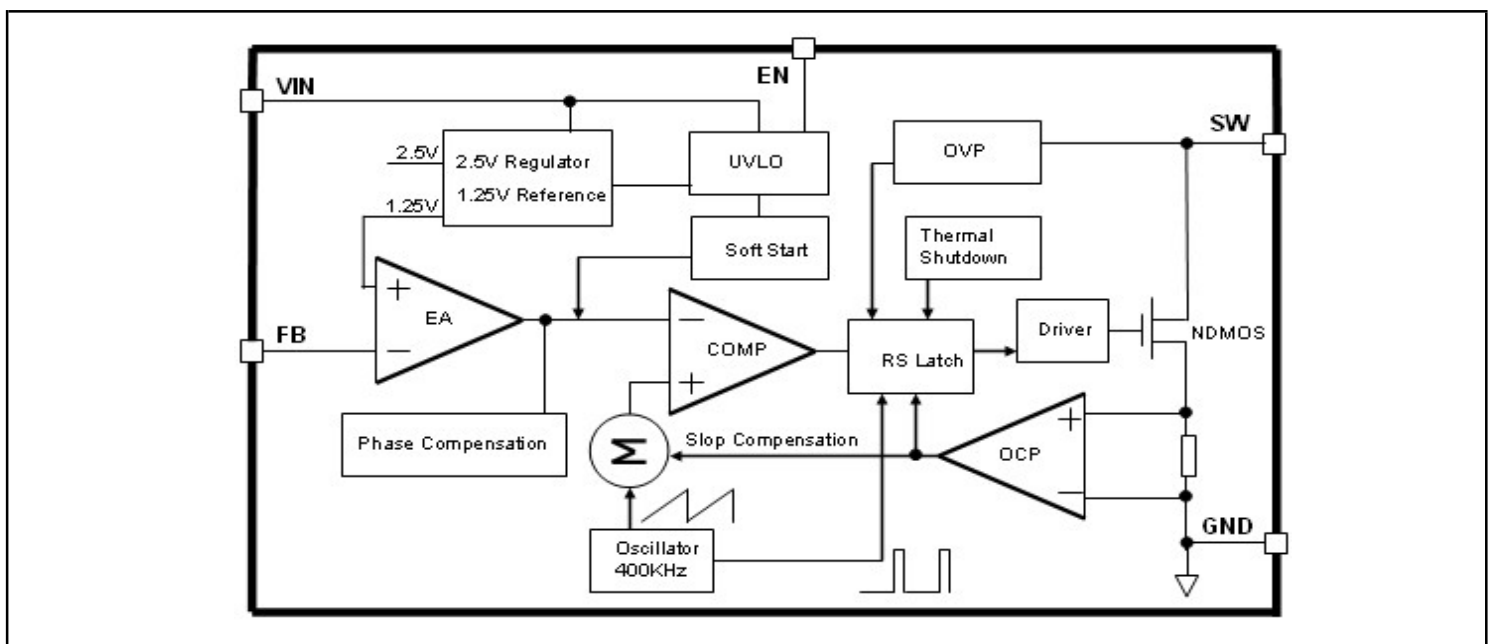


SOIC-8(SOP-8)

Figure 1. Package Type of HCR6607

60V 2A 400KHz Switching Current Boost DC/DC Converter
Pin Configuration

Figure 2. Pin Configuration of HCR6607 (Top View)
Pin Description

SOIC-8 (SOP-8)	Pin Name	Pin Description
1	EN	Enable Pin. Drive EN pin low to turn off the device , drive it high to turn it on . Floating is default high .
2	VIN	Supply Voltage Input Pin. HCR6607 operates from a 3.6V to 24V DC voltage. Bypass VIN to GND with a suitably large capacitor to eliminate noise on the input.
3	FB	Feedback Pin (FB). The feedback threshold voltage is 1.25V.
4	NC	No Connected.
5,6	SW	Power Switch Output Pin (SW). Output is the switch node that supplies power to the output.
7,8	GND	Ground Pin.

Functional Block Diagrams

Figure 3. Block Diagrams of HCR6607

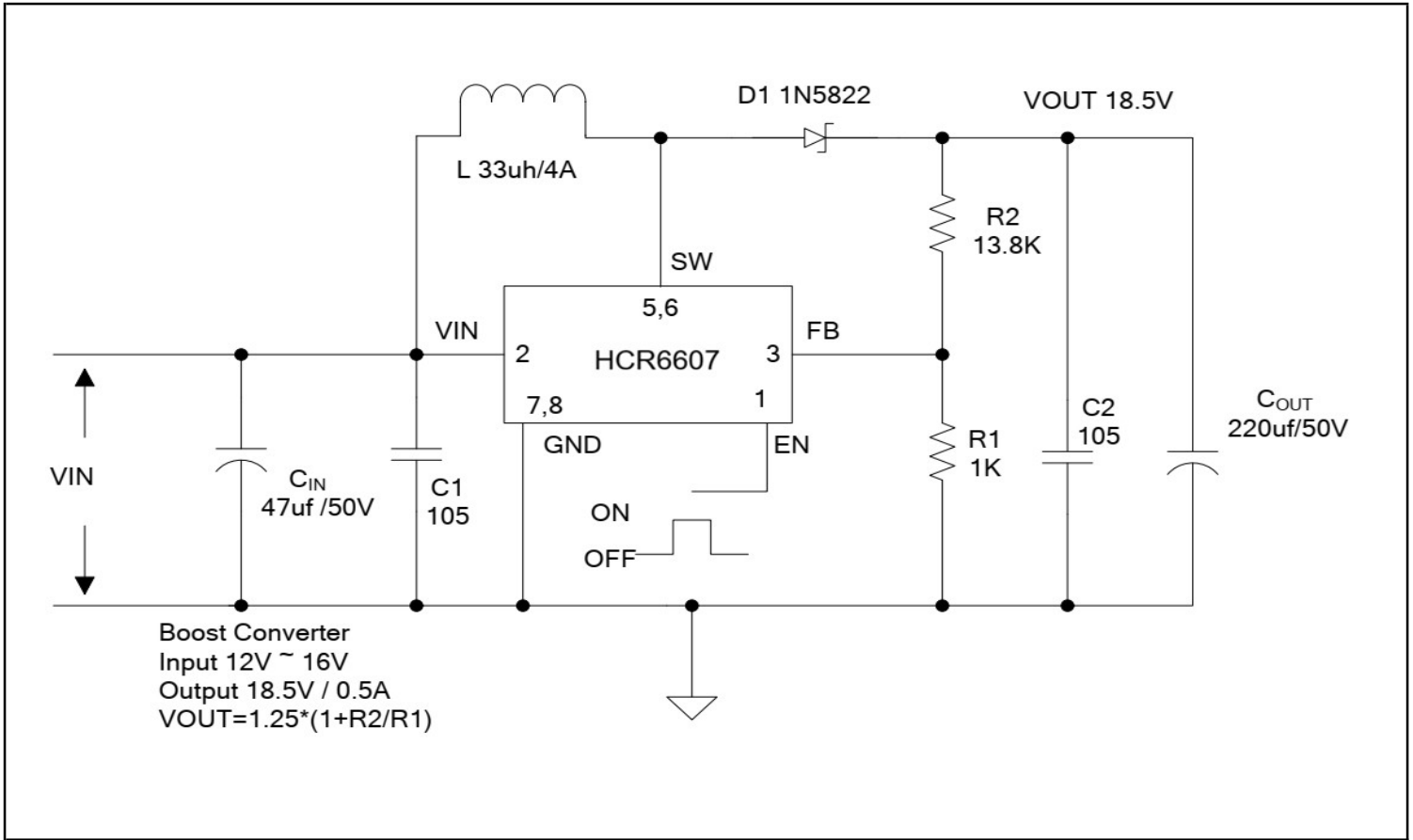
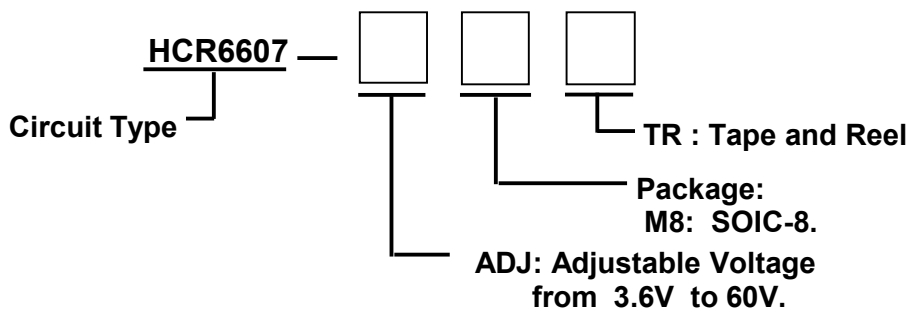
60V 2A 400KHz Switching Current Boost DC/DC Converter
Typical Application Circuit


Figure 4. Typical Application Circuit (Boost Converter) of HCR6607

Ordering Information


Standard	Marking ^[2]	Output Voltage	Temperature	Package
HCR6607-ADJM8TR	HCR6607xxyy	ADJ Volts	-40 to +125'C	SOIC-8 (SOP-8)

note 2. the "xxyy" is date code.

60V 2A 400KHz Switching Current Boost DC/DC Converter**Absolute Maximum Ratings(Note 1)**

Parameter	Symbol	Value	Unit
Input Voltage Range	V _{IN}	-0.3 to 26	V
Feedback Pin Voltage	V _{FB}	-0.3 to V _{IN}	V
EN Pin Voltage	V _{EN}	-0.3 to V _{IN}	V
Output Switch Pin Voltage	V _{SW}	-0.3 to 60	V
Power Dissipation	P _D	Internally Limited	mW
Thermal Resistance (SOIC-8 (SOP-8)) (Junction to Ambient, No Heatsink, Free Air)	θ _{JA}	100	'C/W
Operating Junction Temperature	T _J	-40 to +125	'C
Storage Temperature	T _{STG}	-65 to +150	'C
Lead Temperature (Soldering, 10 sec)	T _{LEAD}	260	'C
ESD(HBM)	HBM	2000	V

Note 1: Stresses greater than those listed under Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation is not implied Exposure to absolute maximum rating conditions for extended periods may affect reliability.

Recommend Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Input Voltage	V _{IN}	3.6	-	24	V
Operating Temperature Range	T _A	-40	-	+125	'C

60V 2A 400KHz Switching Current Boost DC/DC Converter
Electrical Characteristics (Ta=25°C Unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
System Parameters test circuit figure 4						
Feedback Voltage	VFB	VIN=12 to 16V, VOUT=18V, ILOAD=0.1A to 0.5A	1.213	1.25	1.287	V
Efficiency	η	VIN=12V, VOUT=18.5V, IOUT=0.5A	-	90	-	%

Electrical Characteristics (DC Parameters)

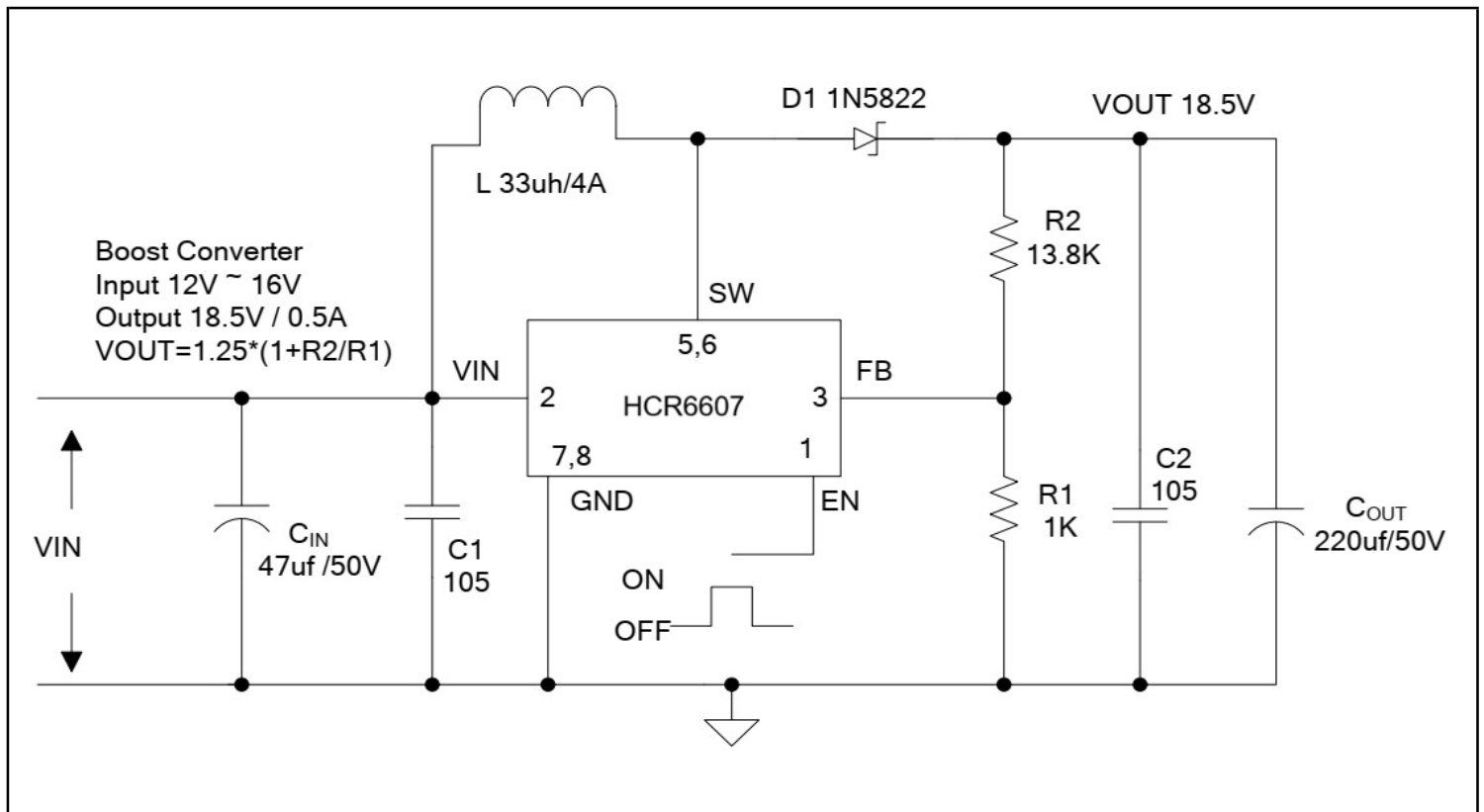
(VIN=12V, GND=0V, Vin&GND parallel connect a 220uF/50V capacitor, IOUT=0.5A, TA=25°C

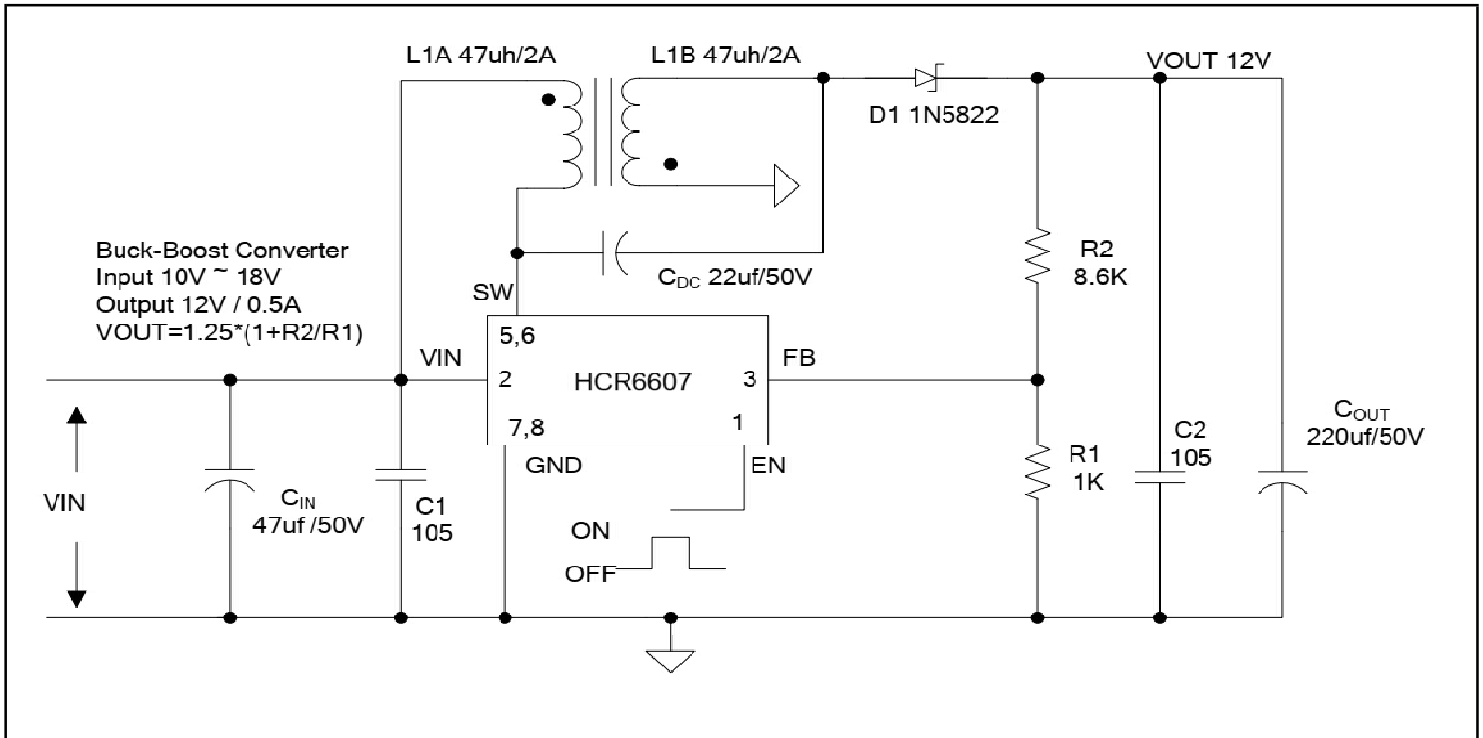
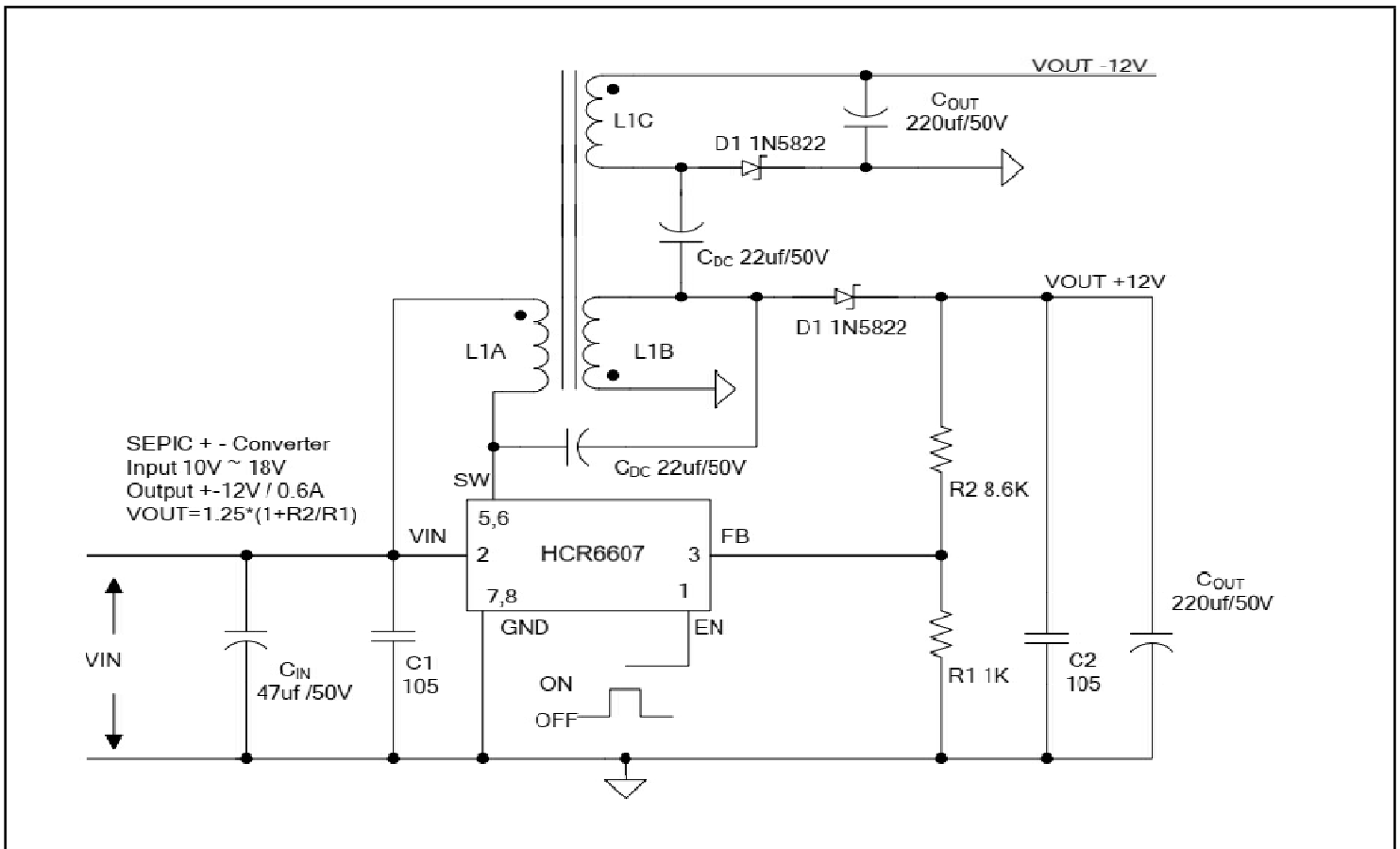
the others floating Unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Operation Voltage	VIN		3.6	-	24	V
Shutdown Supply Current	ISTBY	VEN=0V	-	70	100	uA
Quiescent Supply Current	Iq	VEN=2V, VFB=VIN	-	2.5	5.0	mA
Oscillator Frequency	FOSC		320	400	480	KHz
Switch Current Limit	IL	VFB=0	-	2.0	-	A
Output Power NMOS	RDSON	VIN=12V, ISW=2A	-	110	120	mΩ
EN Pin Threshold	VEN	High (Regulator ON)	-	1.4	-	V
		LOW (Regulator OFF)	-	0.8	-	
EN Pin Input Leakage Current	IH	VEN=2V (ON)	-	3	10	uA
	IL	VEN=0V (OFF)	-	3	10	uA
Max. Duty Cycle	DMAX	VFB=0V	-	90	-	%

60V 2A 400KHz Switching Current Boost DC/DC Converter
Schottky Diode Selection Table

Current	Surface Mount	Through Hole	VR (The same as system maximum input voltage)				
			20V	30V	40V	50V	60V
1A	-	V	1N5817	1N5818	1N5819	-	-
3A	-	V	1N5820	1N5821	1N5822	-	-
	-	V	MBR320	MBR330	MBR340	MBR350	MBR360
	V	-	SK32	SK33	SK34	SK35	SK36
	V	-	-	30WQ03	30WQ04	30WQ05	-
	-	V	-	31DQ03	31DQ04	31DQ05	-
	-	V	SR302	SR303	SR304	SR305	SR306

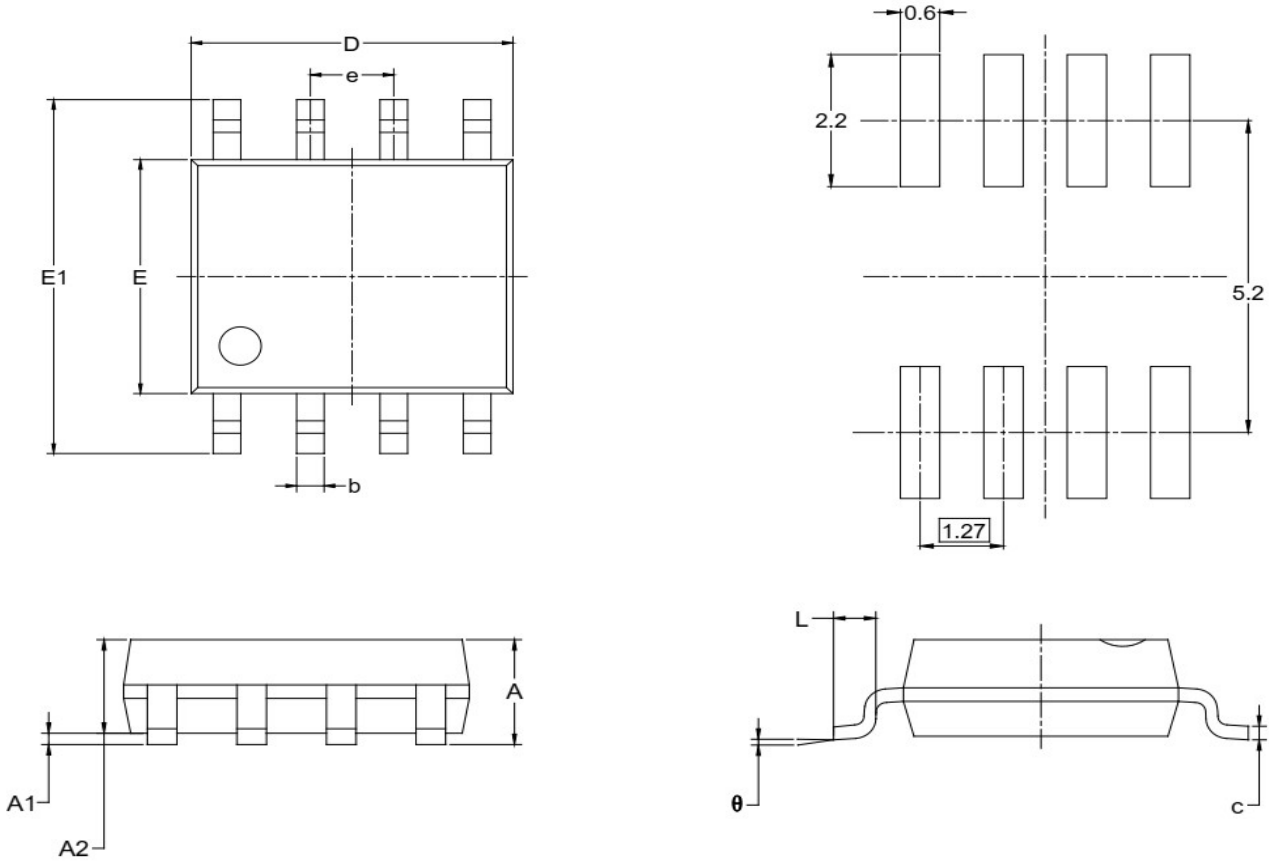
Typical System Application -Boost (Output 18.5V/0.5A)

Figure 5. Boost Converter Circuit of HCR6607

60V 2A 400KHz Switching Current Boost DC/DC Converter
Typical System Application-SEPIC Buck Boost(Input 10V-18V, Output 12V/0.5A)

Figure 6. SEPIC Buck-Boost Converter of HCR6607
Inverting Converter-SEPIC Inverting Topology (Input 10V-18V, Output +/-12V/0.6A)

Figure 7. SEPIC Inverting Converter of HCR6607

60V 2A 400KHz Switching Current Boost DC/DC Converter
Package Mechanical Dimensions

Package: SOIC-8(SOP-8)/M8

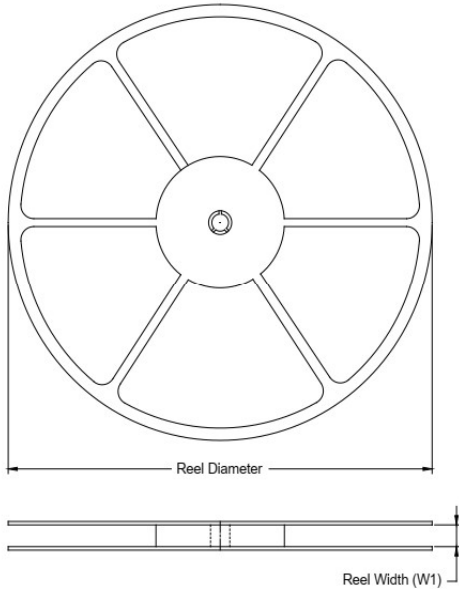
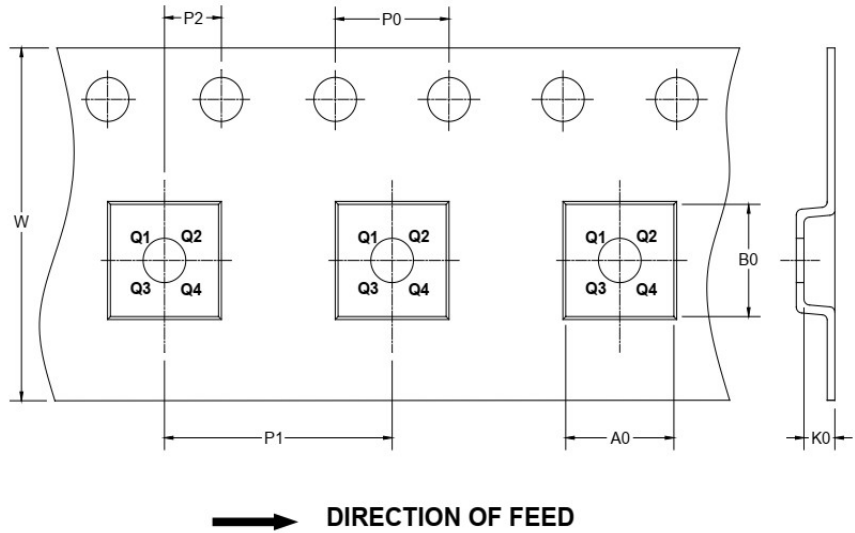
Unit: mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.27 BSC		0.050 BSC	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

NOTES:

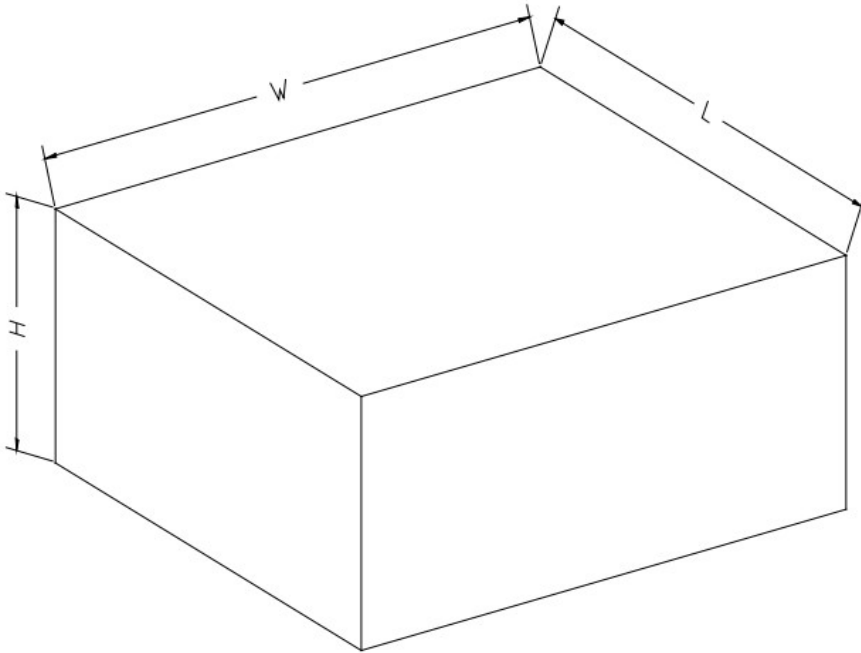
1. Body dimensions do not include mode flash or protrusion.
2. This drawing is subject to change without notice.

TAPE AND REEL INFORMATION
REEL DIMENSIONS

TAPE DIMENSIONS


NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
SOIC-8	13"	12.4	6.40	5.40	2.10	4.0	8.0	2.0	12.0	Q1

60V 2A 400KHz Switching Current Boost DC/DC Converter**CARTON BOX DIMENSIONS**

NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF CARTON BOX

Reel Type	Length (mm)	Width (mm)	Height (mm)	Pizza/Carton
13"	386	280	370	5