



0.8A 150KHz 100V Step-Down DC-DC Converter	XL7015
--	--------

Features

- Maximum input voltage 100V
- Output voltage adjustable from 1.25V to 20V
- Maximum duty cycle 90%
- Minimum voltage drop 2V
- Fixed 150KHz switching frequency
- Maximum 0.8A output current
- 48V input, 5V output recommended maximum output current 0.6A
- 48V input, 15V output recommended maximum output current 0.4A
- Built-in high voltage power transistor
- Efficiency up to 85%
- Excellent line and load regulation
- EN pin TTL shutdown function
- Built-in over-temperature shutdown protection function
- Built-in current limiting function
- Built-in output short circuit protection function
- TO252-5L package

application

- Electric vehicle controller power supply
- Communications

describe

XL7015 is a high efficiency, high voltage step-down DC-DC

The converter has a fixed switching frequency of 150KHz and can provide the highest 0.8A output current capability, low ripple, excellent linear regulation

The XL7015 has a built-in fixed frequency oscillator.

The device and frequency compensation circuit simplify the circuit design.

The PWM control loop can adjust the duty cycle from

Linear change between 0~90%. Built-in output over-current protection function

Yes, when the output is short-circuited, the switching frequency drops from 150KHz to 45KHz. The internal compensation module can reduce the number of external components

quantity.



Figure 1. XL7015 package

0.8A 150KHz 100V Step-Down DC-DC Converter	XL7015
--	--------

Pin Configuration

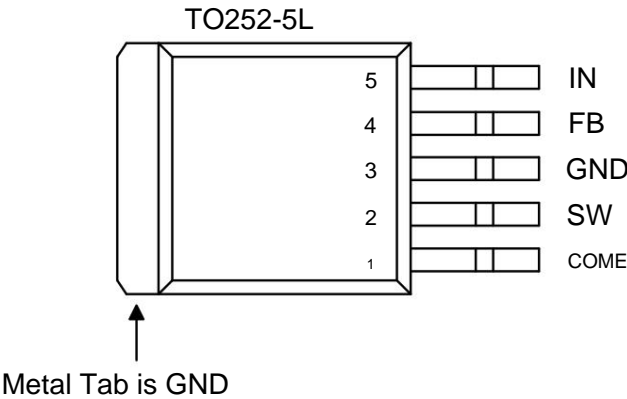


Figure 2. XL7015 pin configuration

Table 1. Pin Description

Pin Number	Pin name description	Power
1	COME	input pin, an electrolytic capacitor needs to be connected in parallel between VIN and GND to eliminate noise.
2	SW Power switch	output pin, SW is the switching node for output power.
3	GND Ground pin.	
4	FB	Feedback pin, through the external resistor divider network, detects the output voltage for adjustment. The test voltage is 1.25V.
5	EN is the enable	pin. It works at low level and shuts down at high level. It is at low level when it is left floating.

0.8A 150KHz 100V Step-Down DC-DC Converter

XL7015

Block Diagram

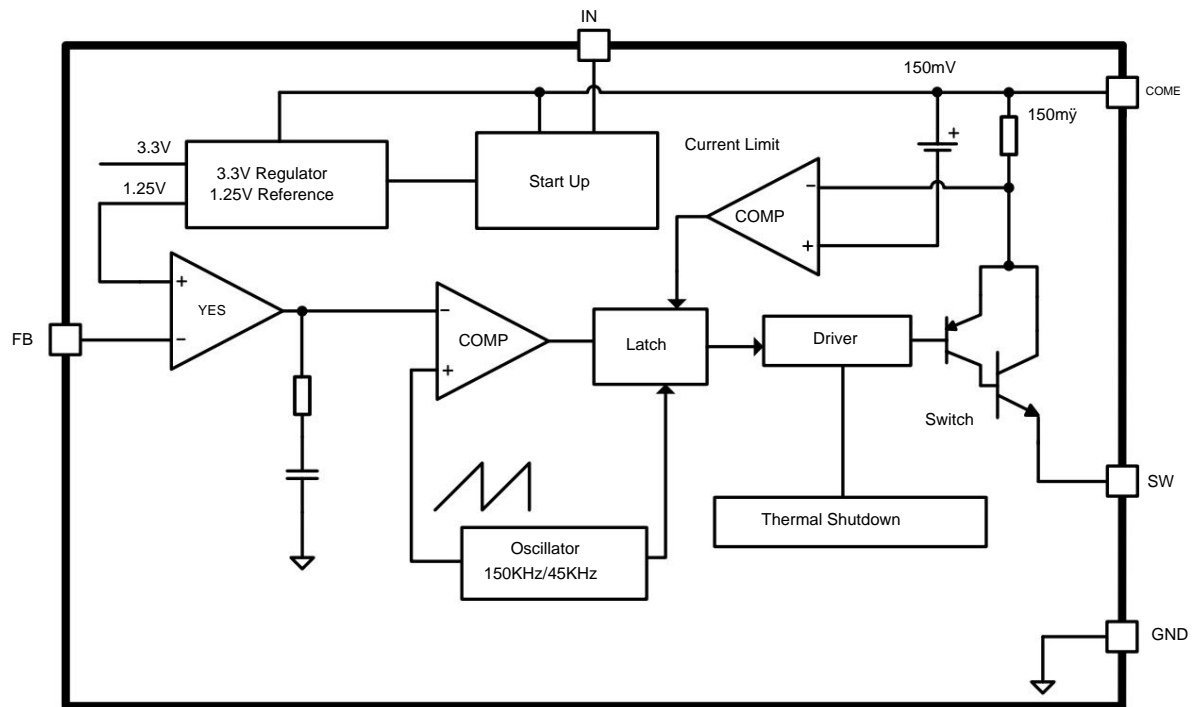


Figure 3. XL7015 block diagram

Typical Applications

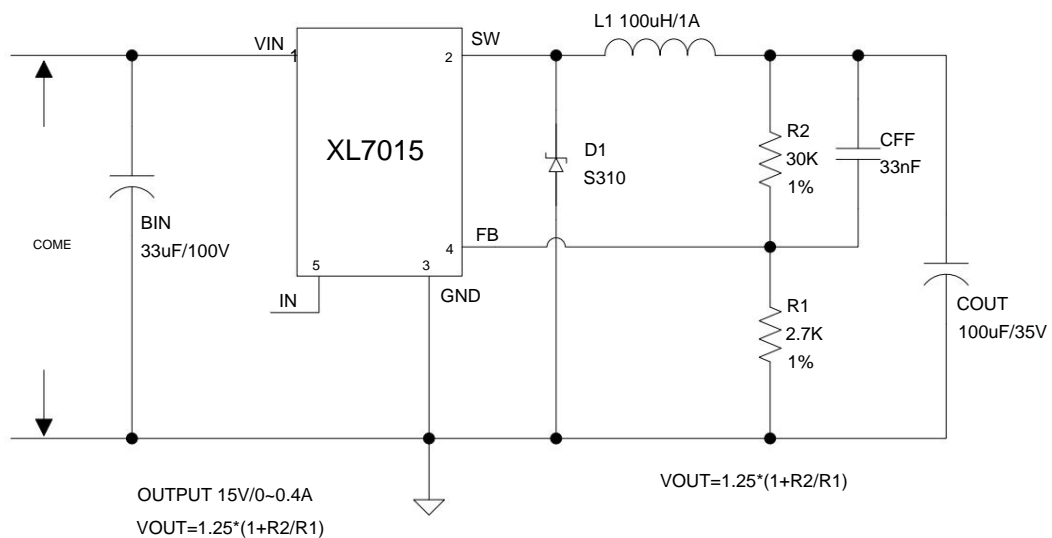


Figure 4. XL7015 system parameter measurement circuit



Datasheet

0.8A 150KHz 100V Step-Down DC-DC Converter

XL7015

Ordering Information

Product Model	Print Name	Packaging	Packaging Type
XL7015E1	XL7015E1	TO252-5L	2500pcs per roll

XLSEMI lead-free products with an "E1" suffix in the part number are RoHS compliant.

Absolute Maximum Ratings (Note 1)

parameter	symbol	value	unit
Input voltage	Come	-0.3 to 100	In
Feedback pin voltage	VFB	-0.3 to 7	In
Enable pin voltage	VEN	-0.3 to 7	In
Output switch pin voltage	VSW	-0.3 to Vin	In
Power consumption	PD	Internal Limitations	mW
Thermal resistance (TO252-5L) (Junction to Ambient, No External Heat Sink)	RJA	50	oC/W
Maximum Junction Temperature	TJ	-40 to 150	oC
Operating Junction Temperature	TJ	-40 to 125	oC
Storage temperature range	TSTG	-65 to 150	oC
Pin temperature (soldering 10 seconds)	TLEAD	260	oC
ESD (Human Body Model)		>3000	In

Note 1: Exceeding the absolute maximum ratings may cause permanent damage to the device. Only functional operation is possible under the above or other unspecified conditions.

Operating at absolute maximum rating conditions for extended periods may affect the life of the device.

0.8A 150KHz 100V Step-Down DC-DC Converter

XL7015

XL7015 Electrical Characteristics

Ta = 25°C unless otherwise specified.

Symbolic parameters	condition	Min	Typ	Max	Unit
Figure 4 System parameter measurement circuit					
VFB Feedback Voltage	Vin = 20V to 80V, Vout=15V Iload = 0.1A to 0.4A	1.225	1.25	1.275V	
or efficiency	Vin=36V, Vout=15V Iout=0.4A		86		%
or efficiency	Vin=48V, Vout=15V Iout=0.4A		83		%
or efficiency	Vin=60V, Vout=15V Iout=0.4A		81		%

Electrical characteristics (DC parameters)

Vin = 48V, GND = 0V, 33uF/100V capacitor is connected in parallel between Vin and GND; Iout = 200mA, Ta = 25°C;

He is arbitrary unless otherwise stated.

parameter	symbol	condition	Min	Typ	Max	Unit
Input voltage	Com		5		80	V
Shutdown current	IS	VEN=2V		85	200	µA
Quiescent supply current	Iq	VEN = 0V, VFB=2V		2.5	5	mA
Oscillation frequency	Dark		120	150	180	KHz
Switching current limit	THE	VFB=0V		1		A
EN pin threshold voltage VEN		High (off)		1.6		V
		Low (Open)		0.8		V
EN pin input leakage current	THE	VEN=2.5V (off)		6	20	µA
	THE	VEN=0.5V (open)		1	10	µA
Saturation pressure drop	VCE	VFB=0V Iout=0.5A		0.87		V
Maximum duty cycle	DMAX	VFB=0V		90		%



0.8A 150KHz 100V Step-Down DC-DC Converter	XL7015
--	--------

Typical system application (recommended output current safe operating range)

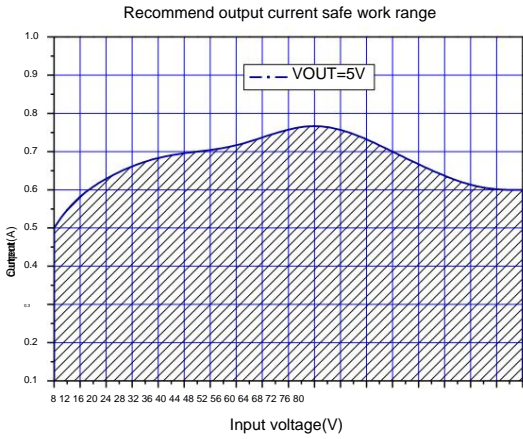


Figure 5. Maximum output current (VOUT=5V)

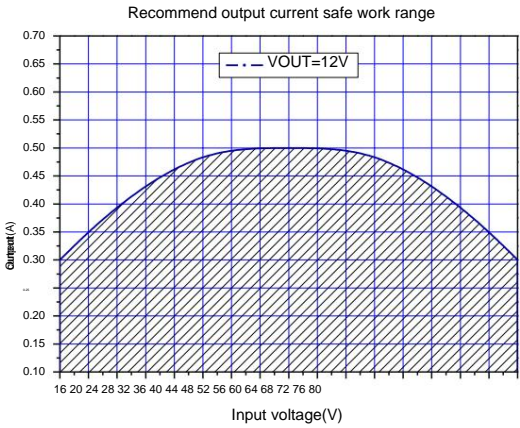


Figure 6. Maximum output current (VOUT=12V)

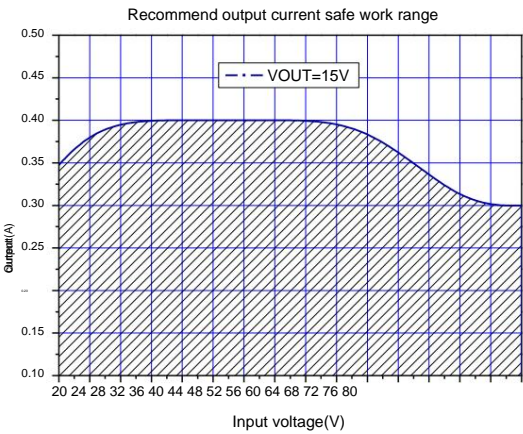


Figure 7. Maximum output current (VOUT=15V)

0.8A 150KHz 100V Step-Down DC-DC Converter	XL7015
--	--------

Typical system application (VOUT=15V/0.4A)

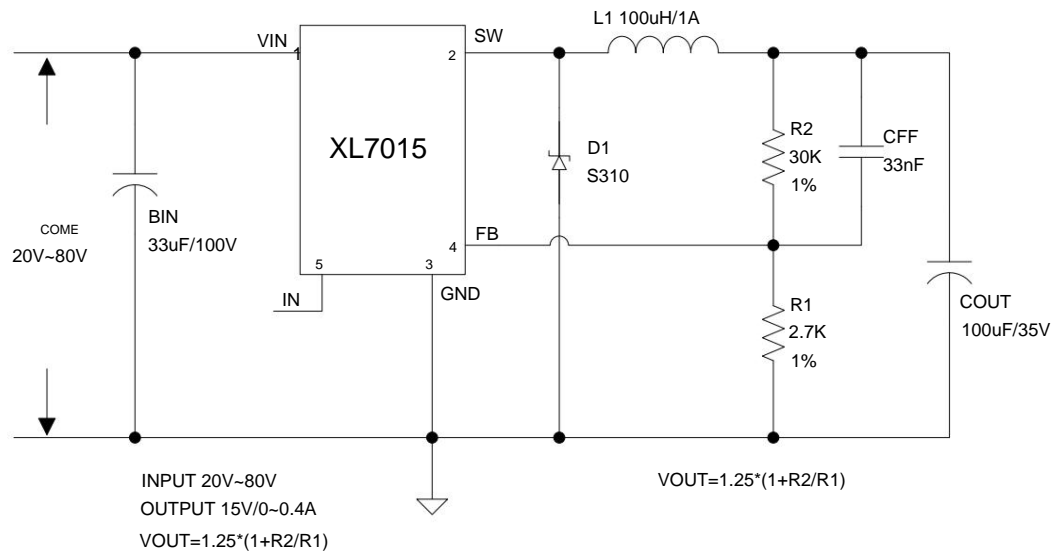


Figure 8. XL7015 system parameter measurement circuit (VIN=20V~80V, VOUT=15V/0.4A)

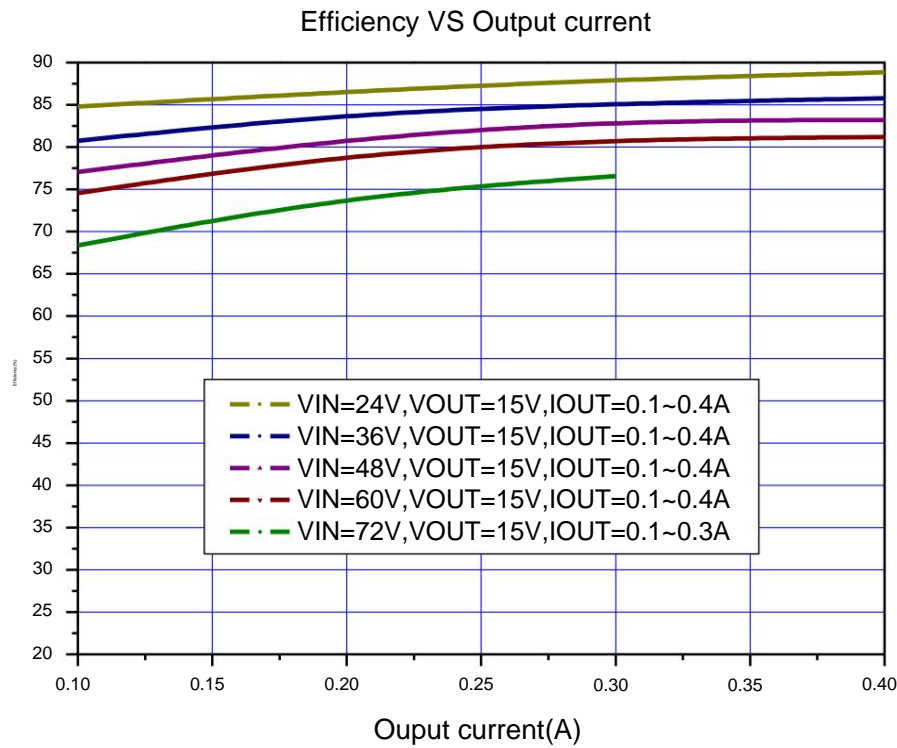


Figure 9. XL7015 system efficiency curve

0.8A 150KHz 100V Step-Down DC-DC Converter	XL7015
--	--------

Typical system application (VOUT=5V/0.8A)

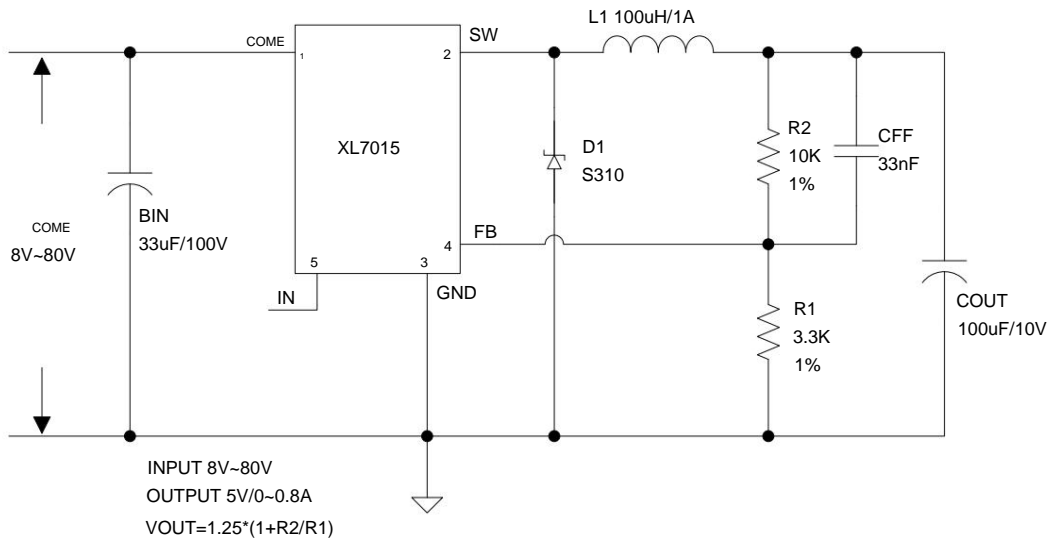


Figure 10. XL7015 system parameter measurement circuit (VIN=8V~80V, VOUT=5V/0.8A)

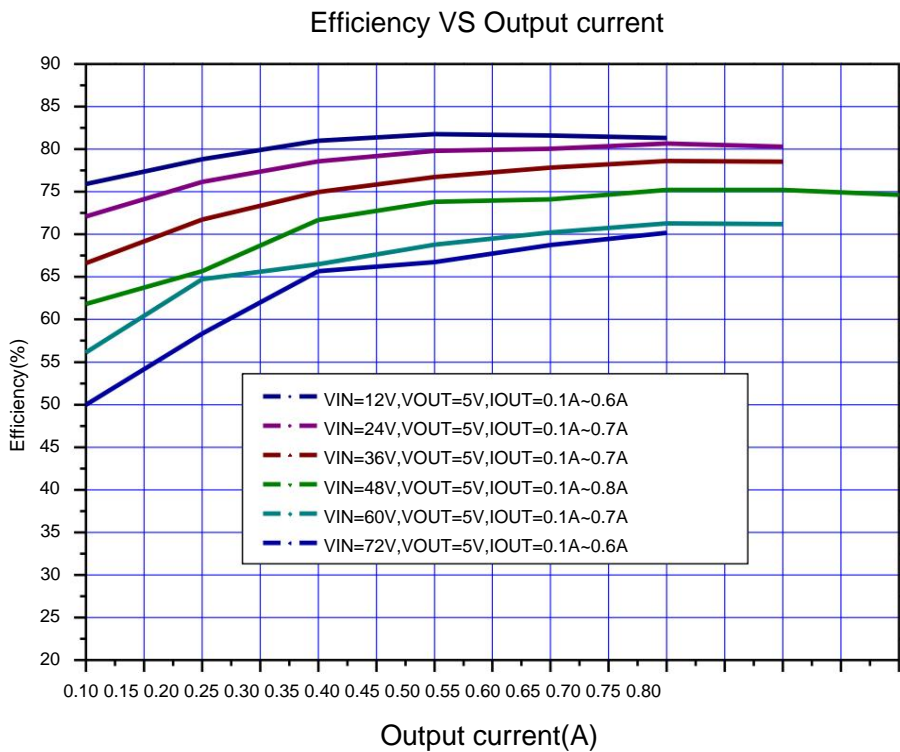
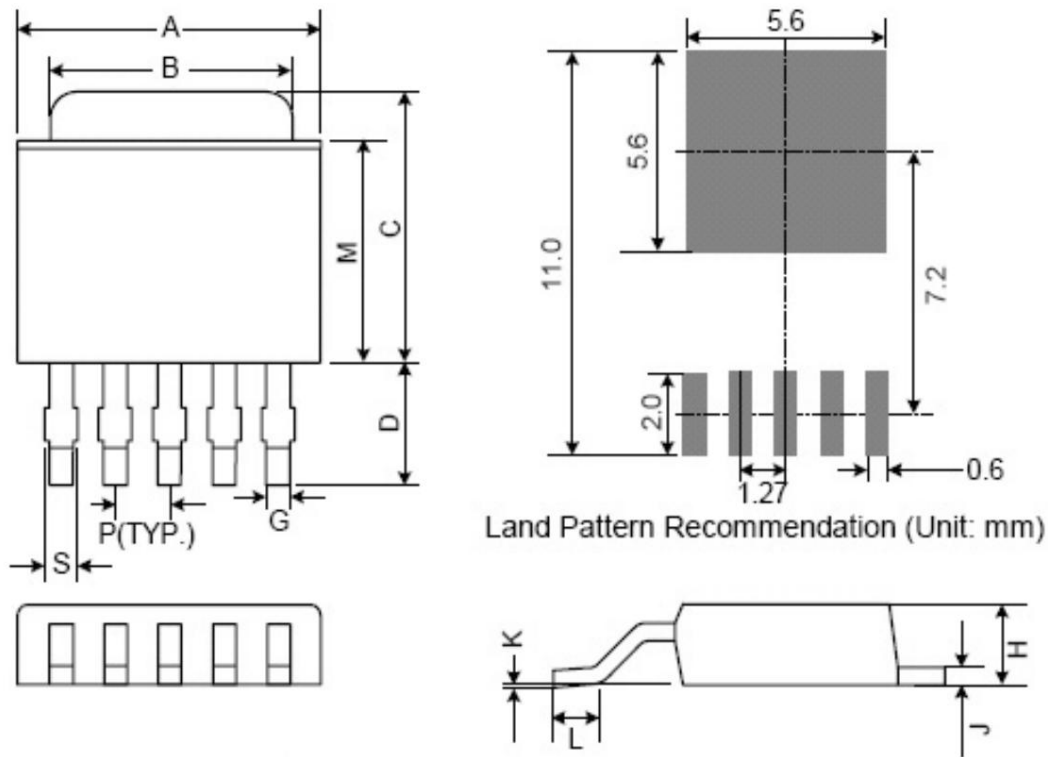


Figure 11. XL7015 system efficiency curve

0.8A 150KHz 100V Step-Down DC-DC Converter	XL7015
--	--------

Physical Dimensions

TO252-5L



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Name.	Max.	Min.	Nom.	Max.
A	6.35	6.60	6.85	0.250	0.260	0.270
B	5.20	5.35	5.50	0.205	0.211	0.217
C	6.80	7.00	7.30	0.268	0.276	0.287
D	2.40	2.80	3.20	0.094	0.110	0.126
P	1.27 REF.			0.05 REF.		
S	0.50	0.65	0.80	0.020	0.026	0.031
G	0.40	0.50	0.63	0.016	0.020	0.025
H	2.20	2.30	2.40	0.087	0.091	0.094
J	0.45	0.52	0.58	0.018	0.020	0.023
K	0.00	0.08	0.15	0.000	0.003	0.006
L	0.90	1.20	1.77	0.035	0.047	0.064
M	5.40	5.80	6.20	0.213	0.228	0.244



0.8A 150KHz 100V Step-Down DC-DC Converter

XL7015

Important statement

XLSEMI reserves the right to make corrections, modifications, or omissions in the products and services provided at any time without prior notice.

XLSEMI is not responsible for the use of any circuit other than XLSEMI products, and does not provide any patent license.

Can.

XLSEMI assumes no responsibility for customer application assistance or product design. Customers should assume all liability for their use of XLSEMI products and

To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safety measures.

Shi.

XLSEMI warrants that the products it sells will perform in accordance with the applicable specifications of XLSEMI standard warranty.

Testing or other quality control techniques will only be used when XLSEMI deems it necessary.

Otherwise, it is not necessary to test all parameters of each product.

For XLSEMI product manuals or data sheets, only if the contents are not tampered with and with the relevant authorization, conditions,

Reproduction is permitted only with the restrictions and notices provided. Alteration of the content during reproduction is an illegal, fraudulent business practice.

XLSEMI assumes no responsibility for such altered documents.

For the latest product information, visit www.xlsemi.com.