

SERIES: VQA | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

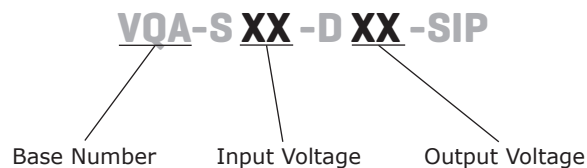
- designed for IGBT driver modules
- small footprint
- 3,000 Vac isolation
- short circuit protection
- temperature range (-40~85°C)
- efficiency up to 80%



MODEL	input voltage range (Vdc)	output voltage (Vo1)	output voltage (Vo2)	output current (Io1) (Io2)		ripple and noise ¹	efficiency ²
		typ (Vdc)	typ (Vdc)	max (mA)	max (mA)	max (mVp-p)	typ (%)
VQA-S9-D15-SIP	9 ~ 15	15	-8	100	80	200	80
VQA-S12-D15-SIP	11.6 ~ 12.4	15	-8.7	80	40	200	80
VQA-S15-D15-SIP	14.5 ~ 15.5	15	-8.7	80	40	150	80
VQA-S15-D17-SIP	14.5 ~ 15.5	17	-8.6	80	40	150	80
VQA-S24-D15-SIP	23.3 ~ 24.7	15	-8.7	80	40	300	80

Note:

1. ripple and noise measured at 20 MHz bandwidth, between pin 6 & 7 (Vo1), full load
2. between pin 6 & 7 (Vo1), full load
3. all specifications are measured at 25°C unless otherwise specified

PART NUMBER KEY


INPUT

parameter	conditions/description	min	typ	max	units
input voltage	VQA-S9-D15-SIP	9	12	15	Vdc
	VQA-S12-D15-SIP	11.6	12	12.4	Vdc
	all other models	14.5	15	15.5	Vdc
	VQA-S24-D15-SIP	23.3	24	24.7	Vdc

OUTPUT

parameter	conditions/description	min	typ	max	units
line regulation	for Vin change of 1%				
	VQA-S12-D15-SIP		1.2	1.5	%
	VQA-S15-D15-SIP		1.3	1.5	%
	VQA-S15-D17-SIP		1.2	1.5	%
	VQA-S24-D15-SIP		1.2	1.5	%
	for Vin change of 25%				
VQA-S9-D15-SIP		1.2	1.5	%	

PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	yes				

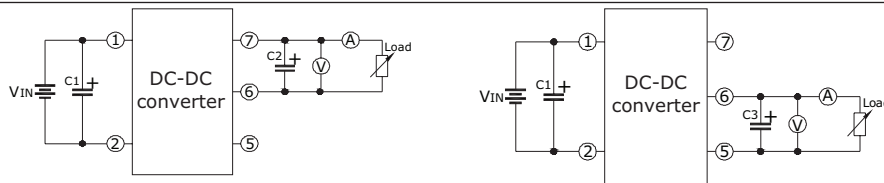
SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	tested for 1 minute at 1 mA max.	3,000			Vac
isolation capacitance	input to output, 1 kHz / 1 V				
	all other models		6.6		pF
	VQA-S15-D17-SIP		8	10	pF
	VQA-S9-D15-SIP		10		pF
RoHS compliant	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	VQA-S9-D15-SIP	-40		105	°C
	all other models	-40		85	°C
storage temperature		-50		125	°C

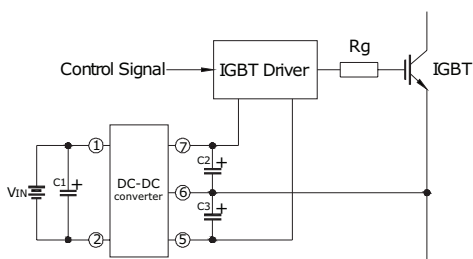
TEST CIRCUIT



C1*, C2, C3: 100 μ F/35V (low impedance)

* C1: 100 μ F/65V for S24 version

APPLICATION CIRCUIT



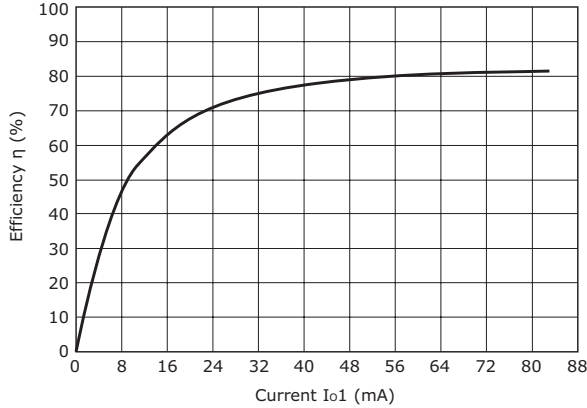
V_{IN} : S9, S12, S15
 C1: 100 μ F/35V (low impedance)
 C2: 100 μ F/35V (low impedance)
 C3: 100 μ F/35V (low impedance)

V_{IN} : S24
 C1: 100 μ F/65V (low impedance)
 C2: 100 μ F/35V (low impedance)
 C3: 100 μ F/35V (low impedance)

1. The wire between the converter and IGBT driver must as short as possible.
2. External filter capacitors should be connected as close as possible to the converter and the IGBT driver.
3. To ensure the high peak gate current, the filter capacitors should be low impedance.
4. The output average power of the IGBT driver should be less than the output power of DC-DC module.
5. In order to avoid over temperature damage for long time short-circuit, the recommended short-circuit time is less than ten minutes at 25°C.

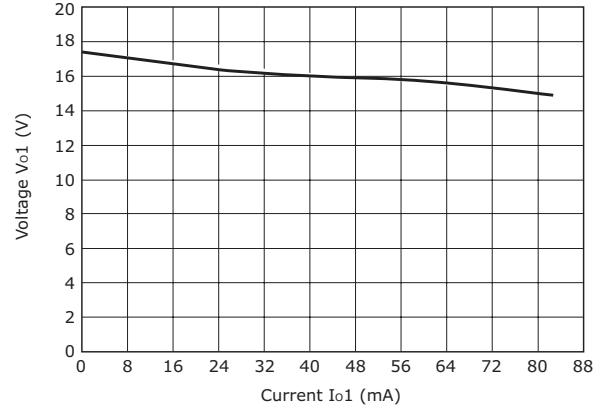
PERFORMANCE CURVES

1. output current vs. efficiency

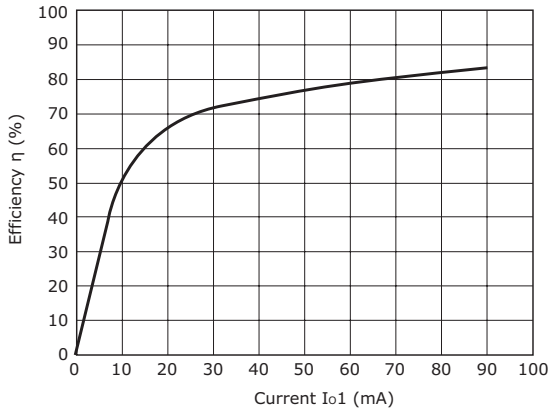


VQA-S12-D15-SIP, VQA-S15-D15-SIP, VQA-S24-D15-SIP

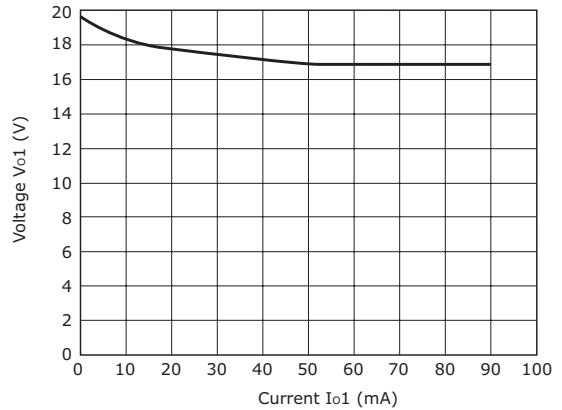
2. output current vs. output voltage



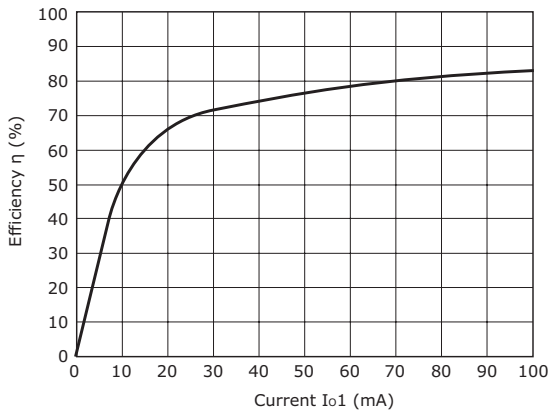
VQA-S12-D15-SIP, VQA-S15-D15-SIP, VQA-S24-D15-SIP



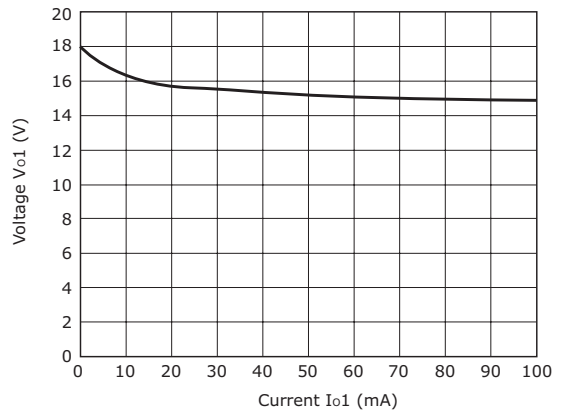
VQA-S15-D17-SIP



VQA-S15-D17-SIP



VQA-S9-D15-SIP



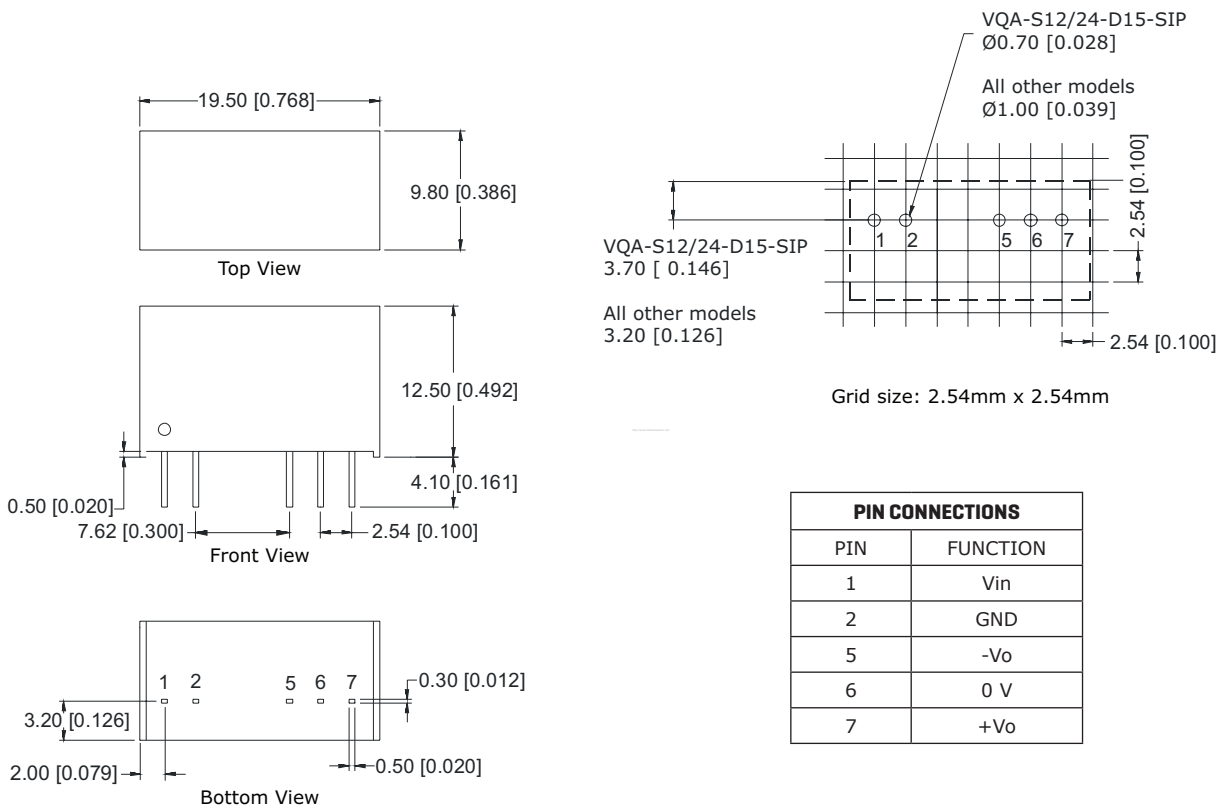
VQA-S9-D15-SIP

MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	0.768 x 0.386 x 0.492 (19.50 x 9.80 x 12.5 mm)				inch

MECHANICAL DRAWING

units: mm [inches]
 tolerance: ± 0.25 [± 0.010]
 pin section tolerance: ± 0.10 [± 0.004]



PIN CONNECTIONS	
PIN	FUNCTION
1	Vin
2	GND
5	-Vo
6	0 V
7	+Vo

REVISION HISTORY

rev.	description	date
1.0	initial release	08/16/2012
1.01	updated features	09/20/2012
1.02	updated product photograph	11/13/2012
1.03	various updates	02/05/2013

The revision history provided is for informational purposes only and is believed to be accurate.



Headquarters
20050 SW 112th Ave.
Tualatin, OR 97062
800.275.4899

Fax 503.612.2383
cui.com
techsupport@cui.com

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