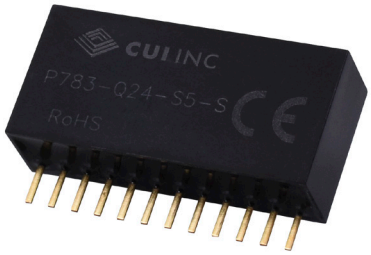
CUI INC
a bel group

SERIES: P783-S | **DESCRIPTION:** NON-ISOLATED SWITCHING REGULATOR

FEATURES

- 3A of output current
- high efficiency up to 97%
- EN62368 approved
- no-load input current as low as 2mA
- output short circuit protection
- wide operating temp: -40°C to +85°C

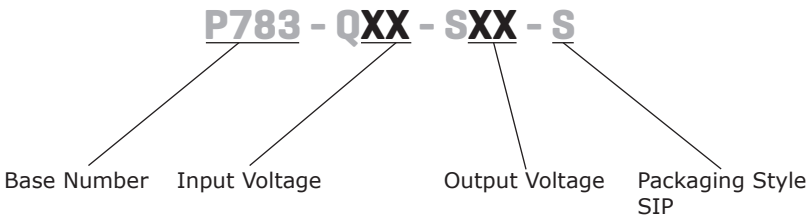


MODEL

MODEL	input voltage typ (Vdc)	input voltage range (Vdc)	output voltage (Vdc)	output current max (mA)	output power max (W)	ripple and noise[1] max (mVp-p)	efficiency typ (%)
P783-Q24-S3-S	24	8~36	3.3	3000	9.9	70	90
P783-Q24-S5-S	24	8~36	5	3000	15	70	93
P783-Q24-S6-S	24	10~36	6.5	3000	19.5	70	94
P783-Q24-S9-S	24	13~36	9	3000	27	70	95
P783-Q24-S12-S	24	16~36	12	3000	36	100	97
P783-Q24-S15-S	24	19~36	15	3000	45	100	97

Notes: 1. ripple and noise are measured at 20 MHz BW

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage	3.3 V output	8	24	36	Vdc
	5 V output	8	24	36	Vdc
	6.5 V output	10	24	36	Vdc
	9 V output	13	24	36	Vdc
	12 V output	16	24	36	Vdc
	15 V output	19	24	36	Vdc
reverse polarity input	avoid / not protected				

OUTPUT

parameter	conditions/description	min	typ	max	units
capacitive load	3.3 V output			1,000	µF
	5 V output			680	µF
	6.5 V output			330	µF
	9 V output			330	µF
	12 V output			330	µF
	15 V output			330	µF
line regulation	full load, input voltage range		±0.5	±1.0	%
load regulation	from 10% to 100% load		±0.5	±1.0	%
voltage accuracy	0~100% load, input voltage range		±2	±3	%
switching frequency	PWM mode	100	250	400	kHz
temperature coefficient	-40°C ~ 85°C			±0.03	%/°C
trimmability	see trim table				
CTRL	module on: CTRL open or high		4.5	14	Vdc
	module off: CTRL low to GND		0	0.8	Vdc

PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	continuous, automatic recovery				

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
safety approvals	EN62368-1				
conducted emissions	CISPR32/EN55032 Class B				
ESD	IEC/EN 61000-4-2, contact ±6 kV, perf. criteria B				
radiated immunity	IEC/EN 61000-4-3, 10V/m, perf. criteria A				
EFT/burst	IEC/EN 61000-4-4, ±1 kV, perf. criteria B (see recommended circuit)				
surge	IEC/EN 61000-4-5, Class B, line to line ±1 kV, perf. criteria B				
EMI/EMC	IEC/EN 61000-4-6 Class A, 3 Vr.ms (see recommended circuit) perf. criteria A				
MTBF	as per MIL-HDBK-217F @ 25°C	2,000			K hours
RoHS	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		85	°C
storage temperature		-55		125	°C
storage humidity	non-condensing	5		95	%

SOLDERABILITY

parameter	conditions/description	min	typ	max	units
pin soldering	for 10 seconds			260	°C

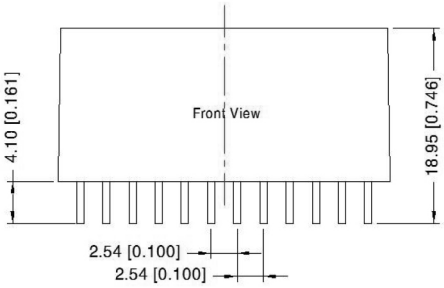
MECHANICAL

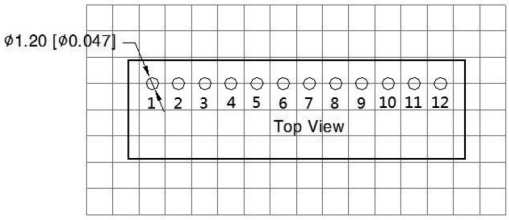
parameter	conditions/description	min	typ	max	units
dimensions	32.15 x 14.85 x 9.05				mm
case material	flame retardant and heat-resistant plastic (UL94 V-0)				
weight			9.3		g

MECHANICAL DRAWING

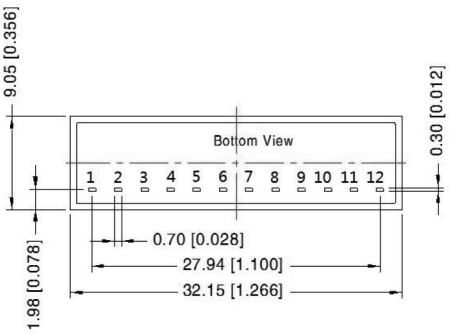
units: mm [inches]
tolerance: ±0.50 [±0.020]
pin section tolerance: ±0.10 mm [±0.004]

PIN CONNECTIONS	
Pin	Function
1	Ctrl
2, 3, 4	Vin
5, 6, 7, 8	GND
9, 10	+Vo
11	+Vo
12	Trim



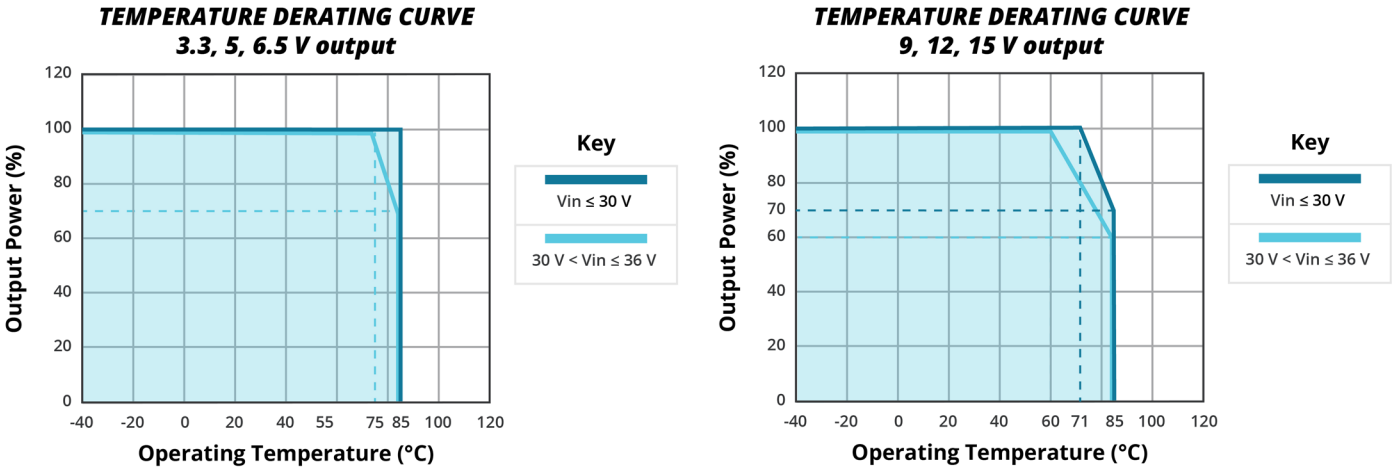


Note: Grid 2.54*2.54mm



DERATING CURVES

Figure 1



TYPICAL APPLICATION CIRCUIT

Figure 2

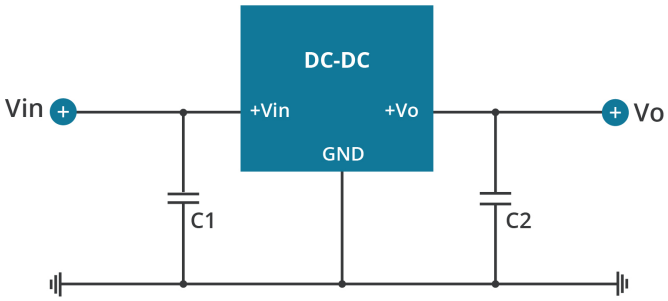


Table 1

Part No.	C1 (ceramic capacitor)	C2 (ceramic capacitor)
P783-Q24-S3-S	100µF/50V	22µF/10V
P783-Q24-S5-S		22µF/10V
P783-Q24-S6-S		22µF/10V
P783-Q24-S9-S		22µF/16V
P783-Q24-S12-S		22µF/25V
P783-Q24-S15-S		22µF/25V

Note:
1. The required capacitors C1 and C2 must be connected as close as possible to the terminals of the module;
2. Refer to Table 1 for C1 and C2 capacitor values. For certain applications, increased values and/or tantalum or low ESR electrolytic capacitors may also be used instead;
3. Converter cannot be used for hot swap and with output in parallel.

EMC RECOMMENDED CIRCUIT

Figure 3

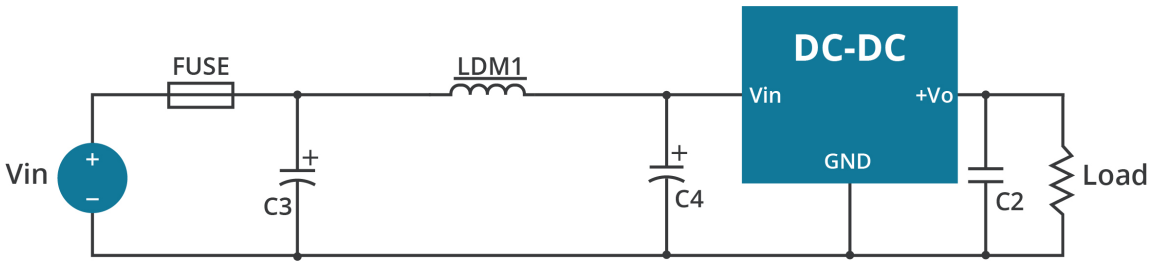


Table 2

	FUSE	C3	LDM1	C4	C2
Emissions	select fuse value according to actual input current	100µF/50V	22µH	100µF/50V	refer to the C2 in Figure X
Immunity				680µF/50V	

TRIM FUNCTION FOR OUTPUT VOLTAGE ADJUSTMENT

Figure 4

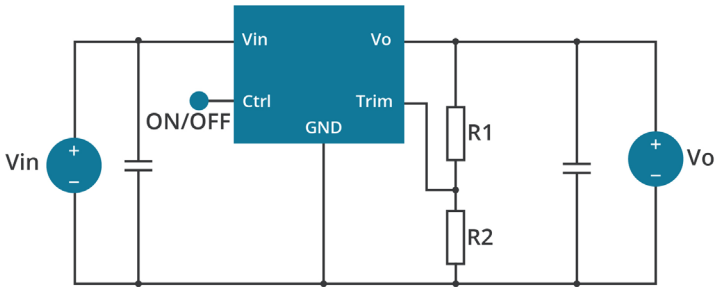


Table 3

Vout nom.	3.3 Vdc		5.0 Vdc		6.5 Vdc		9.0 Vdc		12 Vdc		15 Vdc	
Vout adj.	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2
3	500K											
3.3												
4		95K	195K									
4.5		52K	470K									
5												
5.5				125K	330K							
6				58K	750K							
6.5												
7						140K	220K					
8						40K	520K					
9												
10								65K	530K			
11								28K	1180K			
12												
13										110K	590K	
14										50K	1290K	
15												
16												90K
17												40K

REVISION HISTORY

rev.	description	date
1.0	initial release	06/29/2020
1.01	derating curves and circuit figures updated	09/23/2021

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

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CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

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CUI products are not authorized or warranted for use as critical components in equipment that requires an extremely high level of reliability. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.