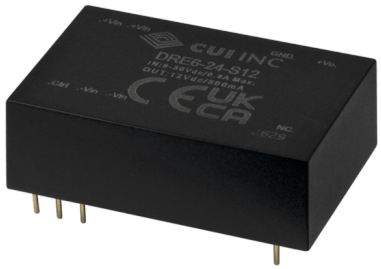
SERIES: DRE6 | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- up to 6 W isolated output
- industry standard 24 pin DIP package style
- single and dual regulated outputs
- input under-voltage, over voltage, output short circuit and over current protections
- 3,000 Vdc isolation
- -40 ~ 105°C temperature range with derating
- certified to EN 62368-1
- designed to meet IEC 62368-1



RoHS CE UKCA

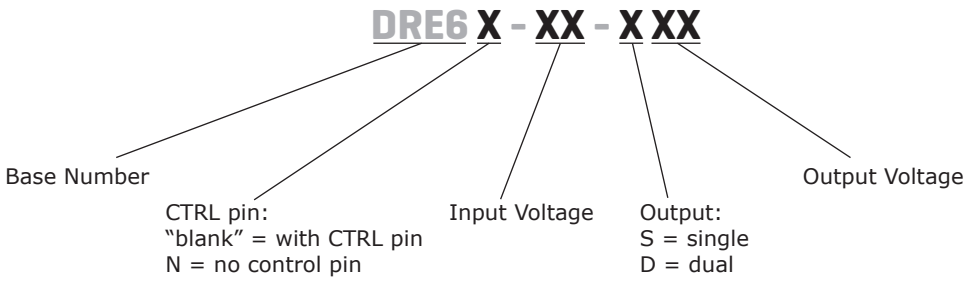
MODEL

MODEL	input voltage typ (Vdc)	input voltage range (Vdc)	output voltage (Vdc)	output current max (mA)	output power max (W)	ripple & noise[1] max (mVp-p)	efficiency[2] typ (%)
DRE6-24-S3	24	9 ~ 36	3.3	1,500	4.95	100	77
DRE6-24-S5	24	9 ~ 36	5	1,200	6	100	83
DRE6-24-S9	24	9 ~ 36	9	667	6	100	84
DRE6-24-S12	24	9 ~ 36	12	500	6	100	85
DRE6-24-S15	24	9 ~ 36	15	400	6	100	86
DRE6-24-S24	24	9 ~ 36	24	250	6	100	86
DRE6-24-D5	24	9 ~ 36	±5	600	6	100	85
DRE6-24-D9	24	9 ~ 36	±9	333	6	100	82
DRE6-24-D12	24	9 ~ 36	±12	250	6	100	84
DRE6-24-D15	24	9 ~ 36	±15	200	6	100	85
DRE6-24-D18	24	9 ~ 36	±18	167	6	100	86
DRE6-24-D24	24	9 ~ 36	±24	125	6	100	86
DRE6-48-S3	48	18 ~ 75	3.3	1,500	4.95	100	80
DRE6-48-S5	48	18 ~ 75	5	1,200	6	100	84
DRE6-48-S9	48	18 ~ 75	9	667	6	100	85
DRE6-48-S12	48	18 ~ 75	12	500	6	100	87
DRE6-48-S15	48	18 ~ 75	15	400	6	100	88
DRE6-48-S24	48	18 ~ 75	24	250	6	100	87
DRE6-48-D5	48	18 ~ 75	±5	600	6	100	83
DRE6-48-D9	48	18 ~ 75	±9	333	6	100	84
DRE6-48-D12	48	18 ~ 75	±12	250	6	100	87
DRE6-48-D15	48	18 ~ 75	±15	200	6	100	88
DRE6-48-D24	48	18 ~ 75	±24	125	6	100	86

Notes:
1. At full load, nominal input, 0% ~ 100% load, 20 MHz bandwidth oscilloscope.
2. The efficiency is test by nominal input and max. full load at 25°C.
3. All specifications measured at Ta=25°C, nominal input voltage, rated output load, and after warm up unless otherwise specified.

Please read our datasheet & drawing disclaimer here.

PART NUMBER KEY



INPUT

parameter	conditions/description		min	typ	max	units
input voltage range	24 Vdc input models 48 Vdc input models		9 18	24 48	36 75	Vdc Vdc
surge voltage	1 second max 24 Vdc input models 48 Vdc input models		 -0.7 -0.7	 	 50 100	 Vdc Vdc
turn-on voltage threshold	at full load 24 Vdc input models 48 Vdc input models		 	 	 9 18	 Vdc Vdc
turn-off voltage threshold	at full load 24 Vdc input models 48 Vdc input models		 5.5 12	 6.5 15	 	 Vdc Vdc
filter	Pi filter					
reflected ripple current	at rated input voltage			20		mA
remote on/off	module ON	CTRL pin opened or pulled high (3~12 Vdc) with respect to -Vin				
	module OFF	CTRL pin pulled low (0~1.2 Vdc) with respect to -Vin				
	input current for switching OFF			3		mA

OUTPUT

parameter	conditions/description		min	typ	max	units
maximum capacitive load	3.3, 5 Vdc output models ±5, 9 Vdc output models 12, 15, 24 Vdc output models ±9, ±12, ±15 Vdc output models ±18, ±24 Vdc output models				2,200 1,000 680 330 220	µF µF µF µF µF
voltage accuracy	5% ~ 100% load			±1	±3	%
	0% ~ 5% load	single output dual output		±1 ±2	±3 ±5	% %
voltage balance	dual output			±0.5	±1.5	%
voltage regulation	full voltage range, full load	positive output negative output		±0.2 ±0.5	±0.5 ±1.0	% %
load regulation	5% ~ 100% load	positive output negative output		±0.5 ±0.5	±1.0 ±1.5	% %
transient response deviation	25% rated load step change			±3	±5	%
transient response recovery	25% rated load step change			250	500	µs
start-up time	at nominal input voltage			10		ms
temperature coefficient					±0.03	%/°C
switching frequency	PWM mode			300		kHz

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection		110	160	200	%
over current protection		110	150	260	%
short circuit protection	continuous, auto recovery				
output overshoot				10	%

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 minute, 1 mA max	3,000			Vdc
isolation capacitance	input to output, (100 kHz, 0.1V)		1,000		pF
safety approvals	certified to: 62368-1: EN designed to meet 62368-1: IEC				
conducted emissions	CISPR32/EN55032 Class B (see recommended circuit)				
radiated emissions	CISPR32/EN55032 Class B (see recommended circuit)				
ESD	IEC/EN61000-4-2 Contact ±4 kV, Perf. Criteria B				
radiated immunity	IEC/EN61000-4-3 3 V/m, Perf. Criteria A				
EFT/burst	IEC/EN61000-4-4 ±1 kV, (see recommended circuit) Perf. Criteria B				
conducted immunity	IEC/EN61000-4-6 3 Vrms (max), Perf. Criteria A				
vibration	10~150Hz, 5G, 0.75 mm, along X, Y and Z axis				
MTBF	as per MIL-HDBK-217F at 25 °C	1,000,000			hours
RoHS	yes				

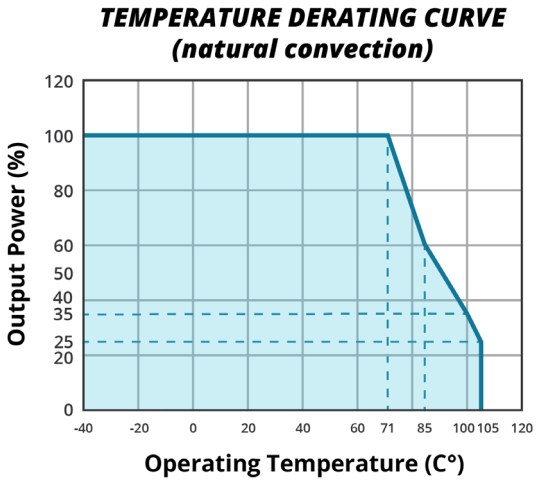
ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		105	°C
storage temperature		-55		125	°C
operating humidity	non condensing	5		95	%
maximum case temperature				105	

SOLDERING

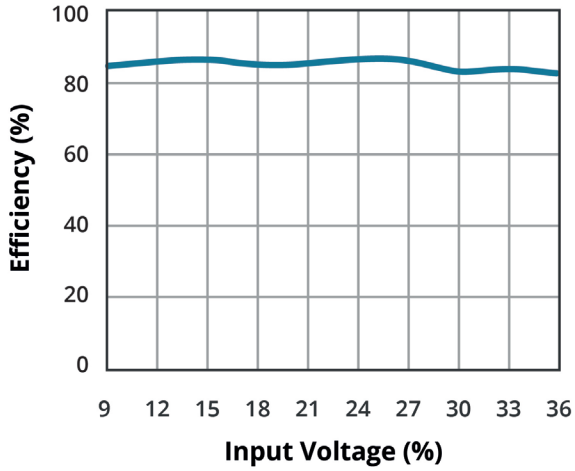
parameter	conditions/description	min	typ	max	units
pin soldering temperature	1.5 mm from the case, soldering time 10 seconds			300	°C

DERATING CURVE

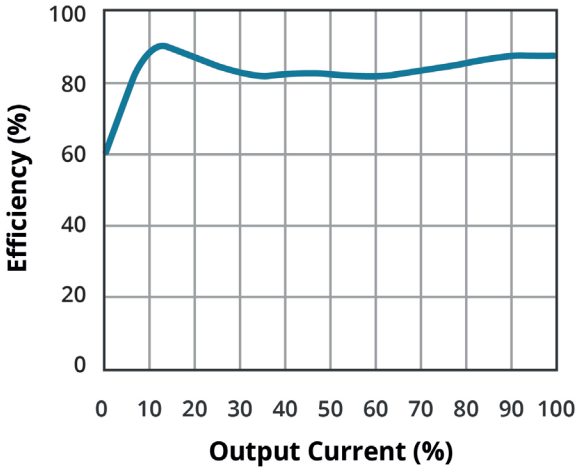


EFFICIENCY CURVE

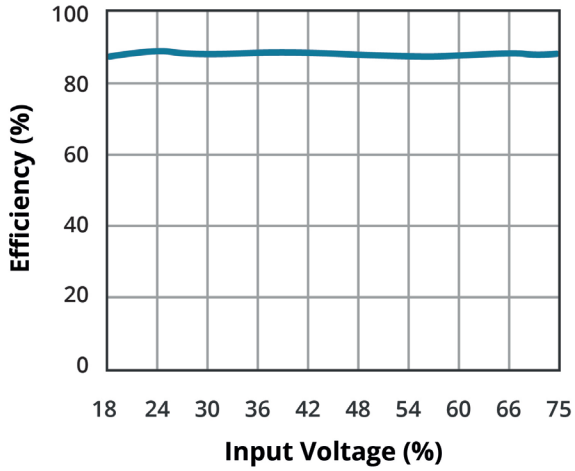
EFFICIENCY VS INPUT VOLTAGE (DRE6-24-D15)



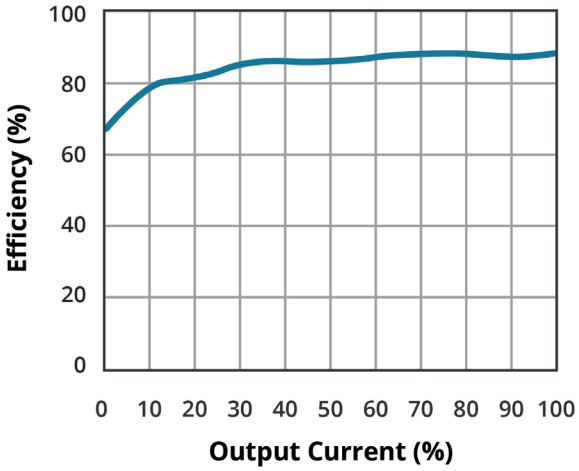
EFFICIENCY VS OUTPUT CURRENT (DRE6-24-D15)



EFFICIENCY VS INPUT VOLTAGE (DRE6-48-S12)



EFFICIENCY VS OUTPUT CURRENT (DRE6-48-S12)



APPLICATION NOTES

Figure 1
Single output

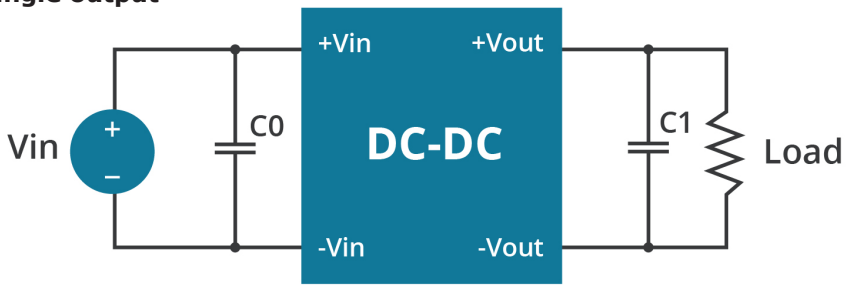


Table 1

COMPONENT	PARAMETER
C0	100 µF/ 100 V
C1	10 µF/ 50 V

Figure 2
Dual output

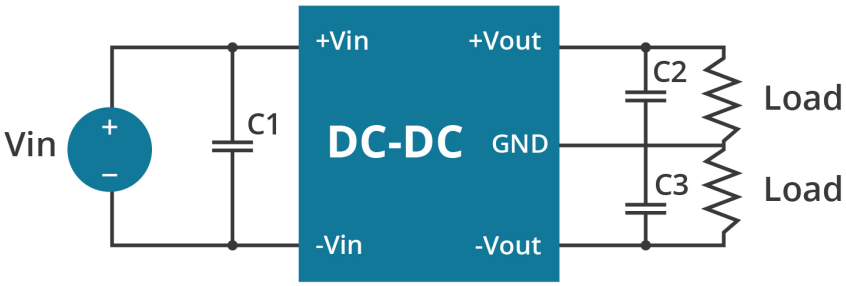


Table 2

COMPONENT	PARAMETER
C1	100 µF/ 100 V
C2, C3	10 µF/ 50 V

EMC RECOMMENDED CIRCUIT

Figure 3
Dual output

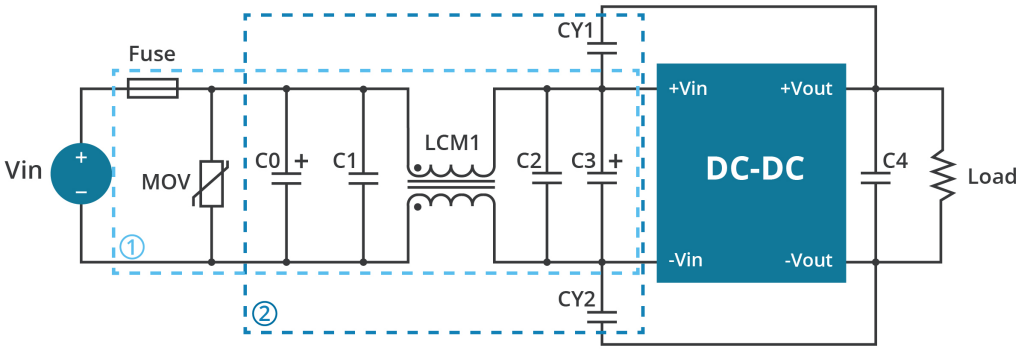


Table 3

COMPONENT	24 Vdc	48 Vdc
Fuse	TBD by customer	
MOV	10D470K	10D101K
C0, C3	330 µF/50 V	100 µF/100 V
C1, C2, C4	10 µF/50 V	10 µF/100 V
LCM1	10 mH	
CY1, CY2	1 nF/3 kV	

Note: 1. Section 1 of the circuit diagram corresponds to EMS, while Section 2 handles EMI filtering. Both sections can be modified to suit specific requirements or situations.

INPUT REFLECTED RIPPLE CURRENT TEST CIRCUIT DIAGRAM

A low-ESR capacitor is recommended for C, and its voltage rating should be higher than the maximum input voltage.

Figure 4

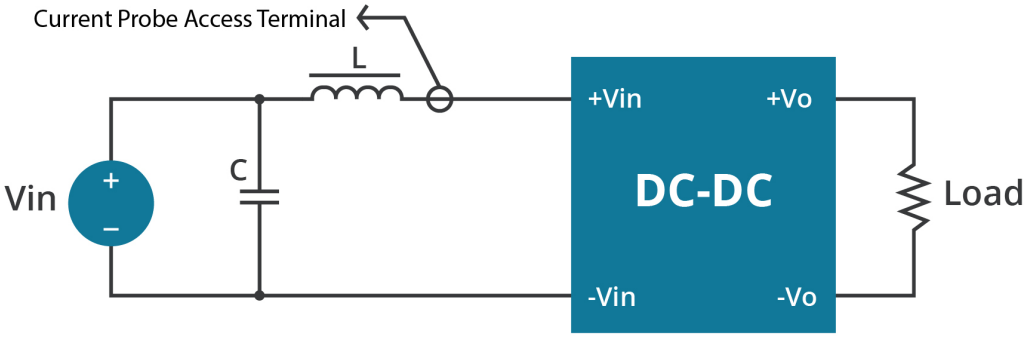


Table 4

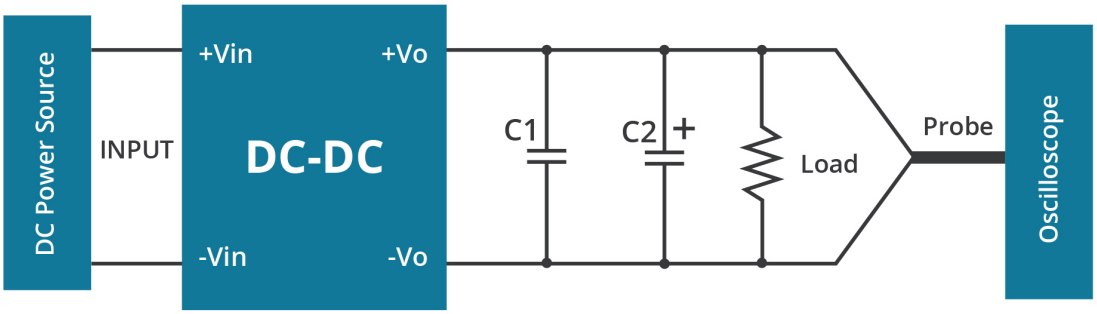
COMPONENT	PARAMETER
C	220 µF/ 100 V
L	4.7 µH/ 15 V

RIPPLE AND NOISE TEST INSTRUCTION

1. For the ripple and noise test, place the cables in parallel and use an oscilloscope set to Sample mode with 20 MHz bandwidth enabled. Use a 100 MHz bandwidth probe with the probe cap and ground clip removed. Connect one polypropylene capacitor C1 (0.1 µF) and one high-frequency, low-ESR electrolytic capacitor C2 (10 µF) in parallel at the probe tip.

2. Refer to the test diagram. Connect the converter output to the electronic load using the jig and cables; the cable size should be selected based on the output current. After the input power is turned on, testing can begin at the converter output terminals

Figure 4

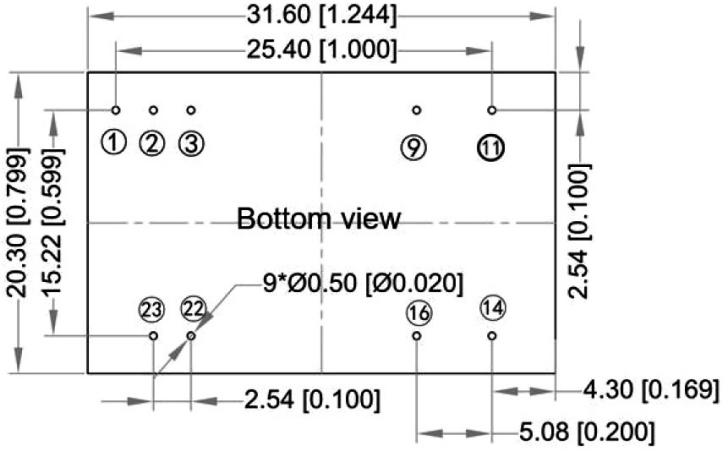


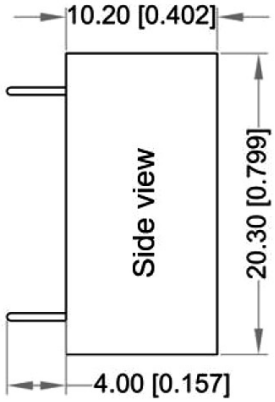
MECHANICAL

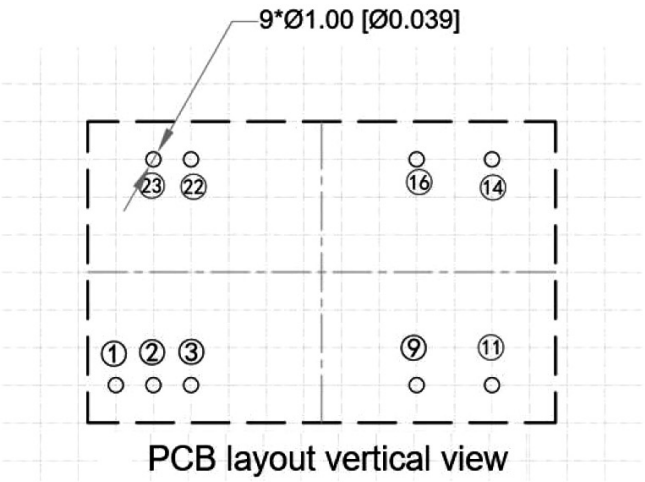
parameter	conditions/description	min	typ	max	units
dimensions	31.6 x 20.3 x 10.2 [1.244 x 0.799 x 0.402 inch]				mm
case material	UL94V-0 black plastic				
weight			12		g
cooling	natural convection				

MECHANICAL DRAWING

units: mm [inch]
general tolerance: ±0.50 [±0.020]
pin diameter tolerance: ±0.10 [±0.004]
grid: 2.54 x 2.54 [0.10 x 0.10]







PIN CONNECTIONS				
PIN	single		dual	
1	Ctrl	no pin	Ctrl	no pin
2, 3	-Vin		-Vin	
22, 23	+Vin		+Vin	
14	+Vo		+Vo	
16	GND		GND	
9	no pin		GND	
11	NC		-Vo	

Note: NC = no connection

REVISION HISTORY

rev.	description	date
1.0	initial release	11/04/2026

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

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