PDCS20 Series

20W DC/DC converter

PDCS20 DC-DC Converters are typically used in point of load (POL) applications that require very stable voltages.

- MIL-STD-202
- Input/output Isolation.
- Compact design.
- Excellent thermal conductivity.

Figure 1: SCHEMATIC

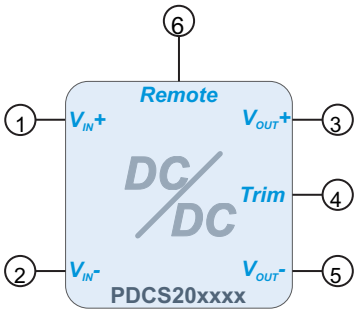


Figure 2: MECHANICAL SPECIFICATIONS (mm)

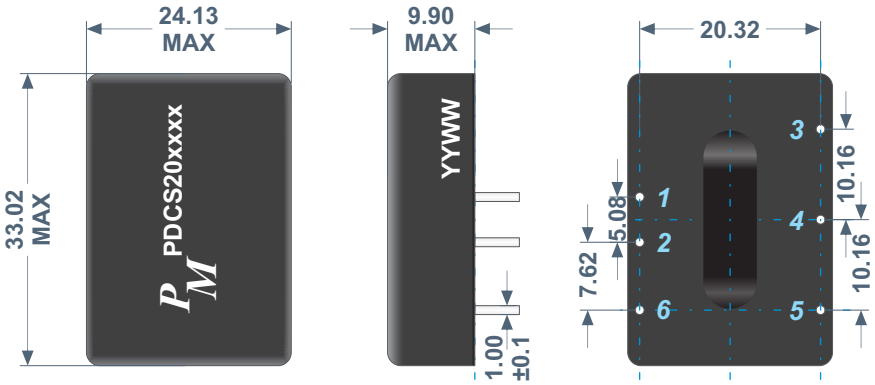


Table 1: PART NUMBER LIST.

PART NUMBER	V_{OUT} (V)	I_{OUT} (A)	Ripple (mV)
PDCS200306	3.3	6.00	75
PDCS200504	5.0	4.00	75
PDCS201202	12.0	1.67	120
PDCS201501	15.0	1.33	150
PDCS202401	24.0	0.83	240

FEATURES:

1) Salt Atmosphere (Corrosion) MIL-STD-202, method 101, test condition B, 48hr.
2) Humidity (steady state) MIL-STD-202, method 103, test condition B at 40+2°C and 92.5+2.5%; 96hr.
3) Barometric Pressure (Reduced) MIL-STD-202, method 105, test condition E, 120kft; 2hr.
4) Thermal Shock MIL-STD-202, method 107, test condition B, special test condition from -55°C to 125°C for 5 cycles; dwell 30min at each extreme.
5) Shock (Specified Pulse) MIL-STD-202, method 213, test condition C, 100g half sine; 6ms shock both directions, 18 repetitions.
6) Random Vibration MIL-STD-202, method 214, test condition I-B, 7.3g, 0.04 power spectral density vibration profile; 15min per axis.
7) Pressure test at 90psi; 5min.
8) Operating temperature -45°C to +85°C.
9) Storage temperature -55°C to +125°C.
10) Case temperature 105°C MAX.
11) MTBF MIL-HDBK-217F(GB) 25°C... 925k hr. TYP.
12) Thermal protection +105°C TYP.
13) Short circuit protection.
14) Over voltage protection.
15) Under voltage lockout.
16) Coated copper case with nonconductive base.

20381 Barents Sea Circle, Lake Forest, CA 92630. ♦ Phone: 949-452-0511 ♦ E-mail: sales@premiermag.com ♦ www.premiermag.com

Table 2: ELECTRICAL SPECIFICATIONS 25°C, V_{IN}=5.0V, C_{IN}=open, C_{OUT}=open, R_{REM}=open, R_{TRU}=open, and R_{TRD}=open unless otherwise noted.

PARAMETERS	TEST CONDITION	MIN	TYP	MAX	UNIT
INPUT VOLTAGE	100%I_{OUT}, and 0%I_{OUT}.	4.7	5.0	5.5	V
INPUT VOLTAGE POWER UP	100%I_{OUT}.	-	4.4	-	V
INPUT VOLTAGE POWER DOWN	100%I_{OUT}.	-	4.1	-	V
INPUT CURRENT	0%I_{OUT}.	-	250	-	mA
OUTPUT VOLTAGE ACCURACY	100%I_{OUT}, and 0%I_{OUT}.	-1.0	-	1.0	%
OUTPUT VOLTAGE TRANSIENT RESPONSE	Load change 75%I_{OUT} to 100%I_{OUT}.	-	-	500	µs
OUTPUT VOLTAGE RIPPLE AND NOISE	20MHz BW, C_{OUT}= 10µF tantalum + 1µF ceramic; 100%I_{OUT}.	-	-	Table 1	mVp-p
OUTPUT VOLTAGE LINE REGULATION	From V_{IN}MAX to V_{IN}MIN; 100%I_{OUT}.	-0.25	-	0.25	%
OUTPUT VOLTAGE LOAD REGULATION	From 100%I_{OUT} to 0%I_{OUT}.	-0.25	-	0.25	%
OUTPUT VOLTAGE TRIM RANGE	See Figure 4	10	-	-	±%
OUTPUT CURRENT LIMIT	Load=%I_{OUT}.	110	-	-	%
SHORT CIRCUIT PROTECTION	Load=%I_{OUT}.	110	130	-	%
EFFICIENCY	100%I_{OUT}.	-	85	90	%
REMOTE CONTROL ON[4]	100%I_{OUT}.	3	-	75	V
REMOTE CONTROL OFF	100%I_{OUT}.	-	1.2	1.8	V
HIPOT	1,2 to 3,5; 50µA MAX, ramp 1s,dwell 2s.	500	-	-	V_{DC}
ISOLATION RESISTANCE	1,2 to 3,5; 500V_{DC}, dwell 0.5s.	1000	-	-	MΩ
WEIGHT		-	22	-	g

Figure 3: TEST CIRCUIT

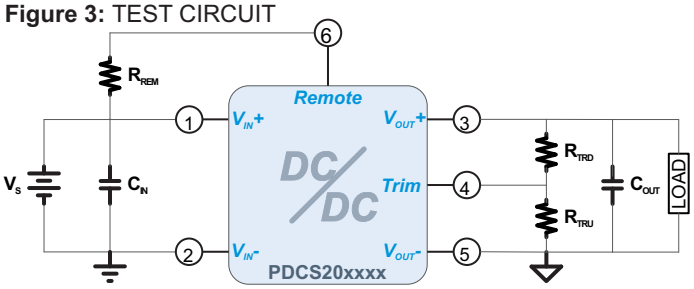
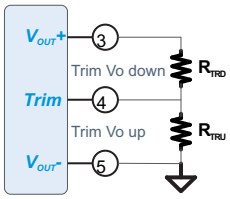


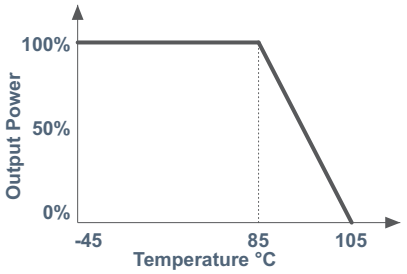
Figure 4: OUTPUT VOLTAGE TRIM[5]



ΔV_o (10kΩ Potentiometer)

PART NUMBER	REF (V)	MIN %	MAX %
PDCS200306	3.325	20	17
PDCS200504	5.002	11	14
PDCS201202	11.960	32	14
PDCS201501	14.962	40	15
PDCS202401	23.928	56	16

Figure 5: DERATING CURVE



NOTES:

1) C_{IN}, C_{OUT}, R_{REM}, R_{TRU} , and R_{TRD} are optional.
2) R_{TRU}≥1MΩ + R_{TRD}=open suggested for stability if *Trim* is unused.
3) R_{REM}≥10kΩ suggested for stability if *Remote* control is unused.
4) *Remote* control ON if open/floating, or external voltage is applied.
5) Table in Figure 4 for reference. Tested at rated currents per Table 1.
   The test measured the nominal output voltage before placing the potentiometer. A precision potentiometer was inserted and calibrated to reach the measured V_o. Then the potentiometer was adjusted all the way to both ends.
6) Figure 6 for reference. PDCS200504 tested at full load (I_{OUT}=4A).

Figure 6: STARTUP[6]