

DATA SHEET		Date	Sep.18,2001
Model	CDS6002412	Temp.	25 °C
Test	Static electricity immunity test 静電気放電試験	Humid.	45 %Rh
		Tested by	R.Sakai

1. Method — according to EN61000-4-2 —

- (1) Points to be applied voltage  
電圧印加箇所  
1) Input pin／Output pin／FG terminal, Enclosure  
入力ピン／出力ピン／FG端子, ケース
- (2) Testing shall be satisfied at the lower levels given below  
印加電圧はレベル1から4まで順次実施(下表参照)
- (3) Change the polarity (+/-) of applied voltage  
印加極性 +/- の条件でそれぞれ実施
- (4) For the time interval between successive single discharges an initial value of 1s. is recommended.  
On preselected points at least ten single discharges shall be applied.  
1秒以上の間隔で各ポイント10回実施
- (5) Contact discharge method  
接触放電で実施

Test levels of EN61000-4-2

Level	1	2	3	4
Contact discharge [kV]	2	4	6	8
Air discharge [kV]	2	4	8	15

2. Conditions

- (1) Input : DC24V
- (2) Output : Rated output
- (3) Ambient temp. : 25±10°C
- (4) Testing circuitry : Refer to item 5

3. Conditions of Acceptability

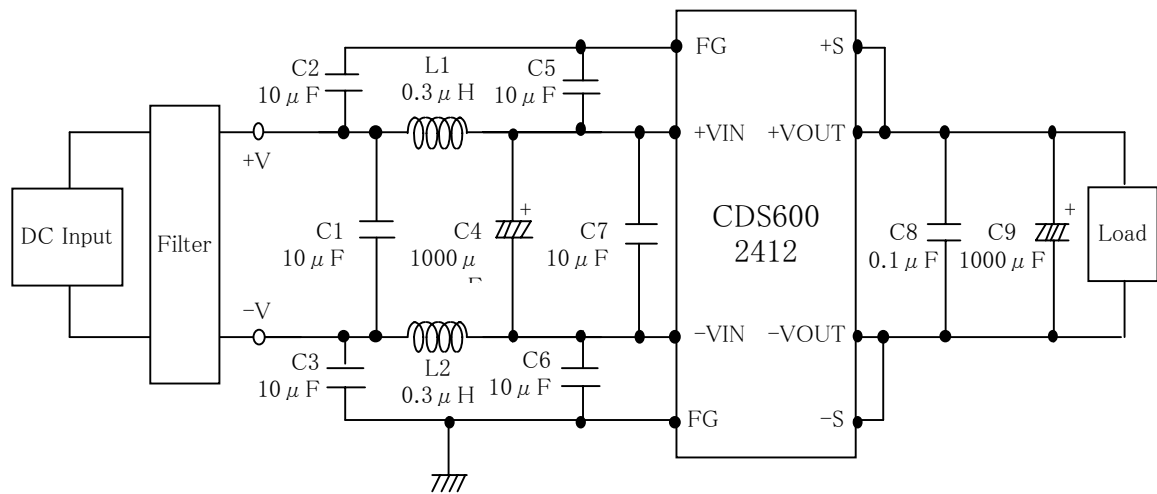
According to EN50082-2 (EN61000-4-2 Level 2)  
EN50082-2(EN61000-4-2 レベル2)を満足すること

4. Result

No.	Level	Voltage [kV]	Polarity	Pin to be tested				
				+VIN	-VIN	+VOUT	-VOUT	FG
1	1	2	+	OK	OK	OK	OK	OK
2			-	OK	OK	OK	OK	OK
3	2	4	+	OK	OK	OK	OK	OK
4			-	OK	OK	OK	OK	OK
5	3	6	+	OK	OK	OK	OK	OK
6			-	OK	OK	OK	OK	OK
7	4	8	+	OK	OK	OK	OK	OK
8			-	OK	OK	OK	OK	OK

All are satisfactory to item 3: OK

5. Testing circuitry



L1,L2:C·PI-1350-0R3 (TOKIN)  
 C1,C2,C3,C5,C6,C7:CY55BJ1H106M (TOKIN)  
 C4:50V 1000  $\mu$  F PMseries (nichicon)  
 C8:MDD50V104M (Nitsuko)  
 C9:25V 1000  $\mu$  F PWseries (nichicon)

Fig. Testing circuitry

DATA SHEET		Date	Aug.30,2001
Model	CDS6002412	Temp.	25 °C
Test	Radiated, radio-frequency, electromagnetic field immunity test 放射無線周波電磁界イミュニティ試験	Humid.	45 %Rh
		Tested by	R.Sakai

## 1. Method — according to EN61000-4-3 —

These tests are defined for measuring the effect that electromagnetic radiation has on the equipment connected. The tests shall be made in a shielded enclosure.

対象機器に対する電磁放射の影響を測定する。試験はシールドルームで行われること。

### (1) Frequency band : 80MHz to 1000MHz

周波数範囲 : 80MHz から 1000MHz

### (2) Test levels

試験レベル

Test levels of EN61000-4-3

Level	Testing field strength V/m
1	1
2	3
3	10

## 2. Conditions

- (1) Input : DC24V
- (2) Output : Rated output
- (3) Ambient temp. :  $25 \pm 10^{\circ}\text{C}$
- (4) Testing circuitry : Fig.1

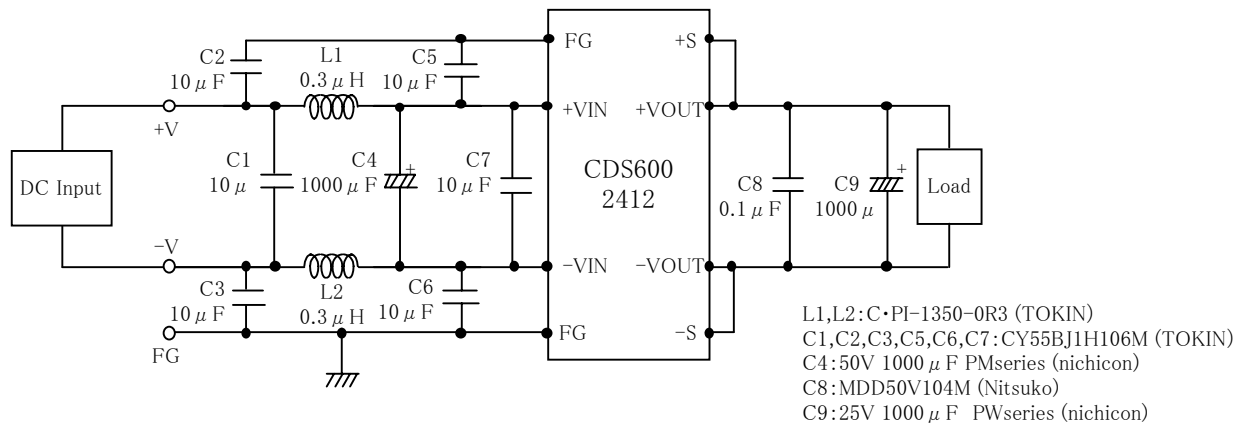


Fig.1 Testing circuitry

## 3. Conditions of Acceptability

According to EN50082-2 (EN61000-4-3 Level 3)  
 EN50082-2 (EN61000-4-3 レベル3)を満足すること

## 4. Result

No.	Level	Testing field strength[V/m]	Result
1	1	1	OK
2	2	3	OK
3	3	10	OK

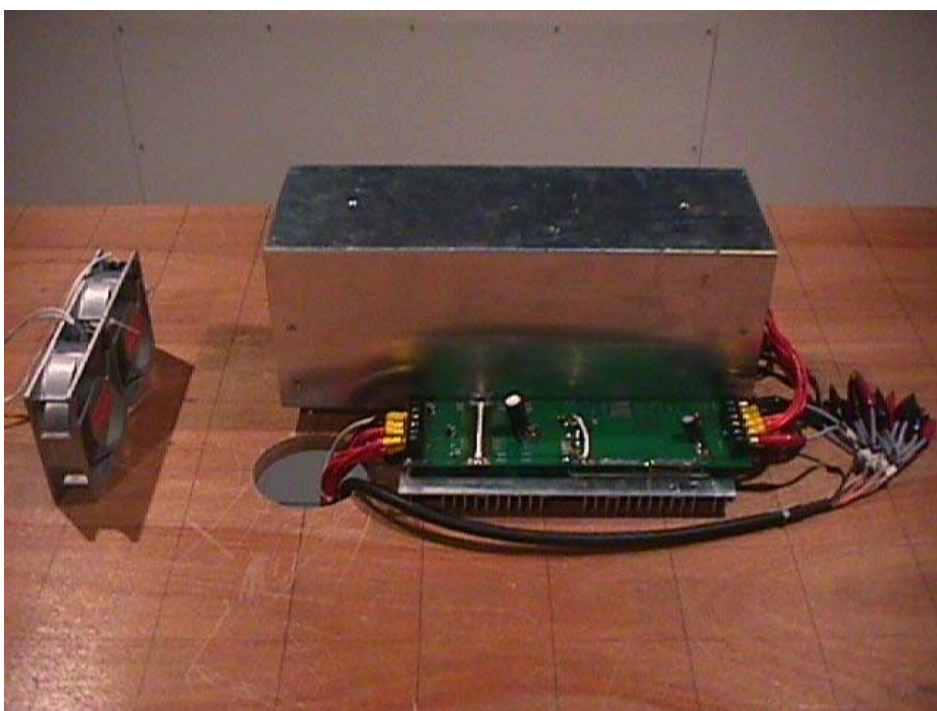
All are satisfactory to item 3: OK

## Conditions

Date 2001/8/30

Test : RADIATED SUSCEPTABILITY  
Model Name : CDS6002412

○Photographs of Test Set-Up



DATA SHEET		Date	Sep.7,2001
Model	CDS6002412	Temp.	25 °C
Test	Electrical fast transient/burst immunity test 電氣的ファーストランジエントバースト試験	Humid.	40 %Rh
		Tested by	R.Sakai

1. Method — according to EN61000-4-4 —

(1) Points to be applied voltage

電圧印加箇所

1) Between input terminal(+) and ground plane

入力端子(+) — グラントプレーン間

2) Between input terminal(-) and ground plane

入力端子(-) — グラントプレーン間

3) Between FG terminal and ground plane

FG端子 — グラントプレーン間

4) Between output pin and ground plane

出力ピン — グラントプレーン間

(2) Testing shall be satisfied at the lower levels given below

印加電圧はレベル1から4まで順次実施(下表参照)

(3) Change the polarity (+/-) of applied voltage

印加極性 +/- の条件でそれぞれ実施

(4) The period of applied voltage is 1 minute

電圧印加時間は1分間

Test levels of EN61000-4-4

Level	1	2	3	4
Voltage peak [kV]	0.5	1	2	4
Repetition rate [kHz]	5	5	5	2.5

2. Conditions

(1) Input : DC24V

(2) Output : Rated output

(3) Ambient temp. : 25±10°C

(4) Testing circuitry : Refer to item 5

3. Conditions of Acceptability

According to EN50082-2 (EN61000-4-4 Level 3)

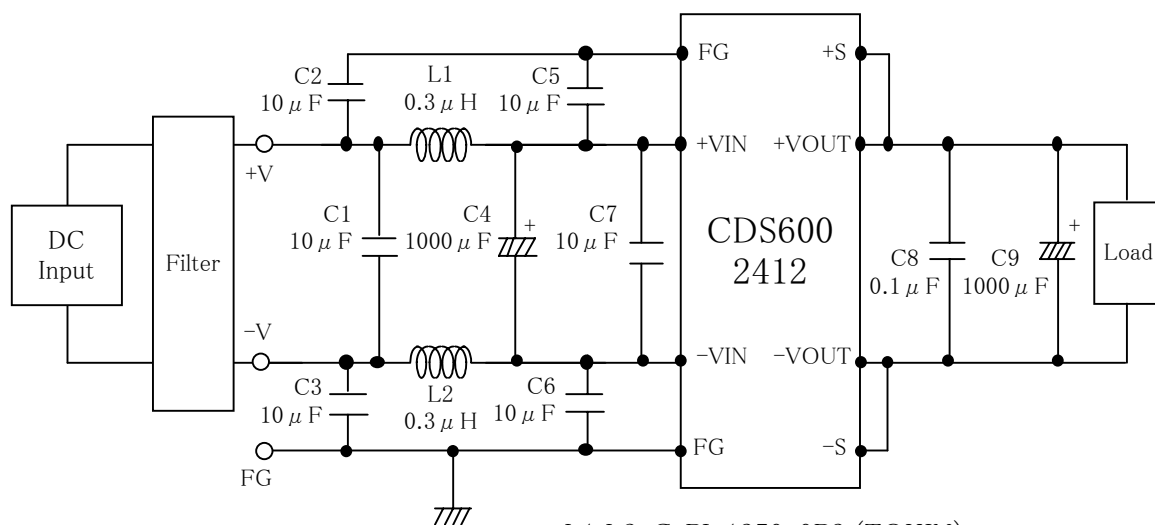
EN50082-2(EN61000-4-4 レベル3)を満足すること

4. Result

No.	Level	Voltage [kV]	Polarity	Terminal and pin to be tested				
				+V	-V	+VOUT	-VOUT	FG
1	1	0.5	+	OK	OK	OK	OK	OK
2			-	OK	OK	OK	OK	OK
3	2	1	+	OK	OK	OK	OK	OK
4			-	OK	OK	OK	OK	OK
5	3	2	+	OK	OK	OK	OK	OK
6			-	OK	OK	OK	OK	OK
7	4	4	+	OK	OK	OK	OK	OK
8			-	OK	OK	OK	OK	OK

All are satisfactory to item 3: OK

5. Testing circuitry



L1,L2:C・PI-1350-0R3 (TOKIN)  
 C1,C2,C3,C5,C6,C7:CY55BJ1H106M (TOKIN)  
 C4:50V 1000  $\mu$  F PMseries (nichicon)  
 C8:MDD50V104M (Nitsuko)  
 C9:25V 1000  $\mu$  F PWseries (nichicon)

Fig. Testing circuitry

DATA SHEET		Date	Sep.19,2001
Model	CDS6002412	Temp.	25 °C
Test	Surge immunity test サージ免疫試験	Humid.	45 %Rh
		Tested by	R.Sakai

## 1. Method — according to EN61000-4-5 —

- (1) Points to be applied voltage  
電圧印加箇所  
— Line to line (ライン - ライン間 : ノーマル) —  
1) Between input terminal (+) and input terminal (-)  
入力端子(+) - 入力端子(-)  
— Line to FG (ライン - FG間 : コモン) —  
2) Between input terminal (+) and FG terminal  
入力端子(+) - FG端子  
3) Between input terminal (-) and FG terminal  
入力端子(-) - FG端子
- (2) Test at the selected levels shown below  
印加電圧(レベル)は、下表に従う
- (3) Change the polarity (+/-) of applied voltage  
印加極性 +/- の条件でそれぞれ実施
- (4) Number of tests : Six positive and six negative at selected points.  
試験の回数 : それぞれの印加箇所、正負各6回試験する
- (5) Repetition rate : maximum 1/min.  
繰り返し速度 : 最大1回/分 (1分以上の間隔をおく)

Test levels of EN61000-4-5

Level	1	2	3	4
Test voltage [kV]	0.5	1	2	4

## 2. Conditions

- (1) Input : DC24V
- (2) Output : Rated output
- (3) Ambient temp. : 25 ± 10°C
- (4) Testing circuitry : Refer to item 5

## 3. Conditions of Acceptability

Line to line : According to EN50082-2 (EN61000-4-5 Level 3)  
ライン - ライン間 (ノーマル) : EN50082-2 (EN61000-4-5 レベル3) を満足すること  
Line to earth : According to EN50082-2 (EN61000-4-5 Level 4)  
ライン - FG間 (コモン) : EN50082-2 (EN61000-4-5 レベル4) を満足すること

## 4. Result

No.	Voltage [kV]	Polarity	Line (+) - Line (-)
1	0.5	+	OK
2		-	OK
3	1	+	OK
4		-	OK
5	2	+	OK
6		-	OK

No.	Voltage [kV]	Polarity	Line (+) - FG	Line (-) - FG
1	0.5	+	OK	OK
2		-	OK	OK
3	1	+	OK	OK
4		-	OK	OK
5	2	+	OK	OK
6		-	OK	OK
7	4	+	OK	OK
8		-	OK	OK

All are satisfactory to item 3: OK

5. Testing circuitry

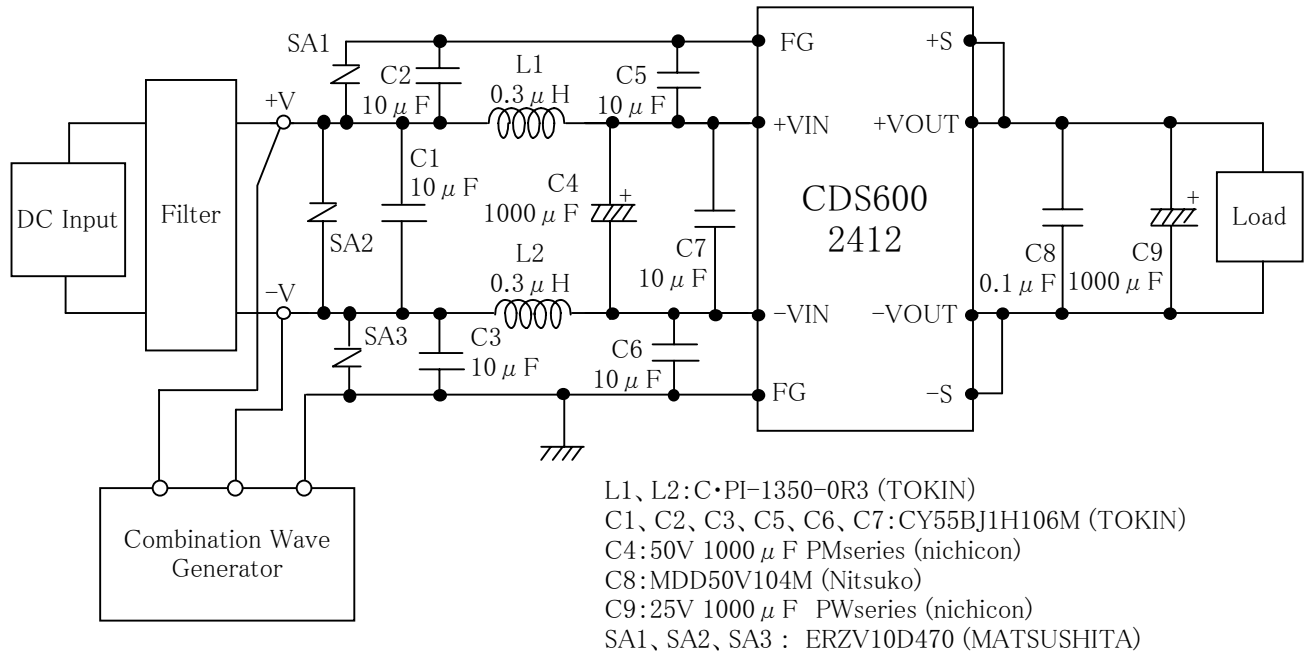


Fig. Testing circuitry



DATA SHEET		Date	Aug.30,2001
Model	CDS6002412	Temp.	25 °C
Test	Immunity to conducted disturbances, induced by radio-frequency fields 伝導性無線周波数電磁界イミュニティ試験	Humid.	45 %Rh
		Tested by	R.Sakai

## 1. Method — according to EN61000-4-6 —

### (1) Points to be applied signals

信号印加箇所

1) Between input terminal(+) and terminal(-)

入力端子(+) — 入力端子(-)間

### (2) Testing shall be satisfied at the lower levels given below

印加信号はレベル1から3まで順次実施(下表参照)

Test levels of EN61000-4-6

No.	Level	Frequency range 150kHz – 80MHz	
		Voltage level (e.m.f.)	
		Vo [dB(μ V)]	Vo [V]
1	1	120	1
2	2	130	3
3	3	140	10
4	X	Special	

## 2. Conditions

(1) Input : DC24V

(2) Output : Rated output

(3) Ambient temp. : 25±10°C

(4) Testing circuitry : Fig.1

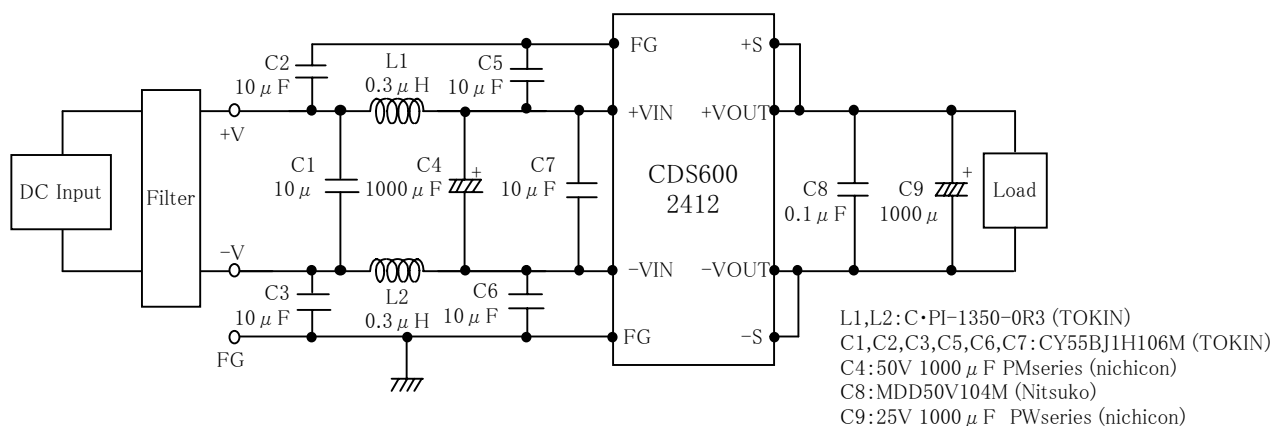


Fig.1 Testing circuitry

## 3. Conditions of Acceptability

According to EN50082-2 (EN61000-4-6 Level 3)

EN50082-2(EN61000-4-6 レベル3) を満足すること

## 4. Result

No.	Frequency range 150kHz – 80MHz			Result
	Level	Voltage level (e.m.f.)		
		Vo [dB(μ V)]	Vo [V]	
1	1	120	1	OK
2	2	130	3	OK
3	3	140	10	OK

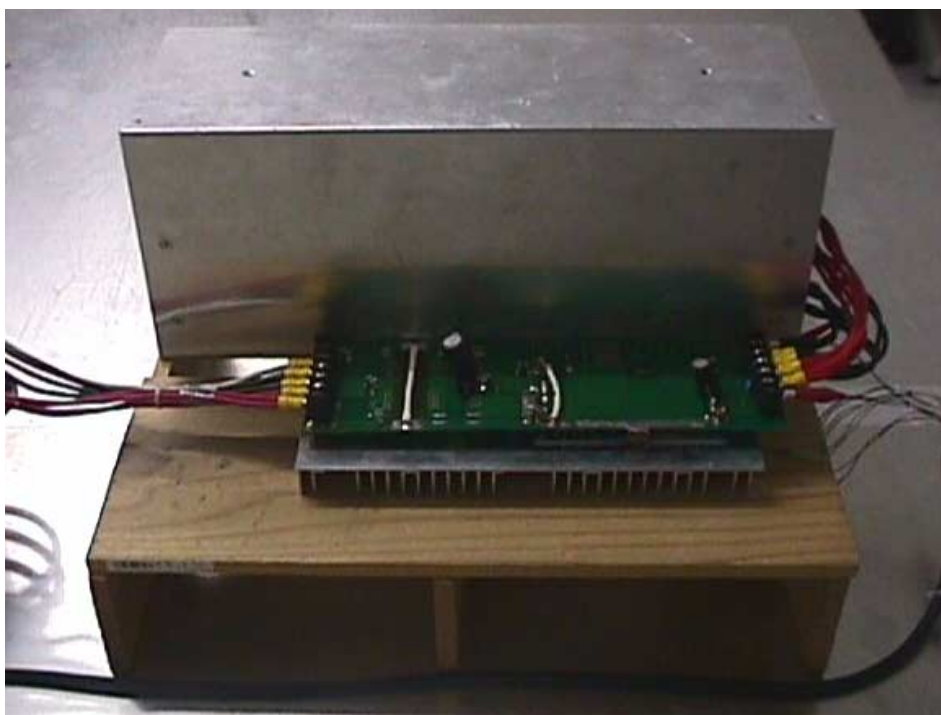
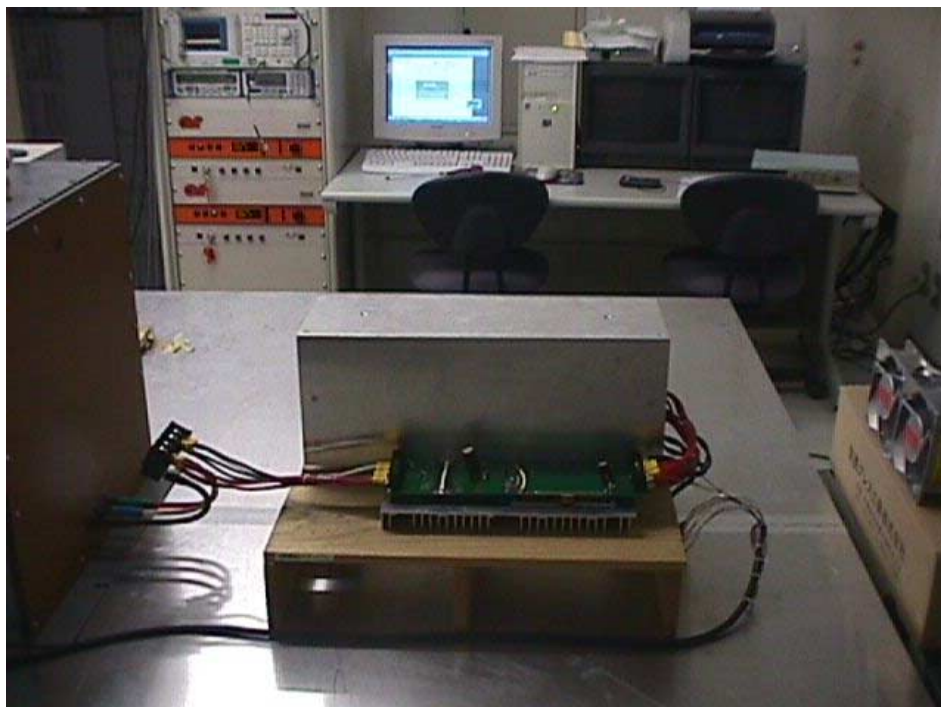
All are satisfactory to item 3: OK

## Conditions

Date 2001/8/30

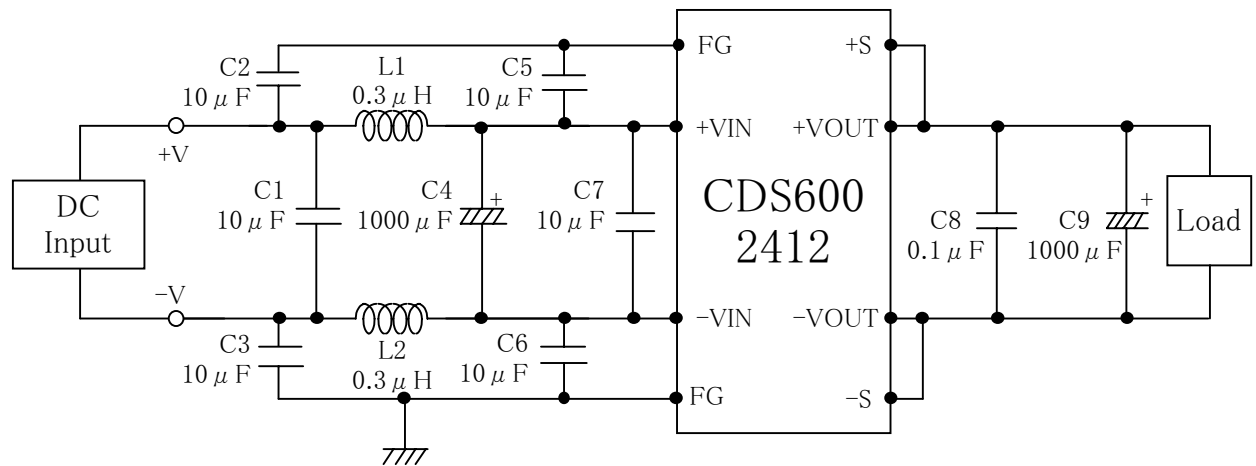
Test : CONDUCTIVE SUSCEPTABILITY  
Model Name : CDS6002412

○Photographs of Test Set-Up



DATA SHEET		Date	Aug.29,2001
Model	CDS6002412	Temp.	25℃
Test	Voltage dips, short interruptions and voltage variations immunity test 電圧ディップ・一時瞬断・変動試験	Humid.	45%Rh
		Tested by	R.Sakai
1. Method — according to EN61000-4-11 —  These tests are defined for evaluating the immunity of switching power supply when subjected to voltage dips, short interruptions and voltage variations. この試験は、入力電圧に電圧低下、一時的遮断及び電圧変動が発生した場合の電源出力特性を評価する。 (1) Voltage dips test 電圧低下試験 Specification 1 1) Test level : 30% reduction of input voltage 試験レベル：入力電圧の30%低下 2) The period of dips is 10mS 低下時間は10mS 3) Numbers of tests : 3 times 試験回数：3回 4) Interval : 10s min 試験間隔：10秒以上 Specification 2 1) Test level : 60% reduction of input voltage 試験レベル：入力電圧の60%低下 2) The period of interruptions is 100mS 遮断時間は100mS 3) Number of tests : 3 times 試験の回数：3回 4) Interval : 10s min 試験間隔：10秒以上 (2) Short interruptions test : 一時的遮断試験 1) Test level : 95% reduction of input voltage 試験レベル：入力電圧の95%低下 2) The period of interruptions is 5000mS 遮断時間は5000mS 3) Number of tests : 3 times 試験の回数：3回 4) Interval : 10s min 試験間隔：10秒以上 (3) Voltage variations test : 電圧変動試験 1) Test level : ±10% variation of input voltage 試験レベル：入力電圧の±10%変動 2) The period of variation is 15 minutes 変動時間は15分間  2. Conditions (1) Input : DC24V (2) Output : Rated output (3) Ambient temp. : 25±10℃ (4) Testing circuitry : Refer to item 5  3. Conditions of Acceptability According to EN50082-2 (EN61000-4-11) EN50082-2 (EN61000-4-11) を満足すること  4. Result (1) Voltage dips : OK (2) Short interruptions : OK (3) Voltage variations : OK  All are satisfactory to item 3: <u>OK</u>			

5. Testing circuitry



L1, L2: C·PI-1350-0R3 (TOKIN)  
 C1, C2, C3, C5, C6, C7: CY55BJ1H106M (TOKIN)  
 C4: 50V 1000  $\mu$  F PMseries (nichicon)  
 C8: MDD50V104M (Nitsuko)  
 C9: 25V 1000  $\mu$  F PWseries (nichicon)

Fig. Testing circuitry