参考資料

COSEL

DATA SHEET		Date	2001/5/16
Model	CBS1002412	Temp.	25 ℃
Test	Static electricity immunity test 静電気放電試験	Humid.	40 %Rh
		Tested by	A.Yoshiyama

1. Method — according to EN61000-4-2 —
   (1) Points to be applied voltage
   電圧印加箇所
   Input pin／Output pin／Case pin／RC pin／TRM pin
   入力ピン／出力ピン／ケースピン／RCピン／TRMピン
   (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℃

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

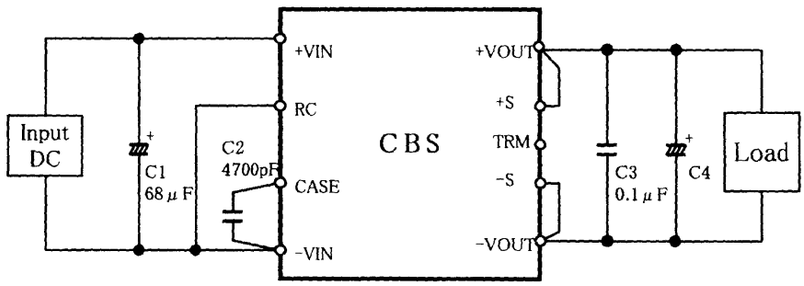
4. Result

No.	Level	Voltage [kV]	Polarity	Pin to be tested						
				+VIN	−VIN	+VOUT,+S	−VOUT,−S	CASE	RC	TRM
1	1	2	+	OK	OK	OK	OK	OK	OK	OK
2			−	OK	OK	OK	OK	OK	OK	OK
3	2	4	+	OK	OK	OK	OK	OK	OK	OK
4			−	OK	OK	OK	OK	OK	OK	OK
5	3	6	+	OK	OK	OK	OK	OK	OK	OK
6			−	OK	OK	OK	OK	OK	OK	OK
7	4	8	+	OK	OK	OK	OK	OK	OK	OK
8			−	OK	OK	OK	OK	OK	OK	OK

All are satisfactory to item 3: OK

COSEL

5. Testing circuitry



C1 : 50V 68 μ F PMseries (nichicon)
C2 : DE1307-640E472M-KH (MURATA)
C3 : MDD21H104M (Nitsuko)
C4 : 25V 470 μ F LXZseries (NIPPON CHEMI-CON)

Fig. Testing circuitry

参考資料

COSEL

DATA SHEET		Date	Sep.18,2001
Model	CBS1002412	Temp.	25 ℃
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.	40 %Rh
		Tested by	K.Kinoshita

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。試験はｼｰﾙﾄﾞ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
試験ﾚﾍﾞﾙ
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±10℃
(4) Testing circuitry : Fig.1

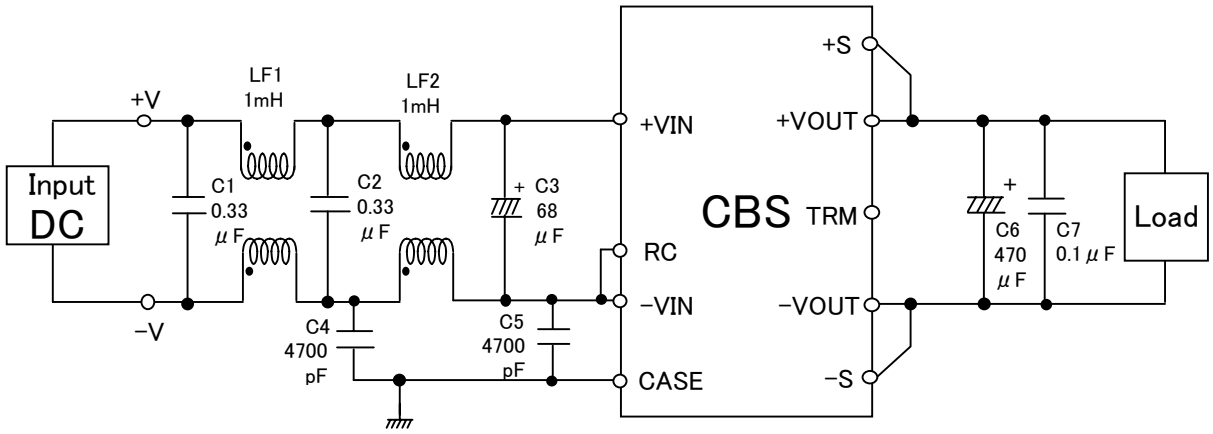


Fig.1 Testing circuitry

3. Conditions of Acceptability
According to EN61000-4-3 Level 3
EN61000-4-3 ﾚﾍﾞﾙ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

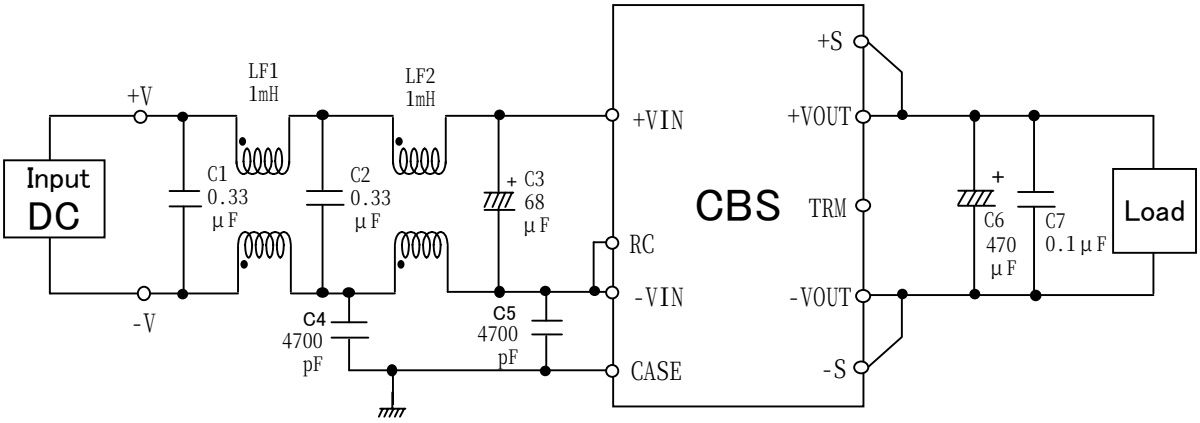
Conditions

Date 2001/9/18

Test : Radiated Susceptability
Model Name : CBS1002412

○Photographs of Test Set-Up

○Testing circuitry



LF1、LF2 ：SC-05-10J (TOKIN)
C1、C2 ： CFJC22E334M (Nitsuko)
C3 ：50V 68μF PMseries (nichicon)
C4、C5 ： DE1307-640E472M-KH (MURATA)
C6 ：25V 470μF LXZseries (NIPPON CHEMI-CON)
C7 ： MDD21H104M (Nitsuko)

Fig. Testing circuitry

参考資料

COSEL

DATA SHEET		Date	2001/5/16
Model	CBS1002412	Temp.	25 ℃
Test	Electrical fast transient/burst immunity test 電気的ﾌｧｰｽﾄﾄﾗﾝｼﾞｪﾝﾄﾊﾞｰｽﾄ試験	Humid.	40 %Rh
		Tested by	A.Yoshiyama

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

(1) Points to be applied voltage
電圧印加箇所
1) Between input pin(+VIN) and ground plane
入力ピン(+VIN) — ｸﾞﾗﾝﾄﾞﾌﾟﾚｰﾝ間
2) Between input pin(-VIN) and ground plane
入力ピン(-VIN) — ｸﾞﾗﾝﾄﾞﾌﾟﾚｰﾝ間
3) Between case pin and ground plane
ｹｰｽﾋﾟﾝ — ｸﾞﾗﾝﾄﾞﾌﾟﾚｰﾝ間
4) Between output pin and ground plane
出力ピン — ｸﾞﾗﾝﾄﾞﾌﾟﾚｰﾝ間

(2) Testing shall be satisfied at the lower levels given below
印加電圧はﾚﾍﾞﾙ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℃

3. Conditions of Acceptability

According to EN50082-2 (EN61000-4-4 Level 3)
EN50082-2(EN61000-4-4 ﾚﾍﾞﾙ3)を満足すること

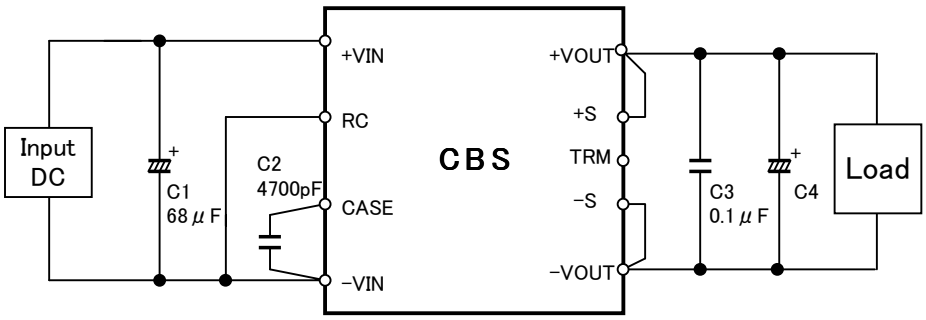
4. Result

No.	Level	Voltage [kV]	Polarity	Pin to be tested					
				+VIN	-VIN	+VOUT,+S	-VOUT,-S	CASE	RC
1	1	0.5	+	OK	OK	OK	OK	OK	OK
2			-	OK	OK	OK	OK	OK	OK
3	2	1	+	OK	OK	OK	OK	OK	OK
4			-	OK	OK	OK	OK	OK	OK
5	3	2	+	OK	OK	OK	OK	OK	OK
6			-	OK	OK	OK	OK	OK	OK
7	4	4	+	OK	OK	OK	OK	OK	OK
8			-	OK	OK	OK	OK	OK	OK

All are satisfactory to item 3: OK

COSEL

5. Testing circuitry



C1:50V 68 μ F PMseries (nichicon)
C2:DE1307-640E472M-KH (MURATA)
C3:MDD21H104M (Nitsuko)
C4:35V 470 μ F LXZseries (NIPPON CHEMI-CON)

Fig. Testing circuitry

参考資料

COSEL

DATA SHEET		Date	2001/7/6
Model	CBS1002412	Temp.	25 ℃
Test	Surge immunity test サージイミュニティ試験	Humid.	40 %Rh
		Tested by	K.Kinoshita

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 pin (+V) and input pin (-V)
   入力ピン(+V) - 入力ピン(-V)
   - Line to case pin (ライン - ケースピン間：コモン) -
   2) Between input pin (+V) and case pin
   入力ピン(+V) - ケースピン
   3) Between input pin (-V) and case pin
   入力ピン(-V) - ケースピン
   (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で、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℃
   (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 Case pin : According to EN50082-2 (EN61000-4-5 Level 4)
   ライン - ケースピン間 (コモン) : EN50082-2(EN61000-4-5 レベル4)を満足すること

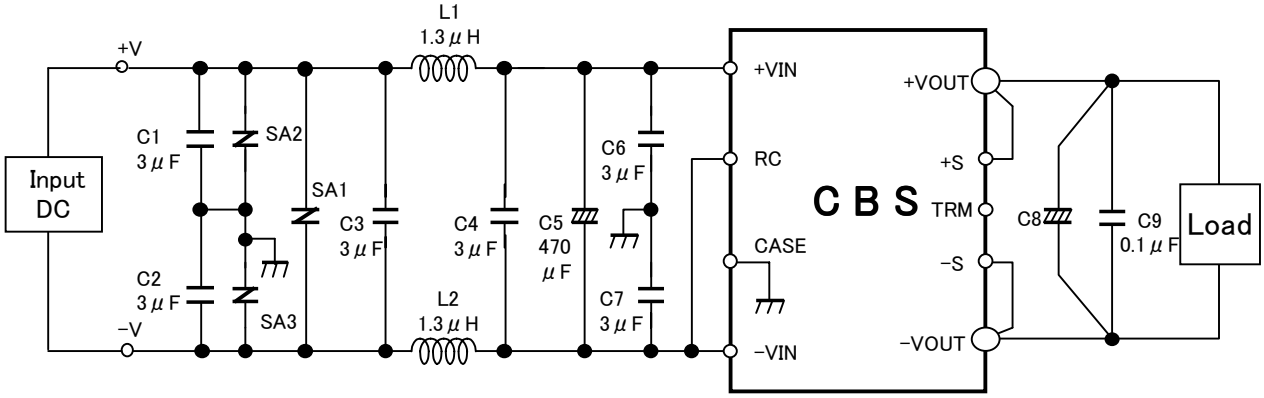
4. Result

No.	Voltage〔kV〕	Polarity	Line (+V) - Line (-V)
1	0.5	+	OK
2		-	OK
3	1	+	OK
4		-	OK
5	2	+	OK
6		-	OK
7	2.4	+	OK
8		-	OK
9	3	+	OK
10		-	OK

No.	Voltage〔kV〕	Polarity	Line (+V) - Case pin	Line (-V) - Case pin
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
9	6	+	OK	OK
10		-	OK	OK

All are satisfactory to item 3: OK

5. Testing circuitry



L1、L2 :ETQP6F1R3LFA(MATSUSHITA)
C1、C2、C3、C4、C6、C7
:CY55Y5P2A305M(TOKIN)
C5 :50V 470μF PFseries (nichicon)
C8 :35V 470μF LXZseries (NIPPON CHEMI-CON)
SA1、SA2、SA3 : ERZV10D470 (MATSUSHITA)
C9 : MDD21H104M (Nitsuko)

Fig. Testing circuitry

参考資料

COSEL

DATA SHEET		Date	2001/7/8
Model	CBS1002412	Temp.	25 ℃
Test	Surge immunity test サージイミュニティ試験	Humid.	40 %Rh
		Tested by	K.Kinoshita

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 pin (+V) and input pin (-V)
   入力ピン(+V) - 入力ピン(-V)
   - Line to case pin (ライン - ケースピン間：コモン) -
   2) Between input pin (+V) and case pin
   入力ピン(+V) - ケースピン
   3) Between input pin (-V) and case pin
   入力ピン(-V) - ケースピン
   (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で、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℃
   (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 Case pin : According to EN50082-2 (EN61000-4-5 Level 4)
   ライン - ケースピン間 (コモン) : EN50082-2(EN61000-4-5 レベル4)を満足すること

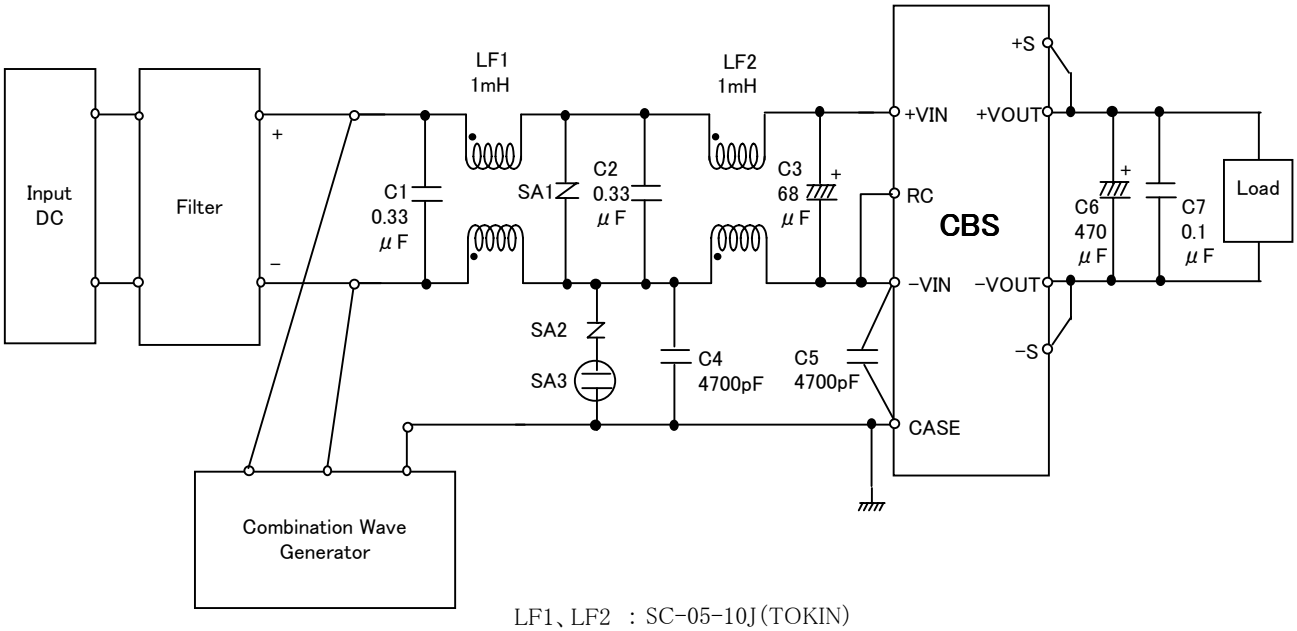
4. Result

No.	Voltage〔kV〕	Polarity	Line (+V) - Line (-V)
1	0.5	+	OK
2		-	OK
3	1	+	OK
4		-	OK
5	2	+	OK
6		-	OK
7	2.4	+	OK
8		-	OK
9	3	+	OK
10		-	OK

No.	Voltage〔kV〕	Polarity	Line (+V) - Case pin	Line (-V) - Case pin
1	1	+	OK	OK
2		-	OK	OK
3	2	+	OK	OK
4		-	OK	OK
5	4	+	OK	OK
6		-	OK	OK
7	4.8	+	OK	OK
8		-	OK	OK
9	6	+	OK	OK
10		-	OK	OK

All are satisfactory to item 3: OK

5. Testing circuitry



LF1、LF2 : SC-05-10J(TOKIN)
C1、C2 : CFJC22E3334M (Nitsuko)
C3 : 50V 68μF PMseries (nichicon)
C4、C5 : DE1307-640E472M-KH (MURATA)
C6 : 25V 470μF LXZseries (NIPPON CHEMI-COM)
C7 : MDD21H104M (Nitsuko)
SA1、SA2 : ERZV10D470 (MATSUSHITA)
SA3 : DSA-302MA (MITSUBISHI)

Fig. Testing circuitry

COSEL

参考資料

DATA SHEET		Date	Sep.17,2001
Model	CBS1002412	Temp.	25 ℃
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.	40 %Rh
		Tested by	K.Kinoshita

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

(1) Points to be applied signals
信号印加箇所
1) Between input pin(+V) and input pin(-V)
入力ピン(+V) — 入力ピン(-V)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.	Frequency range 150kHz - 80MHz		
	Level	Voltage level (e.m.f.)	
		Vo〔dB(μV)〕	Vo〔V〕
1	1	120	1
2	2	130	3
3	3	140	10

2. Conditions

(1) Input : DC24V
(2) Output : Rated output
(3) Ambient temp. : 25±10℃
(4) Testing circuitry : Fig.1

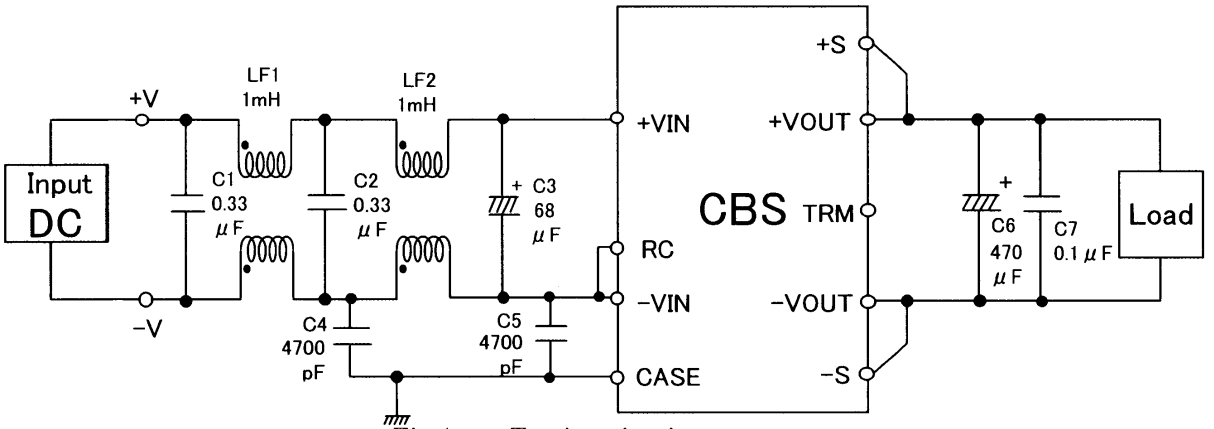


Fig.1 Testing circuitry

3. Conditions of Acceptability

According to EN61000-4-6 Level 3
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(μV)〕	Vo〔V〕	
1	1	120	1	OK
2	2	130	3	OK
3	3	140	10	OK

All are satisfactory to item 3: OK