



April 25th, 2022
Cosel Co., Ltd.
OS Design Dept.

EMI/EMS Test Result

According to IEC60601-1-2 4th Edition (EMS)

Model Name : TUNS1200F series

Approved : Junichi Hatagishi

The EUT is operated with following condition during EMI/EMS test.

Input Voltage : 230VAC / 50Hz
Output Current : Rated Current
Ambient Temperature : 25°C ± 10°C

Prepared : Toshiya Yoshioka

#	Subject	Reference standard	Test Condition	Criteria *1	Result
1	EMI	Conducted Emission	EN55011, EN55032 Class A CISPR 32 Class A FCC Part15 Class A VCCI Class A Testing circuitry Fig.1	-	Pass
2		Radiated Emission	EN55011, EN55032 Class A CISPR 32 Class A FCC Part15 Class A VCCI Class A Testing circuitry Fig.1	-	Pass
3		Harmonic Current	IEC61000-3-2 Class A Testing circuitry Fig. 1	-	Pass
4	EMS	Electrostatic discharge immunity test	IEC61000-4-2 Contact Discharge : Level 4 (8kV) Air Discharge : Level 3 (8kV) Testing circuitry Fig.1(TUNS1200F12,28,48) Fig.2(TUNS1200F65)	A	Pass
5		Radiated, radio-frequency, electromagnetic field immunity test	IEC61000-4-3 10V/m : (80MHz~2.7GHz) 80% Amplitude modulated Testing circuitry Fig. 1	A	Pass
6		Electrical fast transient / Burst immunity test	IEC61000-4-4 Level 4 (4kV) Repetition Rate : 5kHz and 100kHz Testing circuitry Fig. 1	A	Pass
7		Surge immunity test	IEC61000-4-5 Line to Line : Level 4 (2kV) Line to Earth : Level 4 (4kV) Testing circuitry Fig. 3	A	Pass
8		Immunity to conducted disturbances, induced by radio-frequency fields	IEC61000-4-6 Voltage Level (e.m.f.) : Level 3 (10Vrms) Testing circuitry Fig. 1	A	Pass
9		Power frequency magnetic field Immunity test	IEC61000-4-8 Magnetic Field Strength : Level 4 (30A/m) Testing circuitry Fig. 1	A	Pass
10		Voltage dips, short interruptions and voltage variations immunity test	IEC61000-4-11 (1) 100% dip for 10ms, 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° (2) 100% dip for 20ms, 0° (3) 60% dip for 100ms, 0° (4) 30% dip for 500ms, 0° (5) 100% dip for 5 seconds (short interruption) Testing circuitry Fig. 1	A A A A B	Pass Pass Pass Pass Pass

***1 Definition of Criteria**

Criteria A : (1) No output voltage drop with control circuit failure.
(2) No protection circuit and other circuit malfunction.

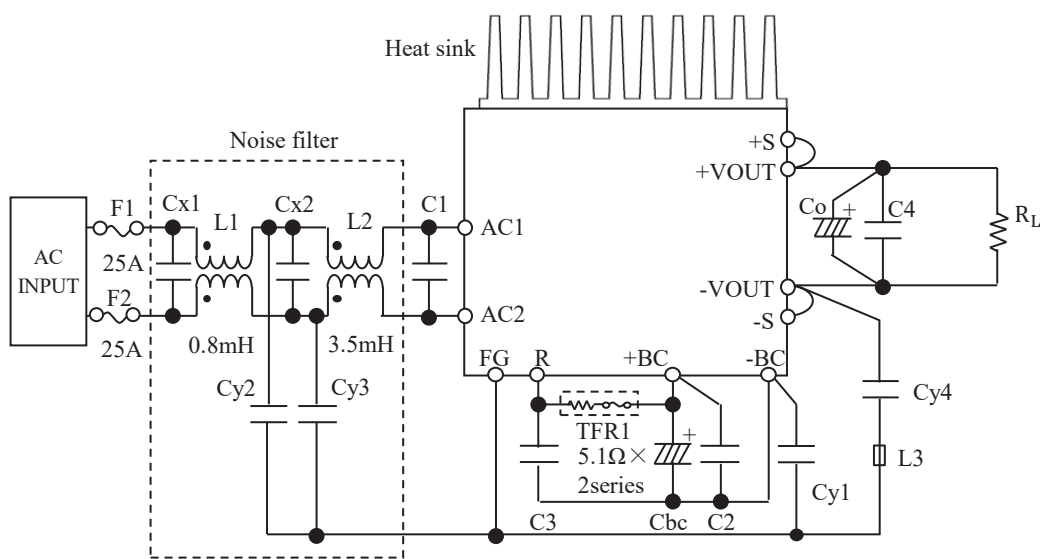
Criteria B : (1) The output voltage is temporary degradation of performance.
It recovers its normal performance without operator intervention.
(2) No protection circuit and other circuit failure.

***2 Output Current : 50% or less of rated current (at 100VAC)**

<Notes>

Power supply shall not determine the final equipment performance against EMS test. Therefore we confirmed the output voltage performance only. EMS test should be performed as a final product.

- Testing circuitry I



- | | |
|---------|---|
| L1 | : SCR25-200-1R7A008JH |
| L2 | : SC15-E350H |
| L3 | : Ferrite Bead (K5B T 4x2x2) × 2series (For TUNS1200F65 only) |
| Cx1,Cx2 | : 1.5uF 310V Film Capacitor |
| Cy1 | : 2200pF 400V |
| Cy2,Cy3 | : 1500pF 400V |
| Cy4 | : 10000pF 300V × 2parallel (For TUNS1200F65 only) |
| C1 | : 1.5uF 310V Film Capacitor × 2parallel |
| C2,C3 | : 1.0uF 630V Film Capacitor × 2parallel |
| C4 | : 1.0uF Ceramic Capacitor |
| Cbc | : 470uF 450V Electrolytic Capacitor × 3parallel |
| Co | : TUNS1200F12 2200uF 25V Electrolytic Capacitor
TUNS1200F28 1000uF 50V Electrolytic Capacitor
TUNS1200F48 470uF 63V Electrolytic Capacitor
TUNS1200F65 150uF 100V Electrolytic Capacitor × 2parallel |

Fig.1 Testing circuitry

○ Testing circuitry II

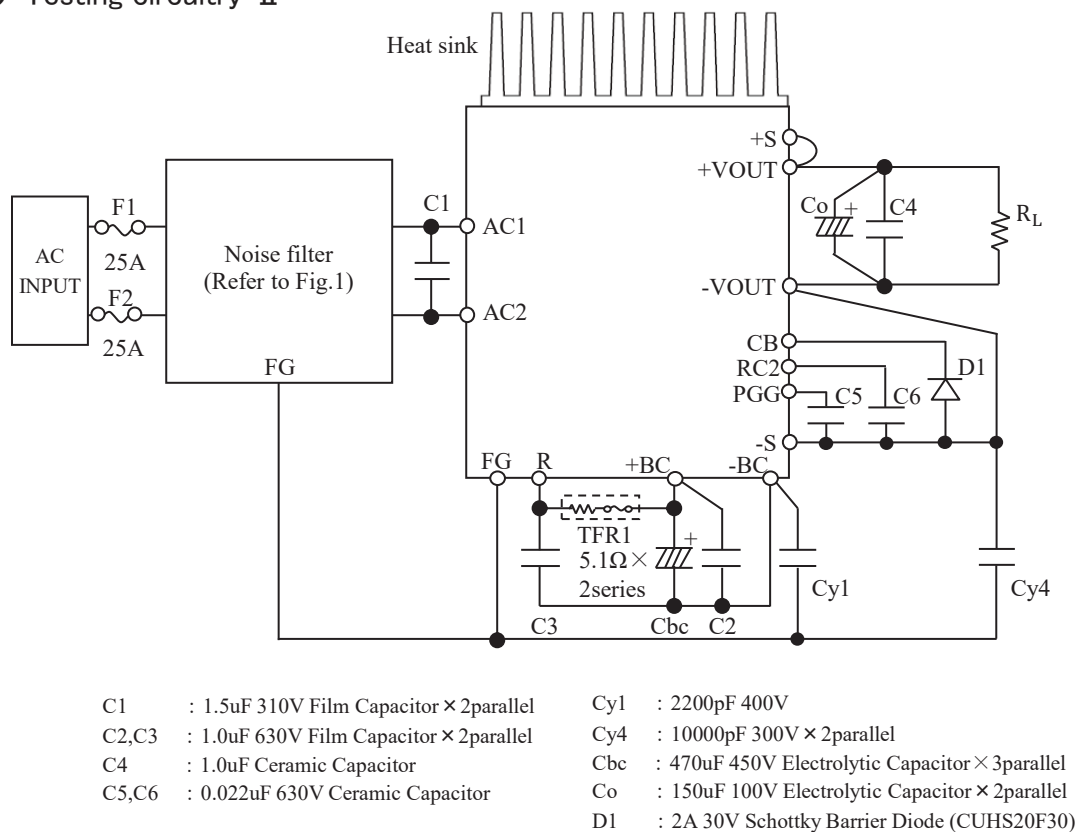


Fig.2 Electrostatic discharge immunity Testing circuitry (For TUNS1200F65 only)

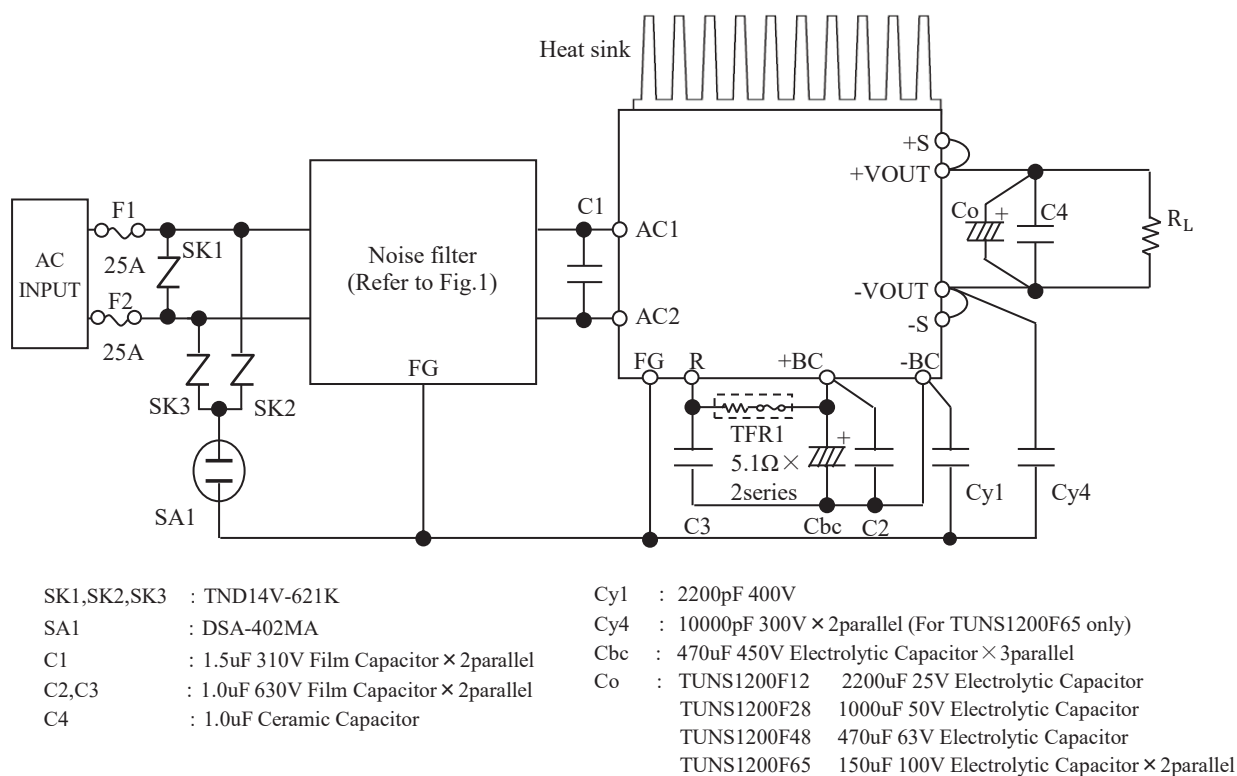


Fig.3 Surge immunity Testing circuitry