



芯瑞科技股份有限公司
Shamrock Micro Devices Corp.

Cost Effective Solution for T8 CE module

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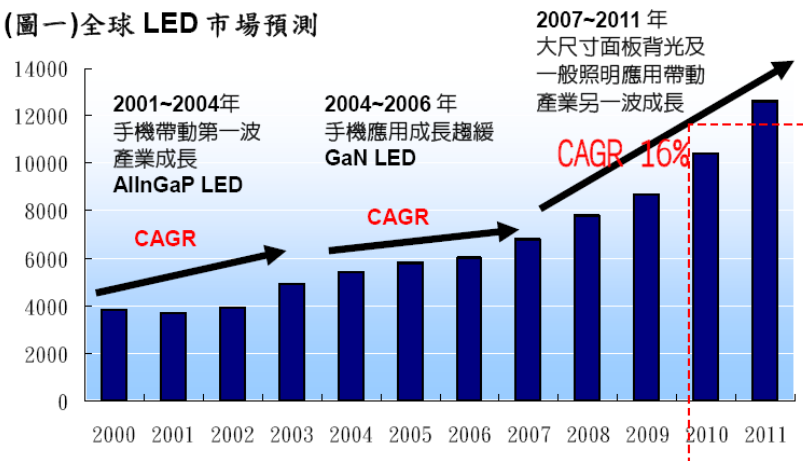
Agenda

- Market survey
- Topology comparison
- Cost effective design
- CE consider
- Best performance
- Q & A

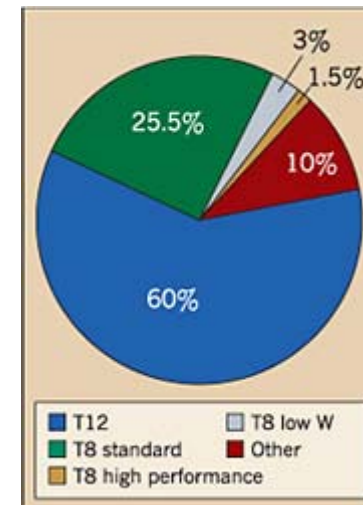
Market survey

- Commercial & Manufacturers indicate building
- CE & Safety require for more confidence
- Market & WLED price drop
- Energy star AUG,2010 PFC>0.7

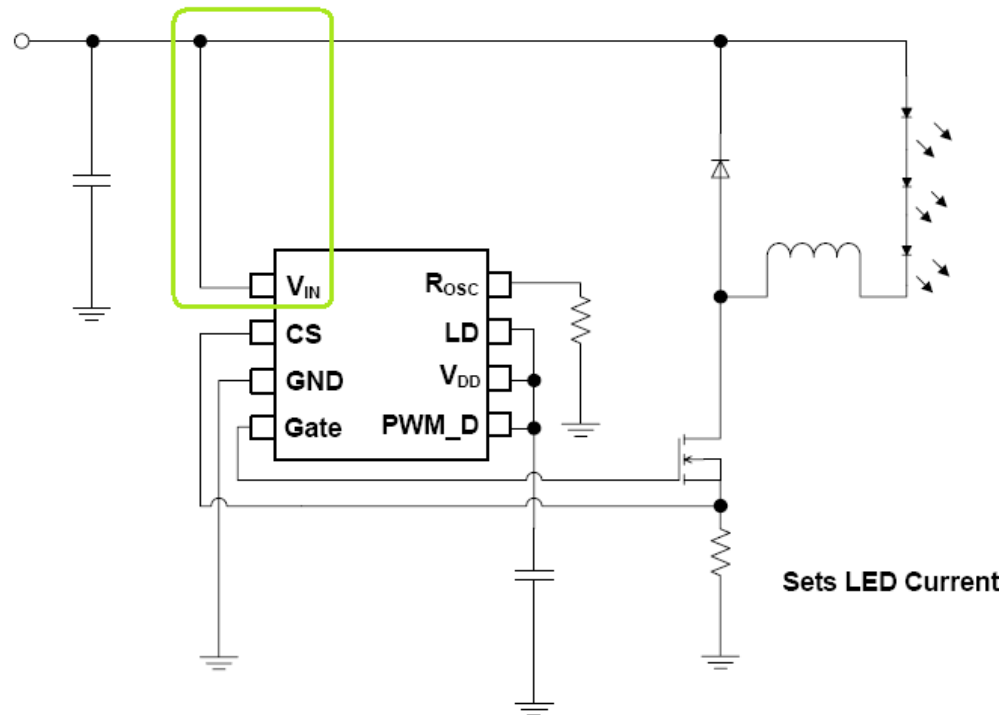
(圖一)全球 LED 市場預測



來源：IEK；一銀投顧彙整(2008/10)



- PFC > 0.85 that isolation for Safety
- EFF > 85% that non-isolation for Low thermal



- Lo-V start up cannot work for 24V



SMD

Cost effective design

- No Transformer USD:0.5
- No photo & secondary USD:0.2
- No Heat Sink & No Y-CAP USD:0.3



- *4 Ruler BOM less then isolation ÷USD:1.0*

CE consider

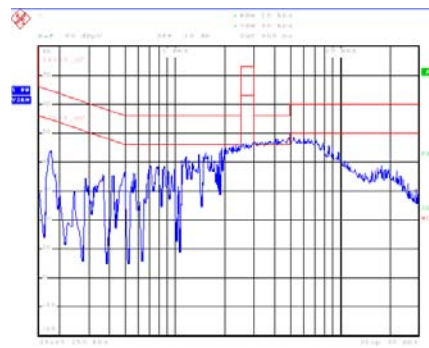
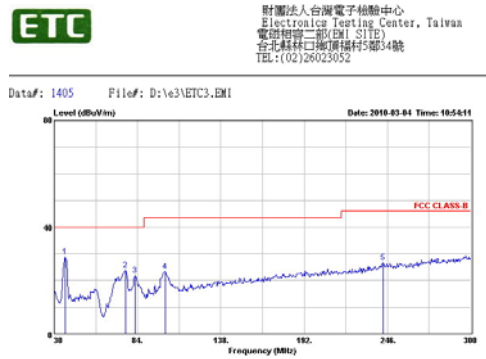
- Surge
- ESD
- EFT
- EMI

Test specifications :

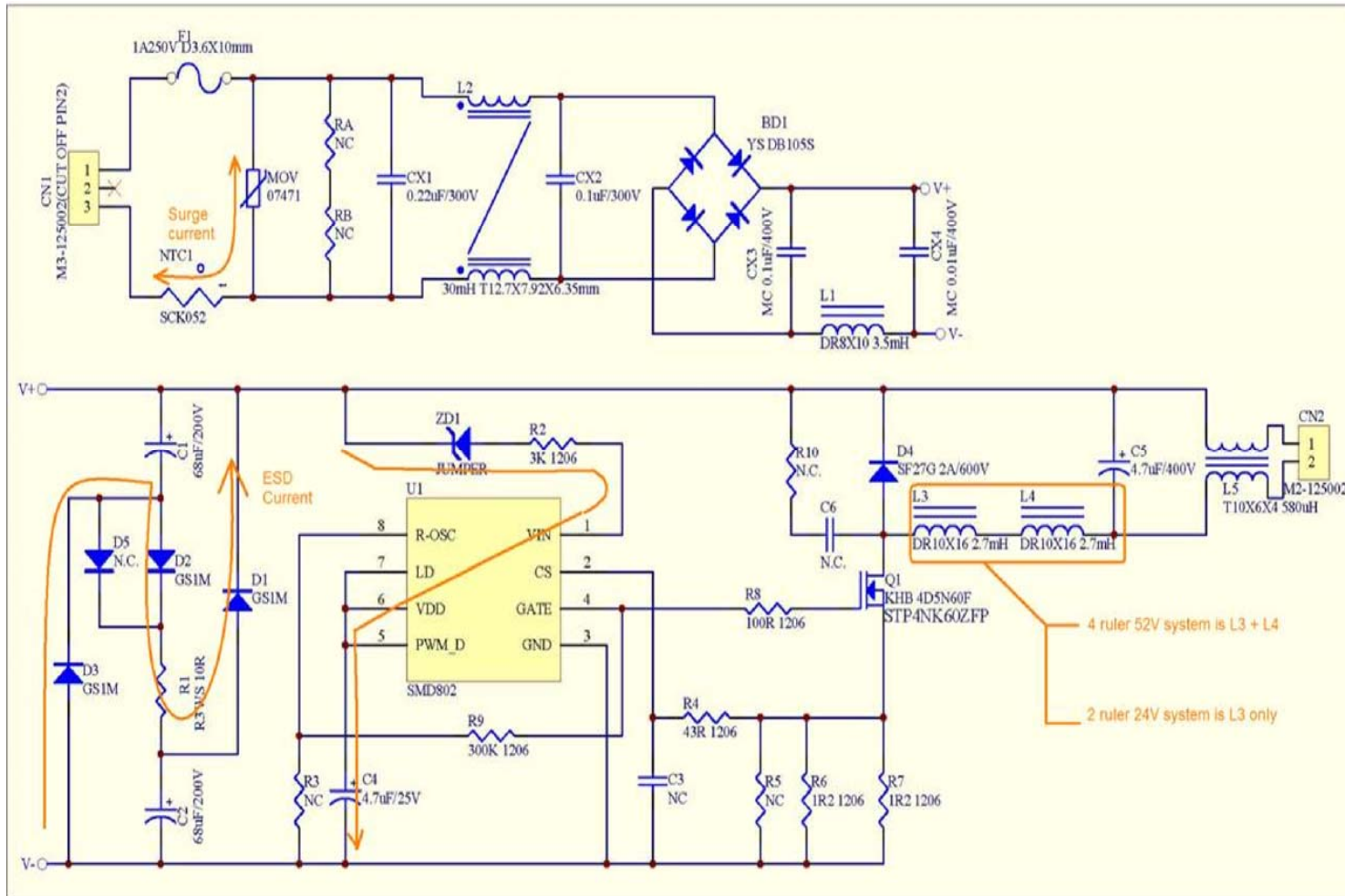
Emissions : EN 55015:2006/A1:2007
IEC 61000-3-3:2008

Immunity : IEC 61000-4-2:2008
IEC 61000-4-3:2006/A1:2007
IEC 61000-4-4:2004
IEC 61000-4-5:2005
IEC 61000-4-6:2008
IEC 61000-4-8:1933/A1:2000
IEC 61000-4-11:2004

Regulations applied : EN 55015:2006/A1:2007
EN 61547:1995/A1:2000



Schematic





Best performance

Items No.	Test Items	Spec'		Test Result		Remark
		Min.	Max.	AC115V	AC230V	
1	Line Regulation	340mA	370mA	345mA	366mA	PASS
2	Efficiency	85%	-	86.2%	85.2%	PASS
3	PFC	0.8	-	0.95	0.90	PASS

240Vac/50Hz					
ITEM	Component	Thermal		Tmax Limit	Pass/Fail
		240Vac/50Hz	240Vac/50Hz		
		25°C (0.5Hr)	50°C (2Hr)		
1	C5	54.5°C	54.8°C	80	Pass
2	L1	60.9°C	61.2°C	105	Pass
3	C1	62.6°C	63.0°C	80	Pass
4	C2	64.1°C	64.4°C	80	Pass
5	Q1	72.6°C	73.1°C	125	Pass
6	U1	81.4°C	81.8°C	100	Pass
7	R1	75.5°C	75.7°C	125	Pass
8	D4	72.0°C	72.4°C	125	Pass
9	L4	64.7°C	65.1°C	105	Pass
10	AMB	24.0°C	23.8°C	-	Pass

