



# PART SPEC

REV.	DATE	CONTENTS	DRAWN	APPROVED
00	01. 09.21	initial release	M.S NA	B.J KAWK
01	02.10.18	REVISIONBY ECO NO ;BN020020930	M.S NA	B.J KAWK



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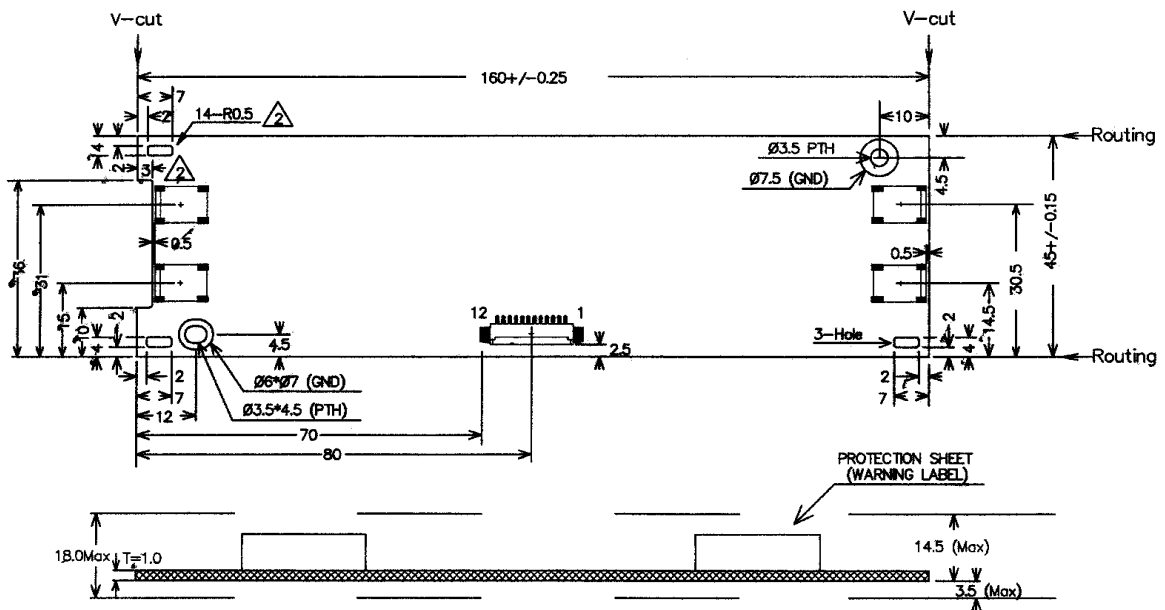
# PART SPEC

## 1.0 SCOPE

- 1.1 THIS DOCUMENT DEFINES FOR INVERTER, K02I036.00, 11.5 ~15.5V, 48KHz
- 1.2 USAGE : BACK LIGHT 2 LAMP CCFL DRIVER INVERTER FOR SAMSUNG LCD
- 1.3 TYPE OF PACKAGE :
- 1.4 COATING :

## 2.0 RELATED DOCUMENTS

## 3.0 DIMENSIONS



## 4.0 REQUIREMENTS

### 4.1 MAXIMUM RATINGS

SYMBOL	PARAMETER	RATING	UNIT
$V_{in1}$	input voltage1	11.5 -15.5	V
$V_{in2}$	input voltage2	5.0	V
$T_{opr}$	operating temperature	0 +55	
$T_{stg}$	storage temperature	-20 +70	
$H_{op}$	operating/storage humidity	0-90	%RH

### 4.2 CONTROL SIGNAL

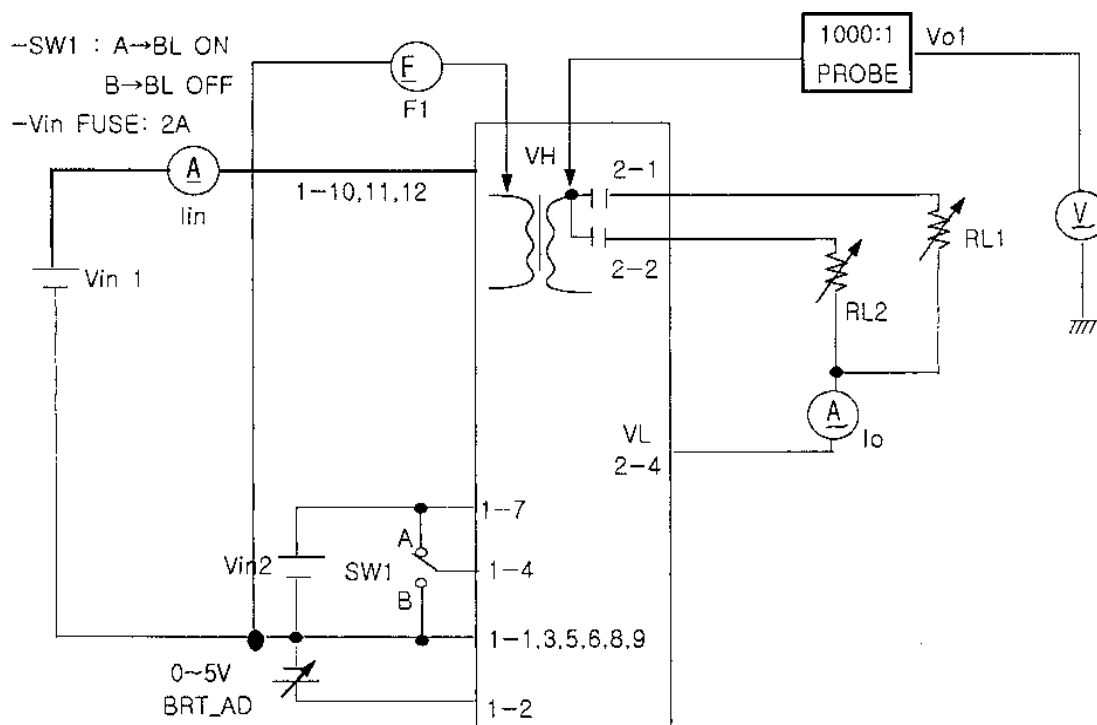
PIN NO.	SYMBOL	STATUS	ACTION	REMARKS
J1 #4	BKLT-ON	HIGH	LAMP (CCFL)-ON	2.2 -5.25V
		LOW	LAMP (CCFL)-OFF	0.0 -0.8V MAX.



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## 4.3 TEST CIRCUIT



## 4.4 INPUT/OUTPUT CHARACTERISTICS

\* RL : SAMSUNG 150XH-L01

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ITEM	SYMBOL	CONDITION				SPECIFICATION			UNIT
		Vin1 (V) (DC- IN)	Vin2 (V)	BRT-ADJ	LOAD	MIN	TYP	MAX	
OUTPUT CURRENT	Io1 (max)	11.5 -45.5	5	0V	RL=80kΩ	6.2	6.7	7.2	mA <sub>rms</sub>
	Io1 (min)	11.5 -45.5	5	5V	RL=80kΩ	1.0	2.5	4.0	
INPUT CURRENT	I <sub>in</sub>	14	5	0V	RL	-	2.1	2.2	ADC
INPUT POWER	P <sub>in</sub>	14	5	0V	RL	-	-	20	W
FREQUENCY	F(1)	11.5 -45.5	5	0V	RL	41	48	55	kHz
OUTPUT POWER	P <sub>out</sub>	11.5 -45.5	5	0V	RL	-	-	20	W
BURST MODE FREQUENCY	F <sub>b</sub>	14	5	5V	RL	525	535	545	Hz
STRIKING TIME	T <sub>s</sub>	11.5 -45.5	5	5V	RL	-	1.0	-	sec
EFFICIENCY		14	5	5V	RL=82.5kΩ	70	-	-	%
KICK ON VOLTAGE	V <sub>k</sub>	14	5	0V	NO LOAD	1500	-	-	V <sub>rms</sub>



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## 5.0 FUNCTIONAL PIN DESCRIPTION



### 5.1 CONNECTOR 1205WR-12(YEONHO) :CN1

PIN NO	SYMBOL	REMARK
1,3,5	GND	GND
2	BRT_ADJ	0 ~ 5V
4	BL ON/OFF	CCFL Drive SIGNAL(Active HIGHT)
6,8,9	GND	GND
7	5V	5V
10,11,12	DC- IN	DC INPUT Power(14V)

### 5.2 CONNECTOR: 35001WR-02 (YEONHO) : CN2, CN3, CN4, CN5

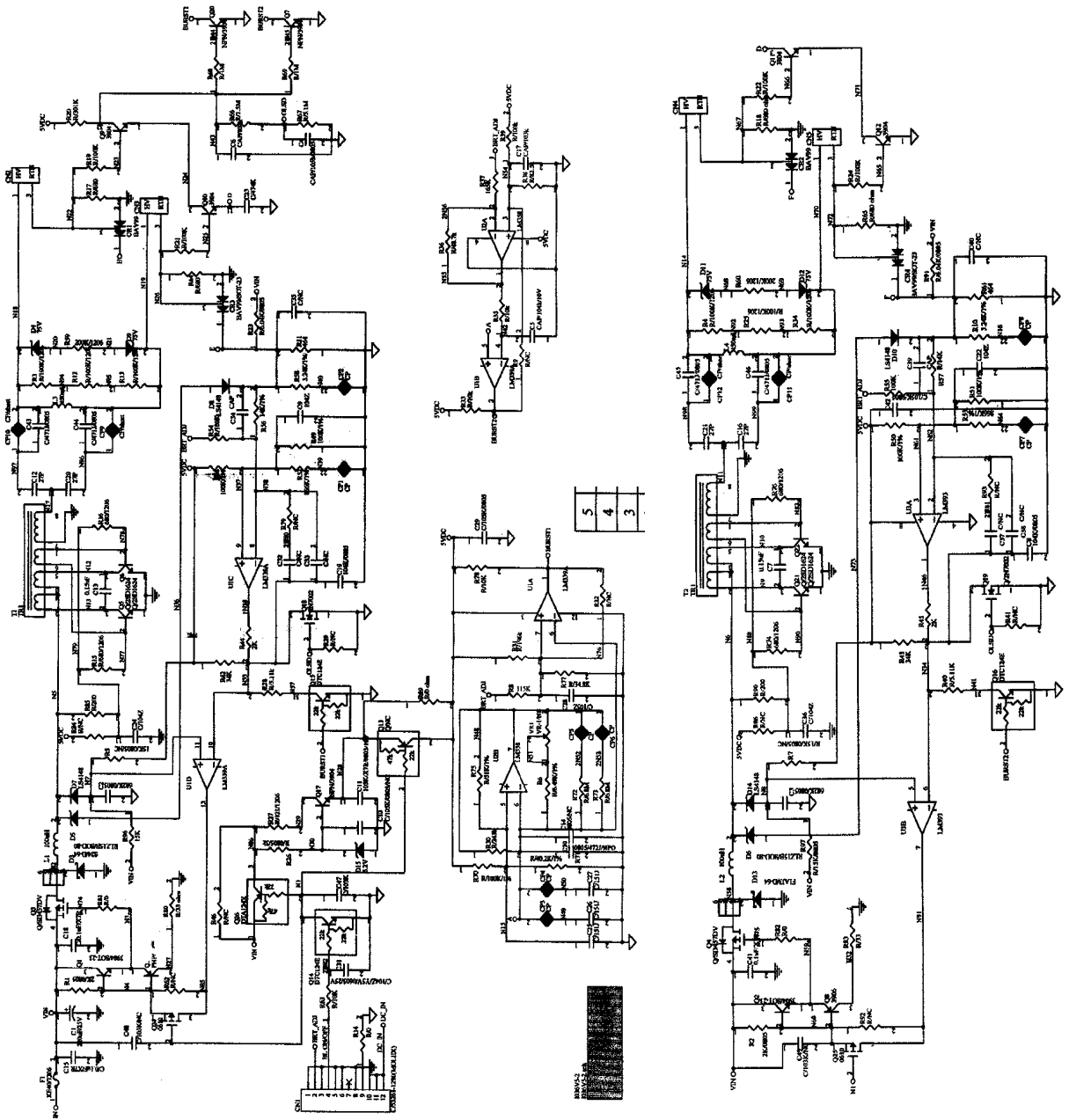
PIN NO	SYMBOL	REMARK
1	HOT	HIGHT 1
2	HOT	HIGHT 2
3	COLD	LOW



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## 6.0 INTERNAL CIRCUIT DIAGRAM



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## 7.0 PARTS LIST



LOCATION	MATERIAL LIST	VENDOR
INSULATOR	K02I036.00 REV:0	SHINSUNG
TRAY	TRAY-069B ,T31,015,C.00 REV.00 15 W 155*41.5mm	WAN JEON PYNG
L1,L2	IND A98-0762,DIP(Axis), 100uH +/-10%, 0.16mohm	AXIS,TOKO,XTREME
L3,L4	IND SPC-1005P-454(TMP), 450mH/K/1.5kohm/10.3*9.7*5.5mm	TMP,XTREME
C13,C7	CAP PPS 2A154J (SUNG HO), 0.15u/100V/10.3*9.7*5.5mm	SUNGHO
C1	CAP AL SC025M0220CBT (TEAPO),220uF/25V/8*11/105/P=3.5mm	SANYO,MAT,NCC
C43,C44,C45,C46	CAP, C 471J/100V/NPO/0805	HEC,AVX,PHYCOM,TDK
C12, C16 C20,C21	CAP C 270J/3KV/DIP/1808	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C23	CAP C 474K/10V/X7R/0603	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C17	CAP C 103K/16V/X7R/0603	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C47	CAP C 103K/50V/X7R/0603	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C5,C6	CAP C 104K/16V/X7R/0603	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C15 C18,C41,C19,C8	CAP C 104K/25V/X7R/0805	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C24,C36,C31,C22,C9	CAP C 104Z/25V/Y5V/0603	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C11,C4,C29,C42	CAP C 105K/10V//X7R/0805	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C28	CAP C 105Z/10V/Y5V/0603	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C25,C26,C27	CAP C 151J/50V/NPO/0603	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C2,C3	CAP C682K/50V/X7R/0805	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
C30	CAP C 472J/25V/NPO/0805, COG	MURATA,PHILIPS,AVX,YAGEO,TAIYO,TDK
CR1,CR2,CR3, CR4	DIO SW BAV99 SOT23 A7,A7P,JE,70V,215mA CATHODE,ANODE COM	PHILIPS,SILICONIX,-SEMI
D15	DIO ZEN RLZ6.2B/TE-11(ROHM) 500mW/5.96-6.27 LL-34	ROHM
D13,D3	DIO SBD FIAJ3 SMA 30V/2.0A/0.4V (ORION)	ORION
D14,D10,D7,D8	DIO SW LS-4148,LL-349TELEFUNEN 75V 300mA	TELEFUNEN
D5,D6	DIO ZEN RLZ15B75-TR 500mW-13.89-14.62V,LL-34	ROHM
D11,D12,D4,D9	DIO ZEN BZM55B75-TR(TELEFUNEN 500mW/73.5-76.5 SOD110	TELEFUNEN
F1	FUSE KE40 1206 9DAITO) 4A/DC24V	DAITO,LITTELE
Q24,Q25	P FET NDS0610 SOT23(NS) 60V 120mA 10 ohm	NS,VISHAY
Q9,Q10,Q11,Q12,Q18,Q19	N FET 2N7002E SOT23 (LT1)60V/115mA/7.5 ohm	MOTO,SILICONIX,FAIRCHILD
Q23,Q8	TR PNP PMB3906 SOT23(PHILIPS) 40V 200mA 100-300 P06	ON-SEMI,ZETEX,PHILIPS
Q26	TR PNP DTA124XKA SOT23(ROHM) 50V 50mA 68Min 47K/47K	ROHM
Q1,,Q17,Q2,Q20,Q7	TR PNP PMB3904 SOT23(PHILIPS) 40V 200mA 100-300 P9A	MOTO,ZENTEX,PHILIPS,ROHM
Q21,Q22,Q5,Q6	TR NPN 2SD1624T-TD SOT89(SANYO)50V 3A 200~400	SANYO

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Q14, Q15, Q16	TR NPN DTC124EKA SOT23(ROHM), 50V 30mA 56min 22K/22K	ROHM
Q3, Q4	P FET Si3457DV/TSOP6(SILICONIX)30V +/-4.3A 0.065 ohm	SILICONIX
R89, R14, R81, R82	RES C 0 ohm/0603/5%	YAGEO, PHILIPS, TA-I, RALEC
R66	RES C1.5M ohm/0603/5%	YAGEO, PHILIPS, TA-I, RALEC
R20, R39, R48, R49, R50, R51, R54, R55, R70	RES C100K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R19, R21, R22, R33, R35, R63, R78,	RES C 10K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R56, R57	RES C 14K ohm/0603/0.5%	YAGEO, PHILIPS, TA-I, RALEC
R5, R7	RES C 15K ohm/0805/1%	YAGEO, PHILIPS, TA-I, RALEC
R68, R69	RES C 1Mohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R67	RES C5.1Mohm/0603/5%	YAGEO, PHILIPS, TA-I, RALEC
R8	RES C 84.5kohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R11, R61	RES C 464 ohm/0805/1%	YAGEO, PHILIPS, TA-I, RALEC
R30	RES C 243K ohm/00603/1%	YAGEO, PHILIPS, TA-I, RALEC
R44, R45,	RES C 2K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R1, R2	RES C 2K ohm/0805/1%	YAGEO, PHILIPS, TA-I, RALEC
R10, R58	RES C 3.24K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R26	RES C 3K ohm/0805/5%	YAGEO, PHILIPS, TA-I, RALEC
R17, R18, R64, R65	RES C 680 ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R27	RES C 121 ohm/1206/5%	YAGEO, PHILIPS, TA-I, RALEC
R12, R13, R25, R3, R34, R4	RES C 100K ohm1206/5%	YAGEO, PHILIPS, TA-I, RALEC
R42, R43	RES C 34.0K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R71	RES C 40.2K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R80, R83	RES C 33 ohm/0603/5%	YAGEO, PHILIPS, TA-I, RALEC
R28, R40	RES C 5.11K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R37	RES C 133K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R75	RES C 51K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R77	RES C 34.8K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R52, R53	RES C 866.0K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R36	RES C 48.7K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R72, R73	RES C 6.8M ohm/0603/5%	YAGEO, PHILIPS, TA-I, RALEC
R31	RES C 196K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R15, R16, R74, R76	RES C 680 ohm/1206/5%	YAGEO, PHILIPS, TA-I, RALEC
R23, R91	RES C 6.04K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R59, R60	RES C 200K ohm/1206/5%	YAGEO, PHILIPS, TA-I, RALEC
R6	RES C 6.49K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R38	RES C 80.6K ohm/0603/1%	YAGEO, PHILIPS, TA-I, RALEC
R85, R90	RES C 200 ohm/0805/5%	YAGEO, PHILIPS, TA-I, RALEC



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LOCATION	MATERIAL LIST	VENDOR
U1	IC COMP LM339A S0-14 (NS) QUAD COMP	NS,SGS,PHILIPS,TI
U2	IC OP LM358AM S08 DUAL OP	NS,SGS,PHILIPS,TI
U3	IC COMP LM393M S08	NS,SGS,PHILIPS,TI
CN2, CN3, CN4, CN5	CONN 35001WR-02	YEONHO
CN5	CONN 12505WR-12	YEONHO
T1, T2	XFMRXT-2009-12508 (XTREME) #8:8:2:1250 REV:1, EFD-20	XTREME, TMP
SOLDER	SOLDER PASTE SE48-M954-2(KOKI), SN63/PB37	
PCB	PCB K021038.00 REV:5 140*37.0mm-6	APCB, CHEER TIME

## 8.0 RELIABILITY SPECIFICATION

NO	ITEM	CONDITION AND METHOD
1	HIGH TEMPERATURE STORAGE TEST	TEMP.; 70 DURATION: 500 hrs
2	LOW TEMPERATURE STORAGE TEST	TEMP.; -30 DURATION: 500 hrs
3	HIGH TEMPERATURE HIGH HUMIDITY STORAGE TEST	TEMP.; 40 , HUMIDITY: 95%RH DURATION: 500 hrs
4	HIGH TEMPERATURE HIGH HUMIDITY OPERATION TEST	TEMP.; 40 , HUMIDITY: 95%RH DURATION: 1000 hrs
5	THERMAL SHOCK TEST	TEMP; -30 70 , 250 CYCLE (30 MINUTE), (30 MINUTE)
6	VIBRATION TEST	AMPLITUDE; 1.5mm, FEEQUENCY; 10-55Hz, POSITION; TREE PERPENDLCULAR PLANES, DURATION; 1000 hrs
7	HIGH TEMPERATURE OPERATION TEST	TEMP; 50 DURATION; 72 hrs
8	LOW TEMPERATURE OPERATION TEST	TEMP; 0 DURATION; 72 hrs



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## 9.0 DETAIL SPECIFICATION FOR KEY PARTS

### 9.1 TRANSFORMER PART LIST

#### 1) XT-2009-12508 ( XTREME )

NAME	MANUFACTURE	DESCRIPTION	UL File NO.
BOBBIN	XTREME TECHNOLOGY CO., LTD.	EFD-20L,LCP E4008,Sumitomo HJ-143,94V-0 130 L.C.P	E54705(M)
	XTREME TECHNOLOGY CO., LTD.	(DUPONT DE NEMOURS CO., LTD.) 7130L ,EFD-2000P	E123598
WIRE	TAIWAN RIKEN ELECTRIC WIRE CO.,LTD.	WIRE (POLYURETHANE),TR-P1	E188164
	ELEKTRISOLA SDN BHD.	WIRE ,Pp155	E143312
	Walsin Lihwa Electric Wire & Cable Corp.	WIRE (POLYURETHANE),UEW PD-800	E70566(S)
Tape	TENNRICH INTERNATIONAL CORP	POLYIMIDE INSULATING KAPTON TAPE 7023*	E154354

#### 2) SIT08122-20 ( TMP )

NAME	MANUFACTURE	DESCRIPTION	UL File NO.
BOBBIN	SUMITOMO CHEMICAL CO.,LTD.	L.C.P E-4008	E54705(M)
WIRE	PACIFIC ELECTRIC WIRE & CABLE CO.,LTD.	DD-NYU	E84081(S)
	TATUNG CO.	UEYW	E106004(S)
	JUNG SHING WIRE CO.,LTD.	UEY	E174837
VARNISH	JOHN C. DOLPH COMPANY	AC-43	E76517
TAPE	FOUR PILLARS ENTERPISE CO.,LTD	KA180*,180	E50292(S)
	3M CO,	92,180	E17385(N)



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## 9.2 DETAIL MATERIAL LIST FOR KEY PARTS ( SAFETY ) 01

SYMBOL	NAME	TYPE NO.	MANUFACURER	UL FILE NO
T1,T2	TRANS	BOBBIN	TMP	E54705(M)
		WIRE		E84081(S)/E106004(S)
		TAPE		E50292(S)/E17385(N)
	TRANS	BOBBIN	XTREME	E123598
		WIRE		E143312/E188164
		TAPE		E230272/E195581
F1	FUSE	KE40	DATITO	E59783
		429 004	LITTEL FUSE	E104809N)
PCB	K021038.00 CHEER TIME	66	CHEER TIME ELTERPRISE CO LTDS	E142470(S)
		ED-130 FR402	ISOLA AG	E41625
	K021038.00 APCB	66	APCB INC	E85792
		FR-4 86	NAN YA PLASTICS CORP	E98983
CN1	CONNECTOR	53261-1290/1205WR12	MOLEX/YEONHO	NYLON 4/6 UL94V-0 E52857/E108706
CN2,3,4,5	CONNECTOR	SM02B-BHSS-1	JST	E52579
		35001WR-02	YEONHO	E108706
		87210-0208	ACES	NYLON46 , E119177
INSULATOR	INSULATOR	8B35	SHINLONG	E61257

### 10.0 PACKING REQUIREMENTS

BULK



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SAMSUNG P/N	VENDOR #1 P/N	VENDOR #2 P/N	VENDOR #3 P/N	VENDOR #4 P/N
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VENDOR #1	AMBIT Microsystems Corporation.
VENDOR #2	
VENDOR #3	
VENDOR #4	

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