SAMSUNG SSED

Model	HNS-13SS34 Rev.① 28-Jun-2008
Application	STB
Color of Illumination #6)	GREEN (G. :x=0.250,y=0.439) Cd-free REDDISH ORANGE (Cd-free Rsh.O. :x=0.62,y=0.37) Cd-free ORANGE (Cd-free O. :x=0.56,y=0.42)

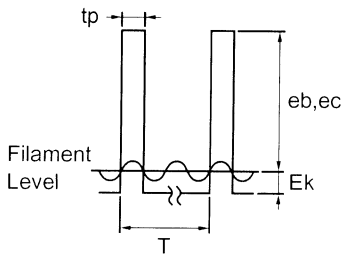
ABSOLUTE MAXIMUM RATINGS #4)

Item	Symbol	Min.	Max.	Unit	Condition
Filament Voltage #2)	Ef	2.88	4.32	Vac	eb,ec = Typ.
Anode Voltage	eb	—	36.0	Vp-p	Ef=Typ.
Grid Voltage	ec	—	36.0	Vp-p	
Operating Temperature	Topr	-40	+85	℃	—

RECOMMENDED OPERATING CONDITION #5)

Item	Symbol	Min.	Typ.	Max.	Unit
Filament Voltage #2)	Ef	3.24	3.60	3.96	Vac
Peak Anode Voltage	eb	27.0	30.0	33.0	Vp-p
Peak Grid Voltage	ec	27.0	30.0	33.0	Vp-p
Cut-Off Bias Voltage	Ek	5.5	—	8.3	Vdc
Duty Factor	Du	—	1/14	—	—
Pulse Width	tp	—	100	—	μs
Operating Temperature	Topr	-20	—	+70	℃
Storage Temperature	Tstg	-55	—	+85	℃

ELECTRICAL CHARACTERISTICS

Item	Test Condition	Symbol		Min.	Typ.	Max.	Unit
Filament Current	Ef= 3.6 Vac ,eb=ec=0	If		90	100	110	mAac
Anode Current #1)	Ef= 3.6 Vac eb= 30.0 Vp-p ec= 30.0 Vp-p	ib	2G~13G	—	4.0	8.0	mAp-p
			1G	—	9.0	18.0	
Grid Current #1)	Duty= 1/14 tp= 100 μs tb= 0 μs	ic	2G~13G	—	4.0	8.0	mAp-p
			1G	—	8.0	16.0	
Brightness		GREEN		102	204	—	ft-L
		Cd-free Rsh.O.		20	41	—	
		Cd-free ORANGE		11	22	—	
Brightness Ratio Between Digits	(All Segs are lit)	L(Max.) / L(Min.)		—	—	2	
Grid Cut-Off Voltage #3)	Ef= 3.6 Vac, Eb= 30.0 Vdc, Ec=Vary	Ecco		(-5.5)	—	—	Vdc
Anode Cut-Off Voltage #3)	Ef= 3.6 Vac, Du= 1/14 ec= 30.0 Vp-p, Eb= Vary	Ebco		(-5.5)	—	—	Vdc

#1. Unless otherwise specified, the anode and the grid current should be measured for each grid when all anodes turn on.
#2. AC 50~60Hz Effective Values.
#3. The cut-off voltage should be measured under the condition of the center-tab ground.
#4. Absolute Maximum Ratings : The value should not be exceeded in any conditions.
If a user don't keep this condition, then VFD may be permanently damaged.
#5. Recommended Operating Condition : Quality can be assured within this condition.
Typical rating is the most optimized value on the life time
#6. All phosphor is Cd-free phosphor.

OUTER DIMENSIONS

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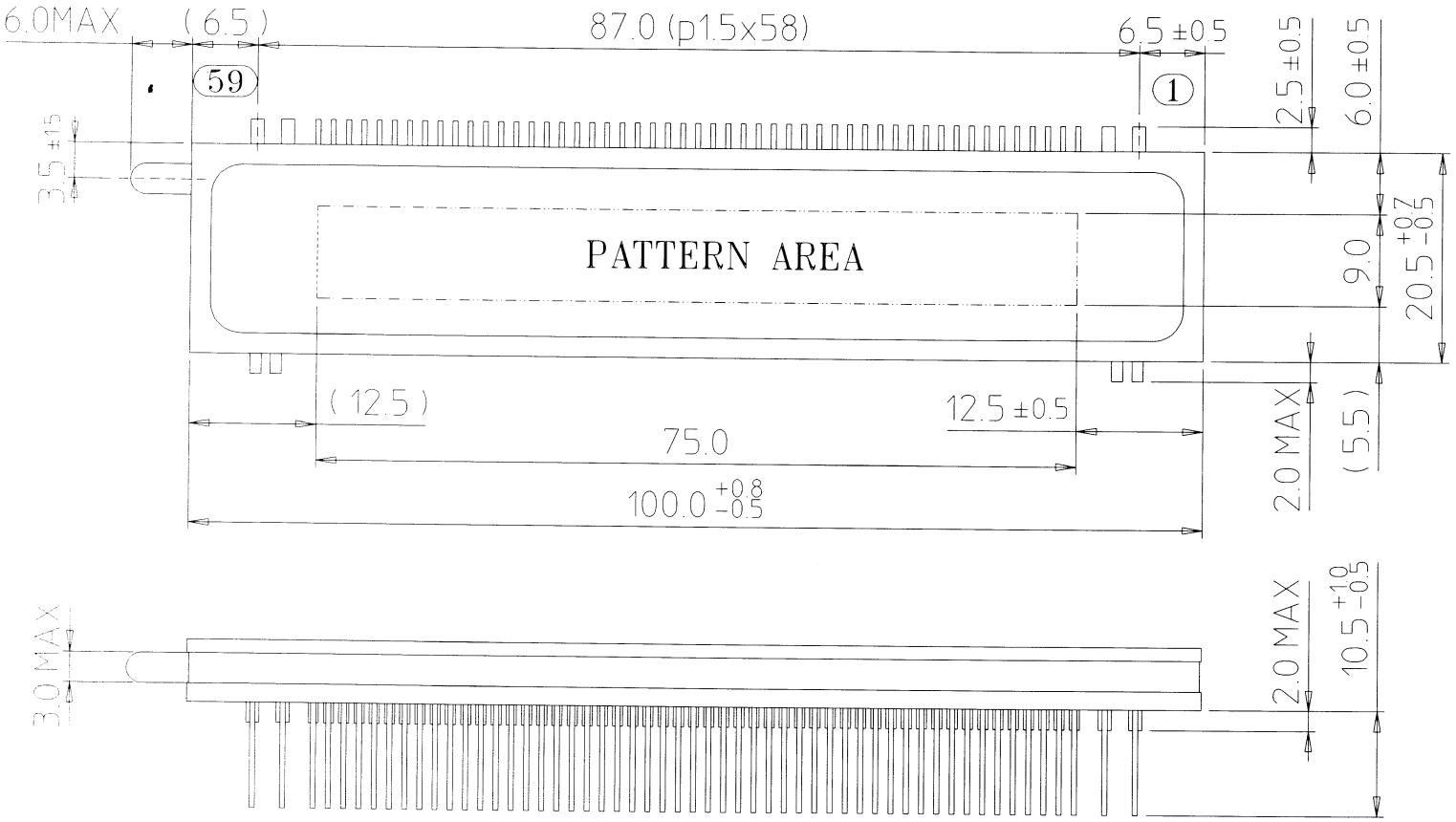

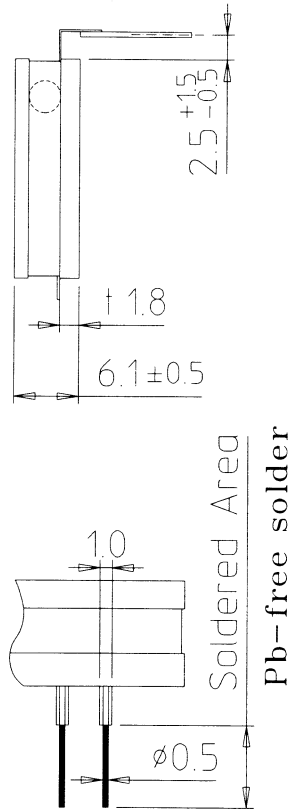

LEAD DETAIL

PIN CONNECTION

PIN NO.	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22
CONNECTION	F2	NP	F2	NP	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	NC	NC	P36	P35	P34	P33	P32	P31	P30	P29	P28	P27	P26	P25	P24	P23	P22	P21	P20	P19	P18

21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
P17	P16	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	F1	NP	F1

◎ Note ◎
1) Fn : Filament pin
2) nG : Grid pin
3) Pn : Anode pin
4) NP : No pin
5) NC : No connection pin

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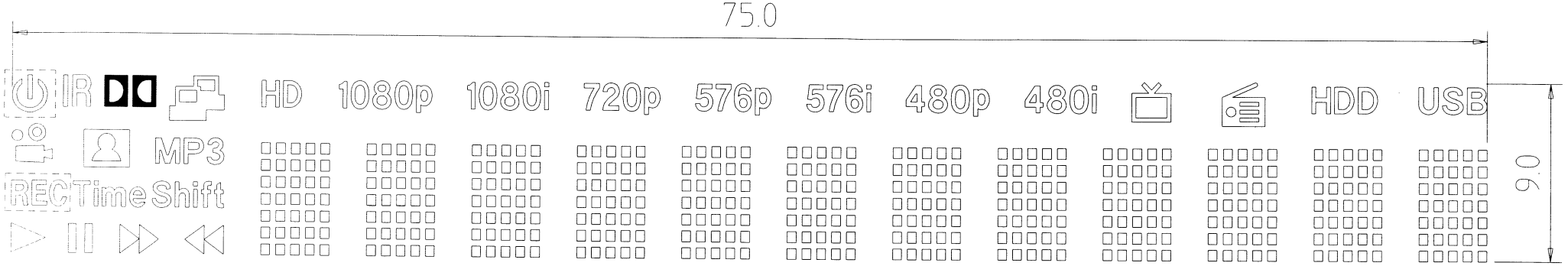
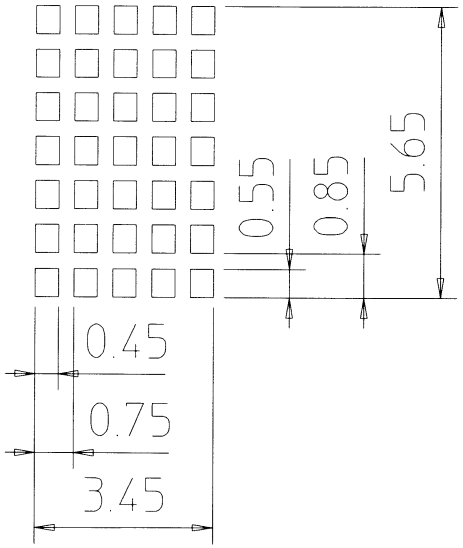
PATTERN DETAILS





◎ *Color of Illumination* ◎

- *Cd-free Reddish Orange (Cd-free Rsh.0. x=0.62,y=0.37)----- Patterns within the dotted lines.*
- *Cd-free Orange (Cd-free 0. x=0.56,y=0.42)----- Hatched patterns.*
- *Green (G. x=0.250, y=0.439) ----- Others.*

◎ Negative Patterns ◎

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GRID ASSIGNMENT

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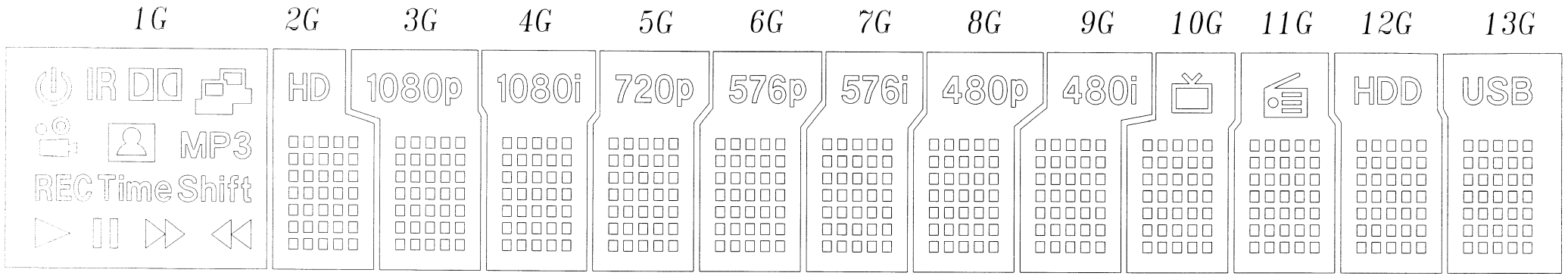

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35

(2G~13G)

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ANODE CONNECTION

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	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G
P1		HD	1080p	1080i	720p	576p	576i	480p	480i			HDD	USB
P2		1	1	1	1	1	1	1	1	1	1	1	1
P3	IR	2	2	2	2	2	2	2	2	2	2	2	2
P4		3	3	3	3	3	3	3	3	3	3	3	3
P5		4	4	4	4	4	4	4	4	4	4	4	4
P6		5	5	5	5	5	5	5	5	5	5	5	5
P7		6	6	6	6	6	6	6	6	6	6	6	6
P8	MP3	7	7	7	7	7	7	7	7	7	7	7	7
P9	REC	8	8	8	8	8	8	8	8	8	8	8	8
P10	Time Shift	9	9	9	9	9	9	9	9	9	9	9	9
P11	▷	10	10	10	10	10	10	10	10	10	10	10	10
P12	II	11	11	11	11	11	11	11	11	11	11	11	11
P13	▷▷	12	12	12	12	12	12	12	12	12	12	12	12
P14	◁◁	13	13	13	13	13	13	13	13	13	13	13	13
P15		14	14	14	14	14	14	14	14	14	14	14	14
P16		15	15	15	15	15	15	15	15	15	15	15	15
P17		16	16	16	16	16	16	16	16	16	16	16	16
P18		17	17	17	17	17	17	17	17	17	17	17	17
P19		18	18	18	18	18	18	18	18	18	18	18	18
P20		19	19	19	19	19	19	19	19	19	19	19	19
P21		20	20	20	20	20	20	20	20	20	20	20	20
P22		21	21	21	21	21	21	21	21	21	21	21	21
P23		22	22	22	22	22	22	22	22	22	22	22	22
P24		23	23	23	23	23	23	23	23	23	23	23	23
P25		24	24	24	24	24	24	24	24	24	24	24	24
P26		25	25	25	25	25	25	25	25	25	25	25	25
P27		26	26	26	26	26	26	26	26	26	26	26	26
P28		27	27	27	27	27	27	27	27	27	27	27	27
P29		28	28	28	28	28	28	28	28	28	28	28	28
P30		29	29	29	29	29	29	29	29	29	29	29	29
P31		30	30	30	30	30	30	30	30	30	30	30	30
P32		31	31	31	31	31	31	31	31	31	31	31	31
P33		32	32	32	32	32	32	32	32	32	32	32	32
P34		33	33	33	33	33	33	33	33	33	33	33	33
P35		34	34	34	34	34	34	34	34	34	34	34	34
P36		35	35	35	35	35	35	35	35	35	35	35	35

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