Model	HNAC25MM02	Rev.① 11-Mar-2013
Application	AUDIO	
Color of Illumination	GREEN (G. : x=0.250,y=0.439) Cd-free GREENISH YELLOW (Cd-free Gsh.Y. : x=0.43, y=0.53) Cd-free REDDISH ORANGE (Cd-free Rsh.O. : x=0.62, y=0.37)	

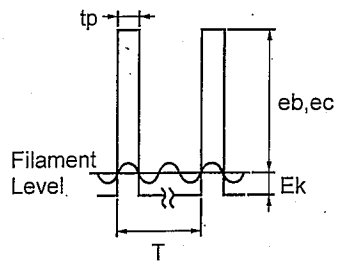
ABSOLUTE MAXIMUM RATINGS #4)

Item	Symbol	Min.	Max.	Unit	Condition
Filament Voltage #2)	Ef	4.80	7.20	Vac	eb,ec = Typ.
Anode Voltage	eb	—	48.0	Vp-p	Ef=Typ.
Grid Voltage	ec	—	48.0	Vp-p	
Operating Temperature	Topr	-40	+85	℃	—

RECOMMENDED OPERATING CONDITION #5)

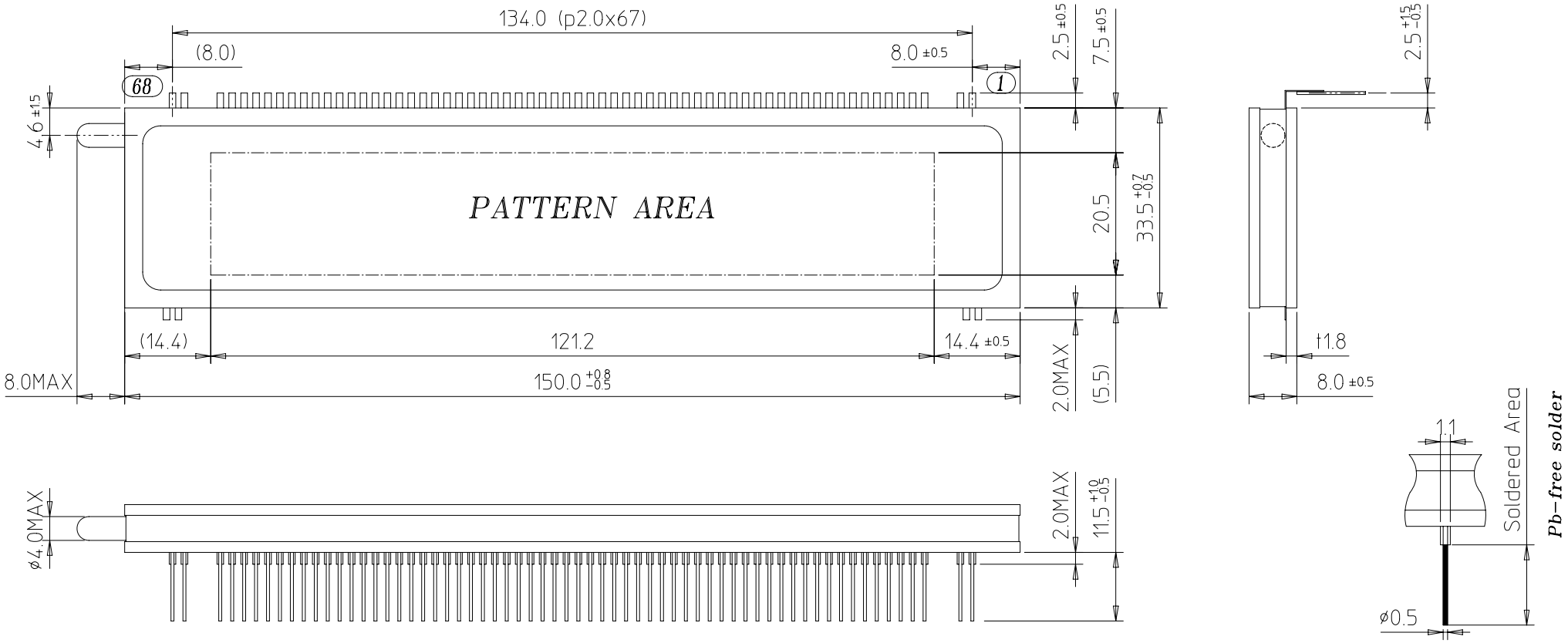
Item	Symbol	Min.	Typ.	Max.	Unit
Filament Voltage #2)	Ef	5.40	6.00	6.60	Vac
Peak Anode Voltage	eb	36.0	40.0	44.0	Vp-p
Peak Grid Voltage	ec	36.0	40.0	44.0	Vp-p
Cut-Off Bias Voltage	Ek	5.0	—	7.5	Vdc
Duty Factor	Du	—	1/25	—	—
Pulse Width	tp	—	100	—	μs
Operating Temperature	Topr	-20	—	+70	℃
Storage Temperature	Tstg	-55	—	+85	℃

ELECTRICAL CHARACTERISTICS

Item	Test Condition	Symbol		Min.	Typ.	Max.	Unit
Filament Current	Ef= 6.0 Vac ,eb=ec=0	If		171	190	209	mAac
Anode Current #1)	Ef= 6.0 Vac eb= 40.0 Vp-p ec= 40.0 Vp-p	ib	2G~24G	—	10.0	20.0	mAp-p
			1G, 25G	—	17.0	34.0	
Grid Current #1)	Duty= 1/25 tp= 100 μs	ic	2G~24G	—	10.0	20.0	mAp-p
			1G, 25G	—	15.0	30.0	
Brightness		GREEN		102	204	—	ft-L
		Cd-free Gsh.Y.		20	41	—	
		Cd-free Rsh.O.		20	41	—	
Brightness Ratio Between Digits	(All Segs are lit)	L(Max.) / L(Min.)		—	—	2	
Grid Cut-Off Voltage #3)	Ef= 6.0 Vac Eb= 40.0 Vdc, Ec=Vary	Ecco		(-5.0)	—	—	Vdc
Anode Cut-Off Voltage #3)	Ef= 6.0 Vac, Du= 1/25 ec= 40.0 Vp-p, Eb= Vary	Ebco		(-5.0)	—	—	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



LEAD DETAILS

PIN CONNECTION

PIN NO.	68	67	66	65	64	63	62	61	60	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
CONNECTION	F2	F2	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	P17	P18	G14	G15	G16	G17	G18	G19	G20	G21	G22

PIN NO.	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	G23	G24	G25	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	NP	NP	F1	F1

◉ *Note* ◉

1) *Fn : Filament pin*
2) *Gn : Grid pin*
3) *Pn : Anode pin*
4) *NP : No pin*

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OUTER DIMENSIONS
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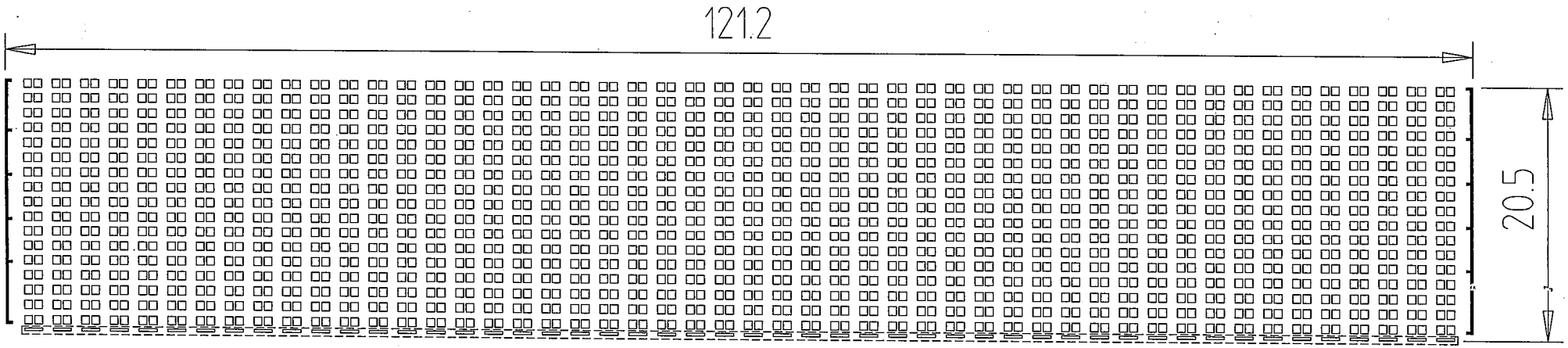
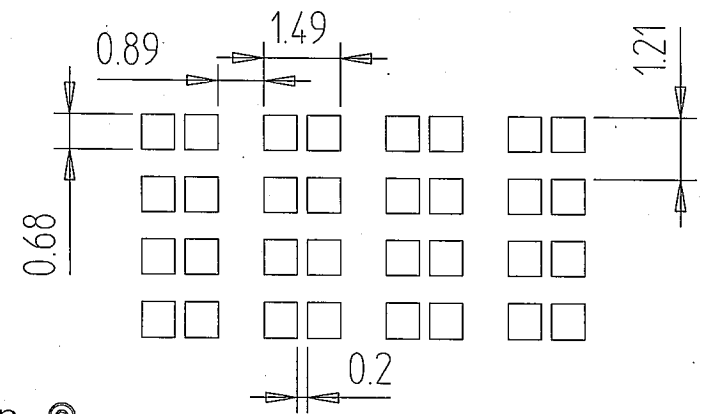
PATTERN DETAILS





◎ Color of Illumination ◎

- Cd-free Greenish Yellow (Cd-free Gsh.Y. x=0.43,y=0.53) --- Patterns within the dotted line.
- Cd-free Reddish Orange (Cd-free Rsh.O. x=0.62,y=0.37) --- Hatched patterns.
- Green (G. x=0.250,y=0.439) ----- Others.

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PATTERN DETAILS
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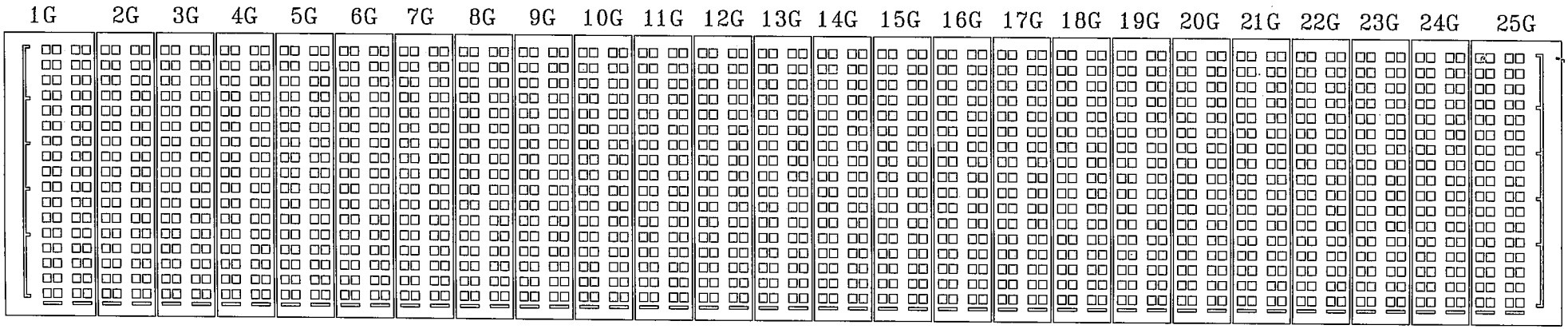
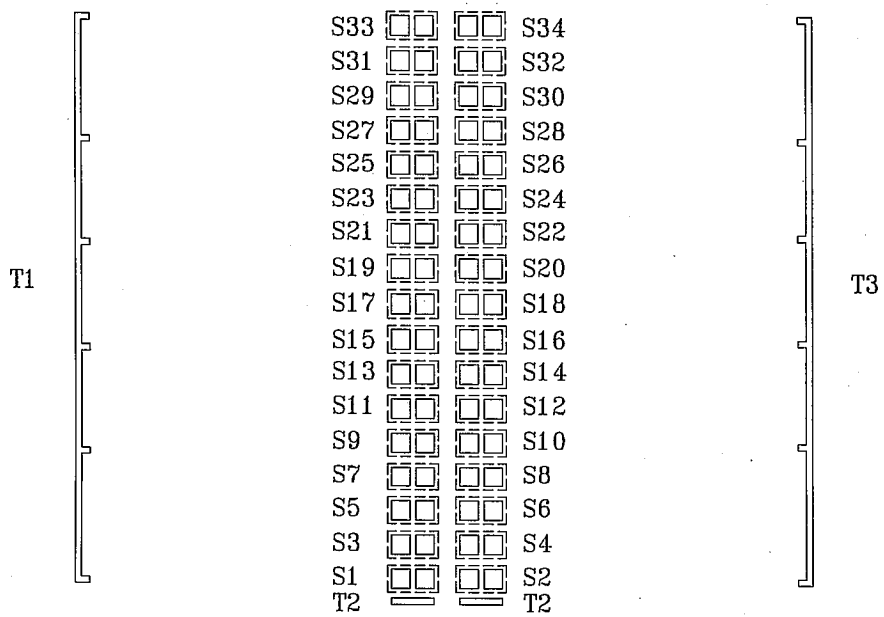
GRID ASSIGNMENT





(1G) (1G - 25G) (25G)

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GRID ASSIGNMENT
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ANODE CONNECTION

	1G	2G – 24G	25G
P1	S24	S24	S24
P2	S25	S25	S25
P3	S26	S26	S26
P4	S27	S27	S27
P5	S28	S28	S28
P6	S29	S29	S29
P7	S30	S30	S30
P8	S31	S31	S31
P9	S32	S32	S32
P10	S23	S23	S23
P11	S22	S22	S22
P12	S21	S21	S21
P13	S20	S20	S20
P14	S19	S19	S19
P15	S18	S18	S18
P16	S17	S17	S17
P17	S33	S33	S33
P18	S34	S34	S34

	1G	2G – 24G	25G
P19	T1, T2	T2	T2, T3
P20	S1	S1	S1
P21	S2	S2	S2
P22	S3	S3	S3
P23	S4	S4	S4
P24	S5	S5	S5
P25	S6	S6	S6
P26	S7	S7	S7
P27	S8	S8	S8
P28	S16	S16	S16
P29	S15	S15	S15
P30	S14	S14	S14
P31	S13	S13	S13
P32	S12	S12	S12
P33	S11	S11	S11
P34	S10	S10	S10
P35	S9	S9	S9

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ANODE CONNECTION
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