

原件
VFD开发



Model	HNV-13SM45T
Application	DVD
Color of Illumination #6)	GREEN (G. : x=0.250, y=0.439)

ABSOLUTE MAXIMUM RATINGS #4)

Item	Symbol	Min.	Max.	Unit	Condition
Filament Voltage #2)	Ef	4.00	6.00	Vac	eb,ec = Typ.
Anode Voltage	eb	—	38.0	Vp-p	Ef=Typ.
Grid Voltage	ec	—	38.0	Vp-p	
Operating Temperature	Topr	-40	+85	°C	—

RECOMMENDED OPERATING CONDITION #5)

Item	Symbol	Min.	Typ.	Max.	Unit
Filament Voltage #2)	Ef	4.50	5.00	5.50	Vac
Peak Anode Voltage	eb	29.0	32.0	35.0	Vp-p
Peak Grid Voltage	ec	29.0	32.0	35.0	Vp-p
Cut-Off Bias Voltage	Ek	6.5	—	9.8	Vdc
Duty Factor	Du	—	1/14	—	—
Pulse Width	tp	—	100	—	μs
Operating Temperature	Topr	-20	—	+70	°C
Storage Temperature	Tstg	-55	—	+85	°C

ELECTRICAL CHARACTERISTICS

Item	Test Condition	Symbol	Min.	Typ.	Max.	Unit	
Filament Current	Ef= 5.0 Vac ,eb=ec=0	If	90	100	110	mAac	
Anode Current #1)	Ef= 5.0 Vac eb= 32.0 Vp-p ec= 32.0 Vp-p	ib	1G,4G~13G	—	5.0	10.0	mAp-p
			2G	—	6.0	12.0	
			3G	—	9.0	18.0	
Grid Current #1)	Duty= 1/14 tp= 100 μs tb= 0 μs	ic	1G,4G~13G	—	6.0	12.0	mAp-p
			2G	—	11.0	22.0	
			3G	—	17.0	34.0	
Brightness	<p>tp eb,ec Filament Level Ek T</p>	GREEN	102	204	—	ft-L	
		L(Max.) / L(Min.)	—	—	2		
Brightness Ratio Between Digits	(All Segs are lit)						
Grid Cut-Off Voltage #3)	Ef= 5.0 Vac Eb= 32.0 Vdc, Ec=Vary	Ecco	(-6.5)	—	—	Vdc	
Anode Cut-Off Voltage #3)	Ef= 5.0 Vac, Du= 1/14 ec= 32.0 Vp-p, Eb= Vary	Ebco	(-6.5)	—	—	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.

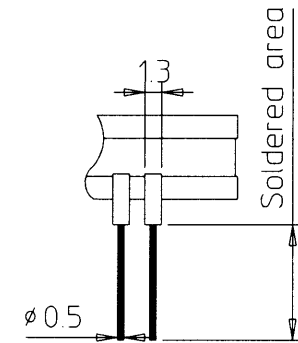
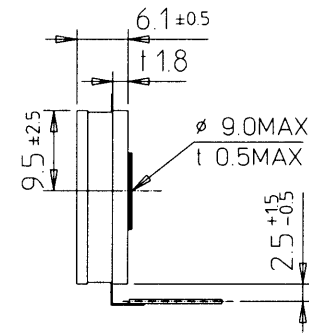
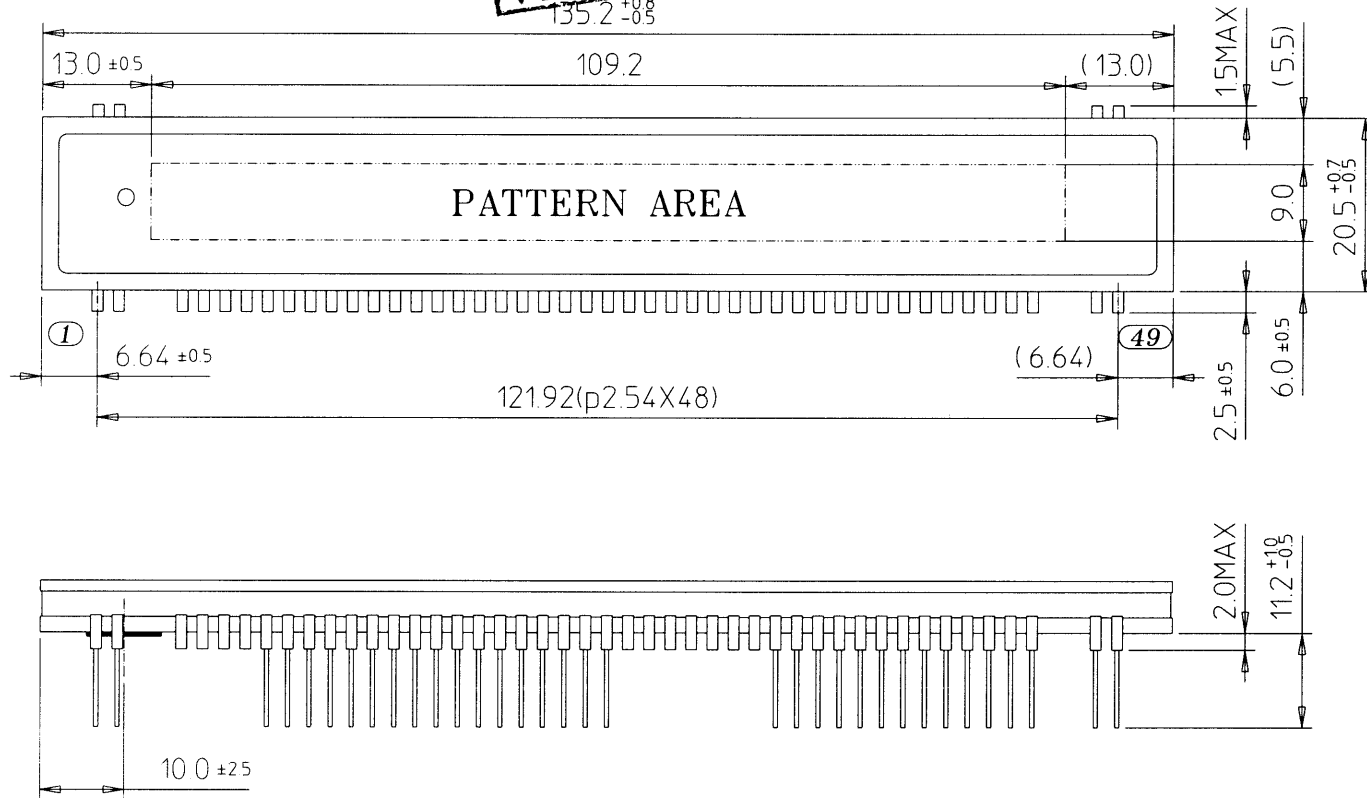
#5. Recommended Operating Condition : Quality can be assured within this condition.

Typical rating is the most optimized value on the life time

#6. All phosphor is Cd-free phosphor.

OUTER DIMENSIONS

原件
VFD升
135.2^{+0.8}_{-0.8}



PIN CONNECTION

LEAD DETAILS

PIN NO.	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
CONNECTION	F1	F1	NP	NP	NX	NX	NX	NX	P17	P16	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NX	NX	NX	NX	NX	NX	NX	1G	2G	3G

36	37	38	39	40	41	42	43	44	45	46	47	48	49
4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	NP	NP	F2	F2

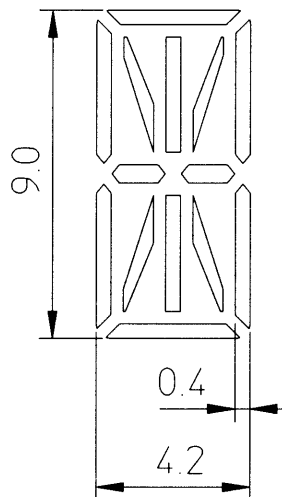
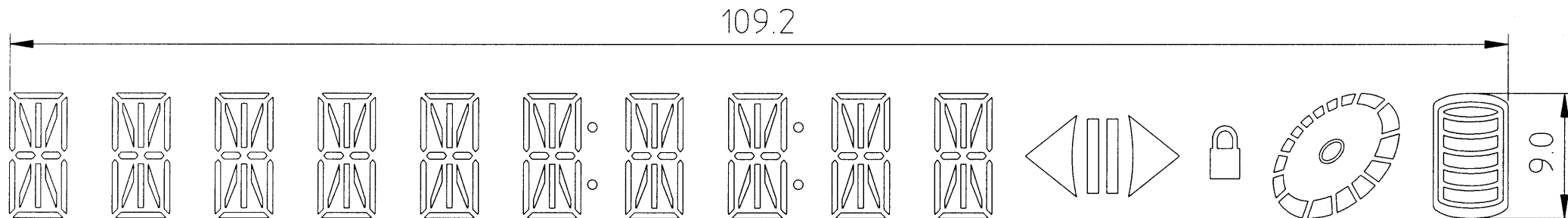
NOTE

- 1) Fn : Filament Pin
- 2) nG : Grid Pin
- 3) Pn : Anode Pin
- 4) NP : No Pin
- 5) NX : No Extended Pin

MODEL : HNV-13SM45T
OUTER DIMENSIONS
Rev. ① 24-Dec-2003

PATTERN DETAILS

原件
VFD开发



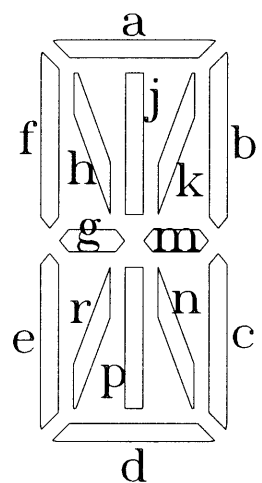
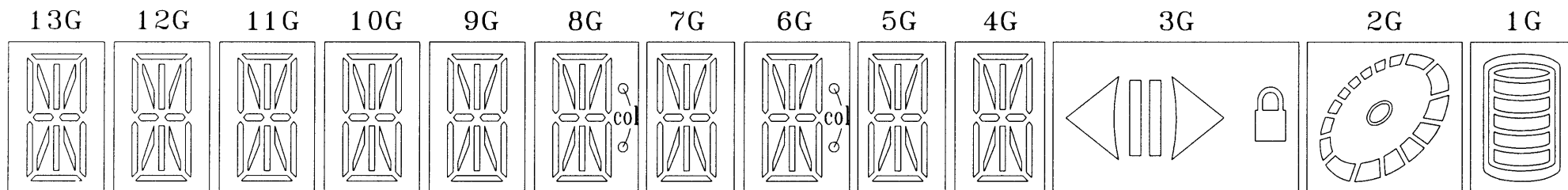
◎ Color of Illumination ◎

· Green (G. $x=0.250, y=0.439$) ----- All patterns.

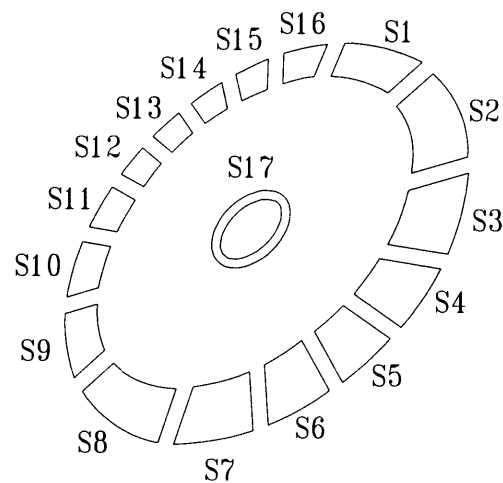
MODEL : HNV-13SM45T
PATTERN DETAILS
Rev. ① 24-Dec-2003

GRID ASSIGNMENT

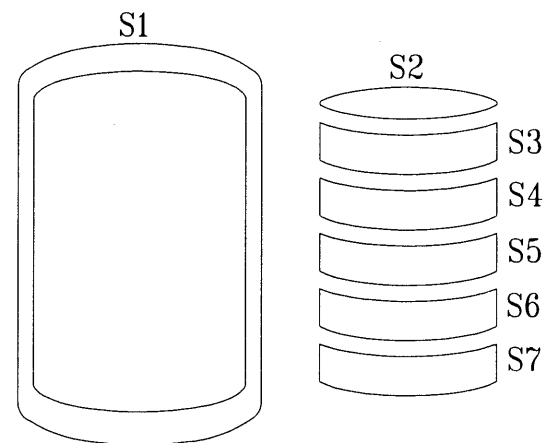
原件
VFD开发



(4G - 13G)



(2G)



(1G)

MODEL : HNV-13SM45T
 GRID ASSIGNMENT
 Rev. ① 24-Dec-2003

ANODE CONNECTION

原件
VFD开发



	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	a	a	a	a	a	a	a	a	◁	S1	S1
P2	b	b	b	b	b	b	b	b	b	b		S2	S2
P3	f	f	f	f	f	f	f	f	f	f	▷	S3	S3
P4	h	h	h	h	h	h	h	h	h	h	🔒	S4	S4
P5	j	j	j	j	j	j	j	j	j	j	/	S5	S5
P6	k	k	k	k	k	k	k	k	k	k	/	S6	S6
P7	m	m	m	m	m	m	m	m	m	m	/	S7	S7
P8	g	g	g	g	g	g	g	g	g	g	/	S8	/
P9	r	r	r	r	r	r	r	r	r	r	/	S9	/
P10	p	p	p	p	p	p	p	p	p	p	/	S10	/
P11	n	n	n	n	n	n	n	n	n	n	/	S11	/
P12	c	c	c	c	c	c	c	c	c	c	/	S12	/
P13	e	e	e	e	e	e	e	e	e	e	/	S13	/
P14	d	d	d	d	d	d	d	d	d	d	/	S14	/
P15	/	/	/	/	/	/	/	/	/	/	/	S15	/
P16	/	/	/	/	/	/	/	/	/	/	/	S16	/
P17	/	/	/	/	/	col	/	col	/	/	/	S17	/

MODEL : HNV-13SM45T
 ANODE CONNECTION
 Rev. ① 24-Dec-2003