



## User's Guide

# C-20-1003FN

# VFD

(Vacuum Fluorescent Character Display Module)

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# Vacuum Fluorescent Display Specification

**PART NUMBER:** **C-20-1003FN**

**FEATURES:** 9 Digits – Alphanumeric, with custom fixed segments

**APPLICATION:** Audio/Video- DVD

**RATINGS:** Below

<b>Outer Dimensions</b>	Panel Length	P.L.	110.2	mm	
	Panel Height	P.H.	20.5	mm	
	Panel Thickness	P.T.	6.1	mm	
<b>Leads</b>	Lead Pitch	L.P.	2.54	mm	
	Lead Out	-	SIL		
<b>Character Size</b>	Character Height	C.H.	-	mm	
	Character Width	C.W.	-	mm	
<b>Item</b>	<b>Symbol</b>	<b>Min.</b>	<b>Recommended</b>	<b>Max.</b>	<b>Unit</b>
<b>Filament Voltage</b>	Ef	3.51	3.90	4.29	Vac
<b>Peak Grid Voltage</b>	ec	-	24.0	27.0	Vp-p
<b>Peak Anode Voltage</b>	eb	-	24.0	27.0	Vp-p
<b>Cut-off Bias</b>	Ek	-	0	-	Vdc
<b>Duty Cycle</b>	Du	-	1/11	-	-
<b>Pulse Width</b>	tp	-	100	-	uS
<b>Operating Temperature</b>	Topr	-20	-	+ 70	C
<b>Storage Temperature</b>	Tstg	-55	-	+ 80	C
<b>Color of Illumination</b>	Green, Red				

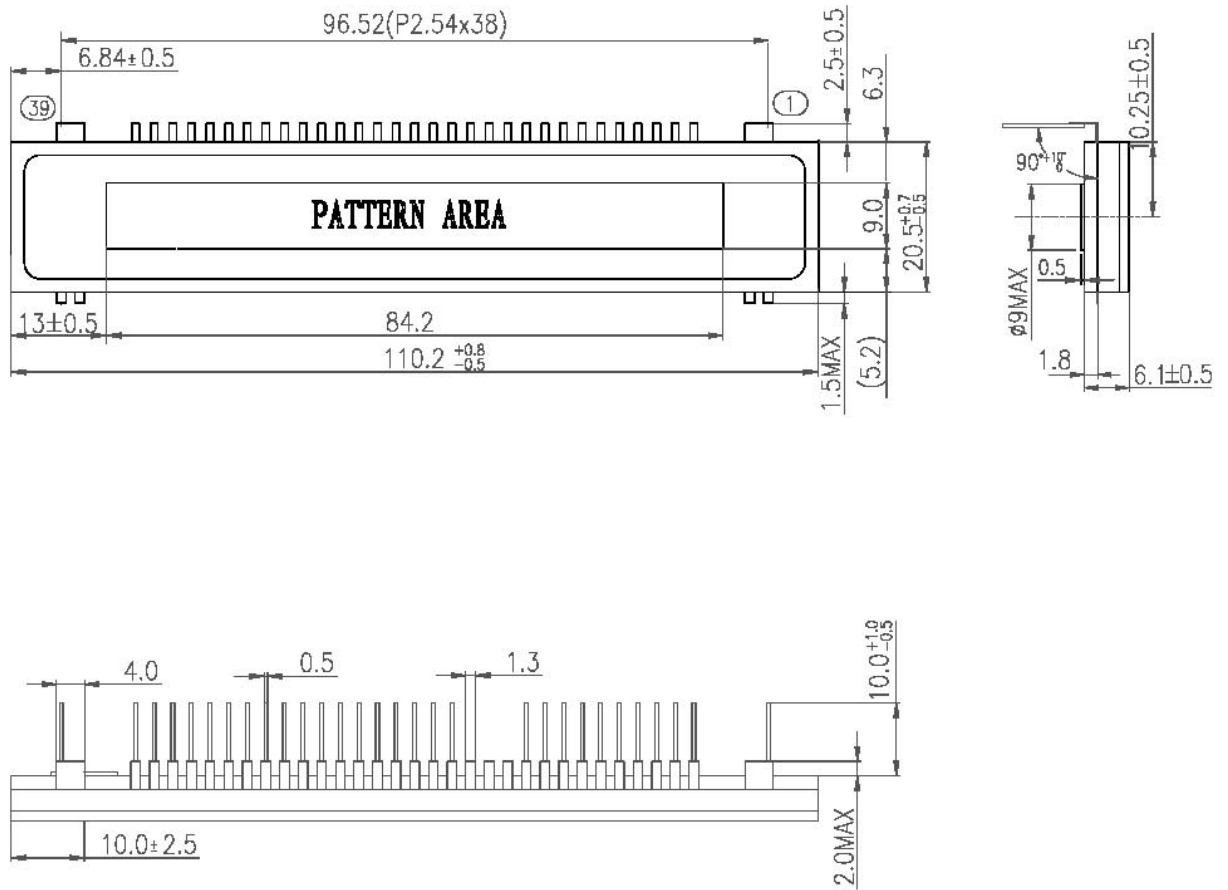
# C-20-1003FN

## Electrical Characteristics

Item	Symbol	Test Condition	Min.	Typical	Max.	Unit
<b>Filament Current</b>	If -	Ef = 3.9 Vac eb = ec = 0	99.0 -	110.0 -	121.0 -	mAac -
<b>Anode Current</b>	ib / 3, 5, 7, 8, 10G ib/ 4, 6, 9G ib/ 2G ib/ 1G -	Ef = 3.9 Vac eb = 24.0 Vp-p ec = 24.0 Vp-p Du = 1/11 tp = 100uS	- - - - -	4.0 5.0 7.0 15.0 -	8.0 10.0 14.0 30.0 -	mA <sub>p-p</sub> mA <sub>p-p</sub> mA <sub>p-p</sub> mA <sub>p-p</sub> -
<b>Grid Current</b>	ic / 3, 5, 7, 8, 10G ic / 4, 6, 9G ic / 2G ic / 1G -	( All segs are ON )	- - - - -	4.0 5.0 7.0 15.0 -	8.0 10.0 14.0 28.0 -	mA <sub>p-p</sub> mA <sub>p-p</sub> mA <sub>p-p</sub> mA <sub>p-p</sub> -
<b>Luminance</b>	L(G) L(R) -		350 (102) 70 (35) -	700 (204) 140 (70) -	- - -	cd/m <sup>2</sup> /fL cd/m <sup>2</sup> /fL -
<b>Luminance Ratio</b>	Lmin/Lmax		50	-	-	%
<b>Grid Cut-off Voltage</b>	Ecco	Ef = 3.9 Vac Eb = 27.0 Vdc	-4.8	-	-	Vdc
<b>Anode Cut-off Voltage</b>	Ebco	Ef = 3.9 Vac ec = 27.0 Vp-p Du = 1/10 Tp = 100uS	-4.8	-	-	Vdc

**DRIVE MODE: Dynamic State**

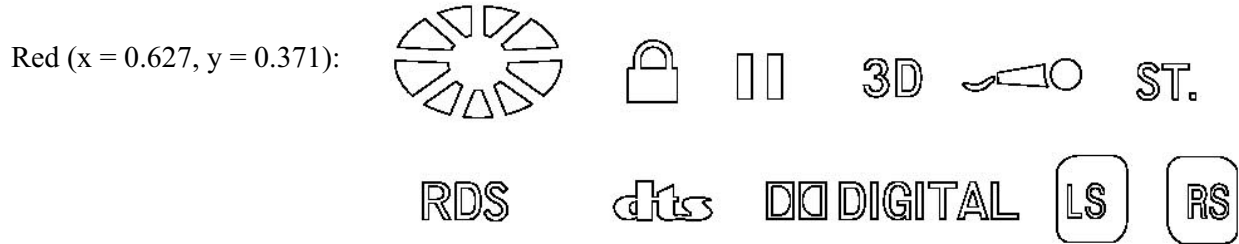
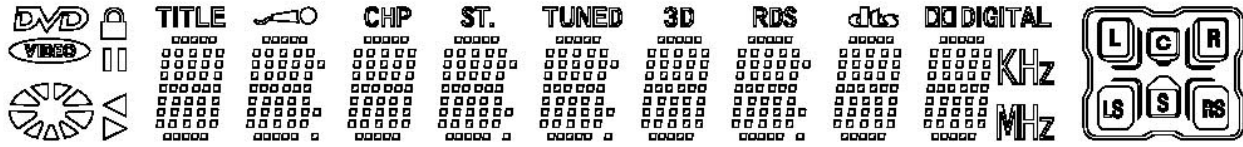
1: Outline Drawing (Unit: mm)



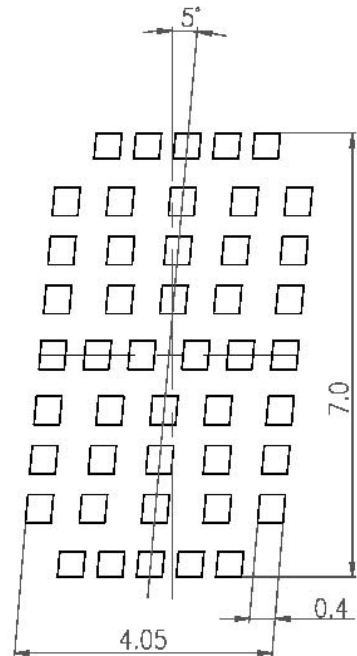
Pin Connections

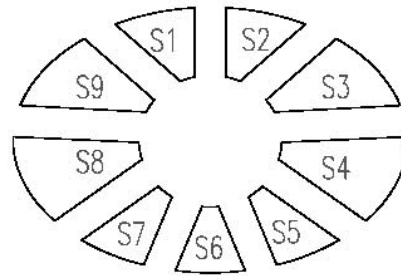
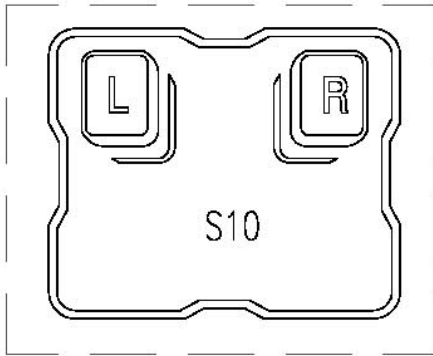
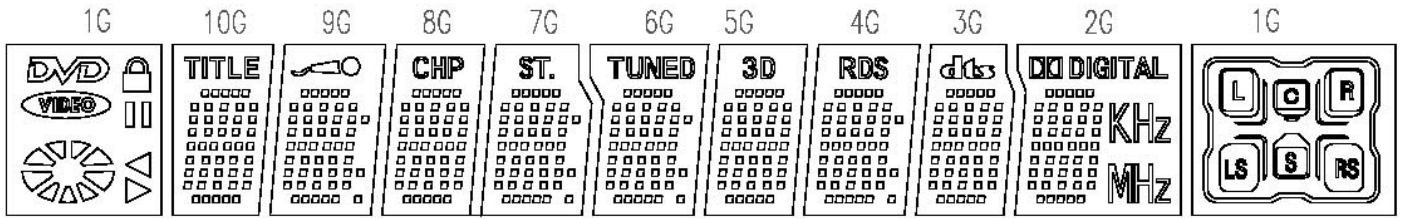
Pin Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Connection	F	NX	NP	NP	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	NC	NC	NC	P1	P2	P3
Pin Number	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
Connection	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	NP	NP	NX	F	

F: Filament    P: Anode    G: Grid    NC: No Connection    NP: No Pin    NX:

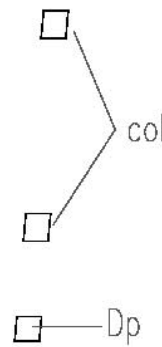
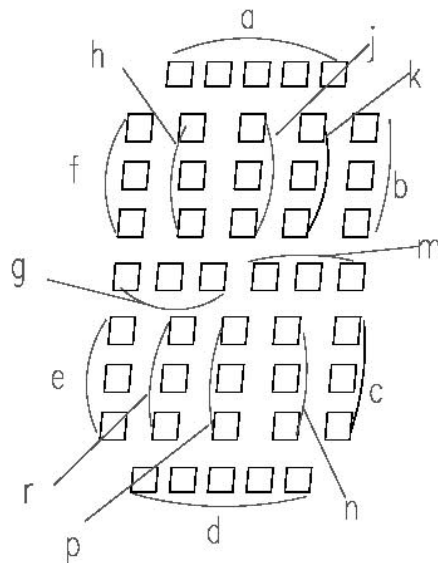


Green (x = 0.250, y = 0.440): Others





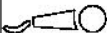








(1G)



(2G~10G)

(4G,6G,7G,9G)

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G
P1		DIGITAL		RDS	3D	TUNED	ST.	CHP		TITLE
P2		a	a	a	a	a	a	a	a	a
P3		b	b	b	b	b	b	b	b	b
P4		f	f	f	f	f	f	f	f	f
P5		h	h	h	h	h	h	h	h	h
P6	S1	j	j	j	j	j	j	j	j	j
P7	S2	k	k	k	k	k	k	k	k	k
P8	S3	m	m	m	m	m	m	m	m	m
P9	S4	g	g	g	g	g	g	g	g	g
P10	S5	c	c	c	c	c	c	c	c	c
P11	S6	e	e	e	e	e	e	e	e	e
P12	S7	r	r	r	r	r	r	r	r	r
P13	S8	p	p	p	p	p	p	p	p	p
P14	S9	n	n	n	n	n	n	n	n	n
P15	S10	d	d	d	d	d	d	d	d	d
P16		KHz		col		col	col		col	
P17		MHz		Dp		Dp	Dp		Dp	
P18	