



蛍光表示管製品規格

VACUUM FLUORESCENT DISPLAY SPECIFICATION

形名 Type No. 16-JD-05 GK, GSK, GAK, GAK. GA2K

双葉電子工業株式会社
電子管工場 技術部
ENGINEERING DEPT.
ELECTRONIC DISPLAY PLANT
FUTABA CORPORATION

用途 : Application Character Display

概要 : Features 16 digits 5x7dots with cursor

発光色 : Color of Illumination Green (G. x=0.235, y=0.405)

外形寸法 Outer Dimension	Panel Length	P.L.	100	mm
	Panel Height	P.H.	16.2	mm
	Panel Thickness	P.T.	6.1	mm
端子 Lead	Lead Pitch	L.P.	1.5	mm
	Lead Out		SIL 直付	

定格: Ratings

項目 : Item	Symbol	Min.	Recommended	Max.	Unit
フィラメント電圧 : Filament Voltage	*1 Ef	3.6	4.0	4.4	Vac
せん頭グリッド電圧 : Peak Grid Voltage	ec	-	34	41	Vp-p
せん頭アノード電圧: Peak Anode Voltage (下記Du条件 : At following Du)	eb(G.)	-	34	41	Vp-p
	eb()	-			Vp-p
	eb()	-			Vp-p
	eb()	-			Vp-p
カットオフバイアス: Cut-off Bias	*2 Ek	-	5.1	-	Vdc
デューティファクタ : Duty Factor	Du		1/18		-
パルス幅 : Pulse Width	tp		100		μs
拡散グリッド電圧 : Diffusion Grid Voltage	*3 Ecd	-		-	Vdc
フィラメントダンパー電圧: Filament damper Voltage	*4 Efd	-		-	Vdc
動作温度: Operating Temperature	Topr	- 20	-	+ 70	°C
保存温度: Storage Temperature	Tstg	- 55	-	+ 80	°C

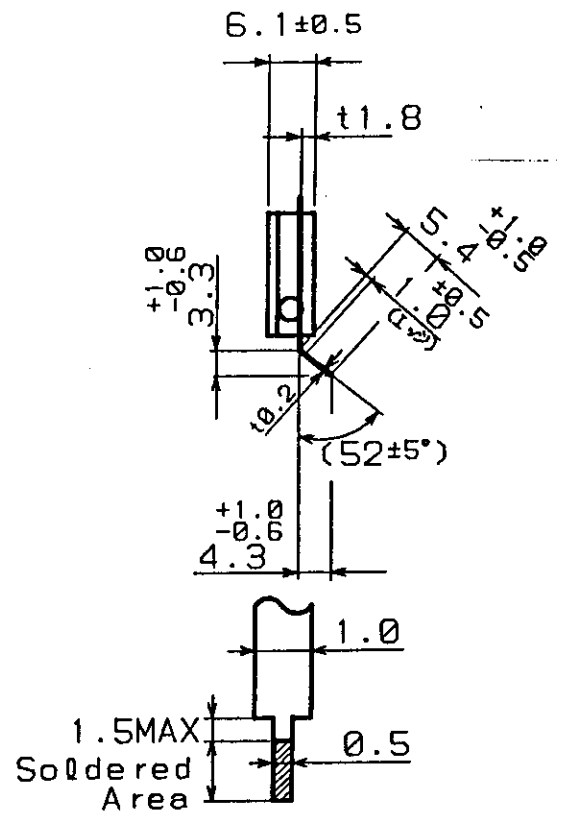
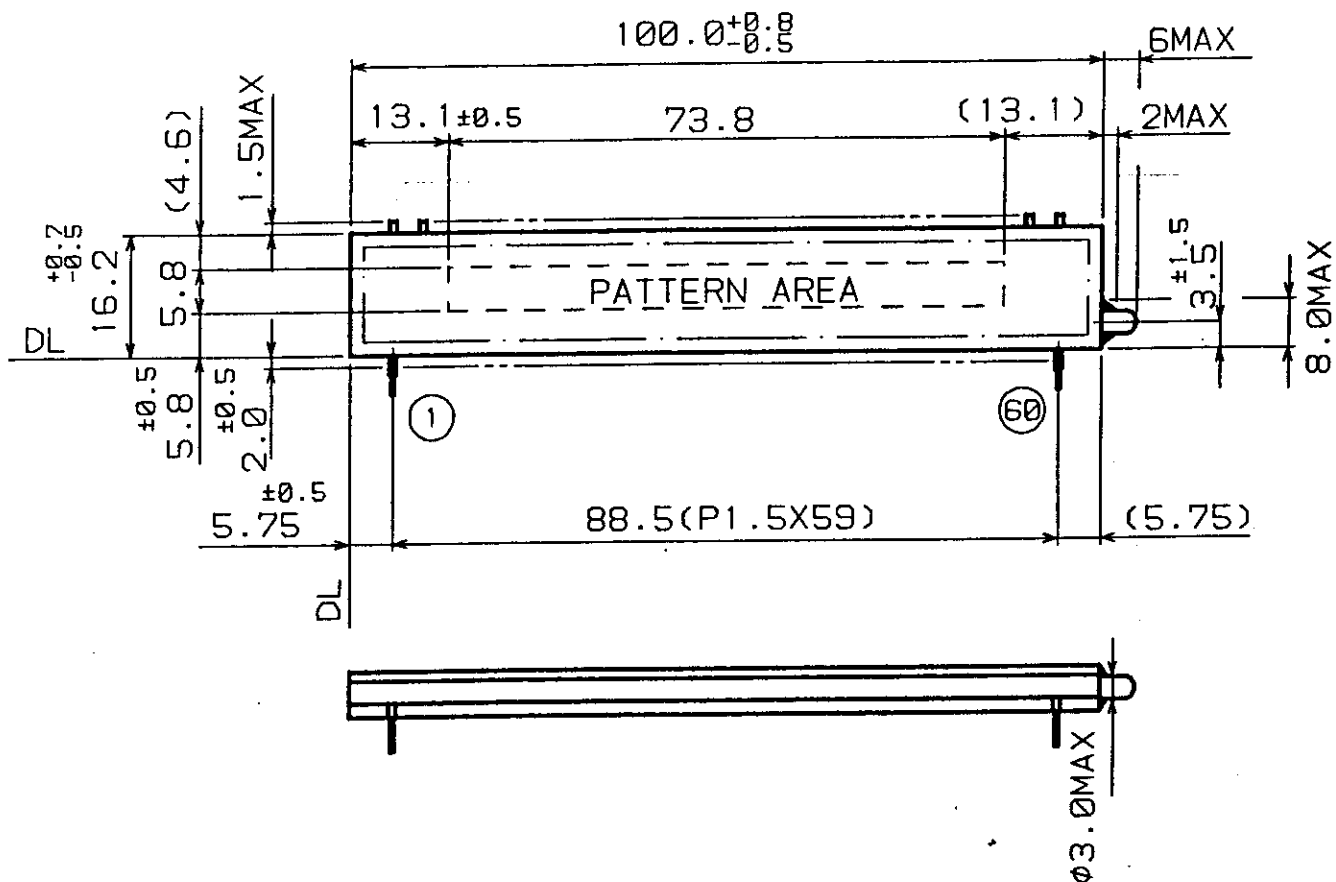
- *1. AC 50または60Hzの実効値。
50Hz or 60Hz r.m.s.
 - *2. フィラメントトランスのセンタータップに印加する。
Ek is applied to the center tap of the filament transformer.
 - *3. Rd = kΩの抵抗を通して印加する。
Ecd is supplied through " kΩ" resistor to the Gd terminal.
 - *4. Rfd = kΩの抵抗を通して印加する。
Efd is supplied through " kΩ" resistor to the Fd terminals.
- 注1. フィラメント電圧は表示管の寿命表示品位に大きな影響を与える要因となりますので、必ず定格範囲内で御使用ください。
Note 1. The filament voltage shall be kept within above rating to maintain the expected life and display quality.
- 注2. 本規格と異なる使い方をされる場合は、事前にご相談下さい。
Note 2. In case of the driving condition differs from this specification, consult to FUTABA for the proper usage.

電気的特性 ; Electrical Characteristics

Item -	Test Condition	Symbol	Min.	Typ.	Max.	Unit
フィラメント電流 Filament Current	$E_f = 4.0 \text{ Vac}$ $e_b = e_c = 0$	I_f	49	54	59	mA
アノード電流 Anode Current	$E_f = 4.0 \text{ Vac}$ $e_c = 34 \text{ Vp-p}$ $e_b(\text{c.}) = 34 \text{ Vp-p}$ $e_b(\quad) = \text{Vp-p}$ $e_b(\quad) = \text{Vp-p}$ $e_b(\quad) = \text{Vp-p}$	$i_b/_{1-16G}$	-	2.8	5.0	mA
		$i_b/$	-			mA
		$i_b/$	-			mA
		$i_b/$	-			mA
		$i_b/$	-			mA
グリッド電流 Grid Current	*($E_k = 5.1 \text{ Vdc}$) $t_p = 100 \mu\text{s}$ $t_{\text{blank}} = 0 \mu\text{s}$ $D_u = 1/18$	$i_c/_{1-16G}$	-	3.5	7.0	mA
		$i_c/$	-			mA
		$i_c/$	-			mA
		$i_c/$	-			mA
拡散グリッド電流 Diffusion Grid Current		I_{cd}	-	-		mA
輝度 Luminance	$E_{cd} = \text{Vdc}$ $R_d = \text{k}\Omega$ $E_{Fd} = \text{Vdc}$ $R_{Fd} = \text{k}\Omega$	$L(\text{c.})$	440 (128)	880 (257)	- (-)	cd/m^2 (fL)
		$L(\quad)$	()	()	(-)	cd/m^2 (fL)
		$L(\quad)$	()	()	(-)	cd/m^2 (fL)
		$L(\quad)$	()	()	(-)	cd/m^2 (fL)
輝度比 Luminance Ratio between Digits		$\frac{L_{\text{max}}}{L_{\text{min}}}$	-	-	1.8	
グリッド消去電圧 Grid Cut-Off Voltage	$E_f = 4.0 \text{ Vac}$ $E_b = 34 \text{ Vdc}$ $E_c = \text{vary}$	E_{cco}	*(-5.1)	-	-	Vdc
アノード消去電圧 Anode Cut-Off Voltage	$E_f = 4.0 \text{ Vac}$ $D_u = 1/18$ $t_p = 100 \mu\text{s}$ $e_c = 34 \text{ Vp-p}$ $E_b = \text{vary}$	E_{bco}	*(-2.5)	-	-	Vdc

* ()内は、センタータップを接地した場合である。
The value in * () is shown for the center tap grounded.

形名 Type No. 4AK
16-SD-054K, GSK
GAK



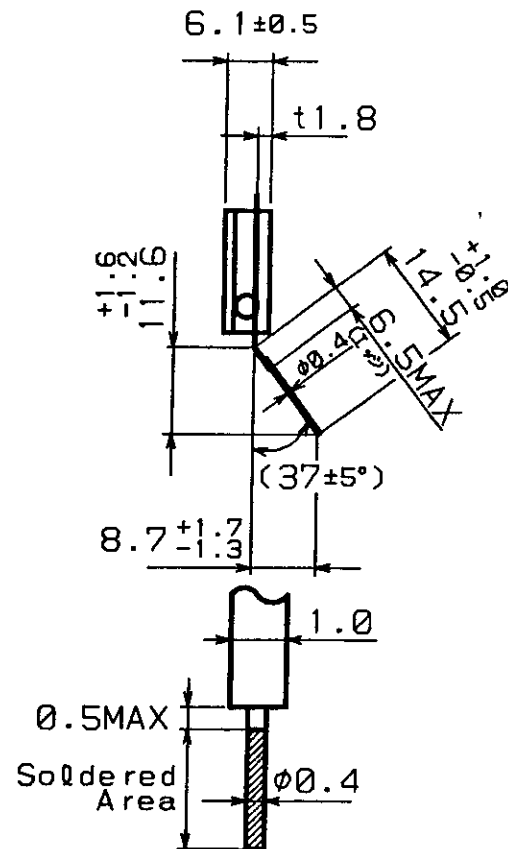
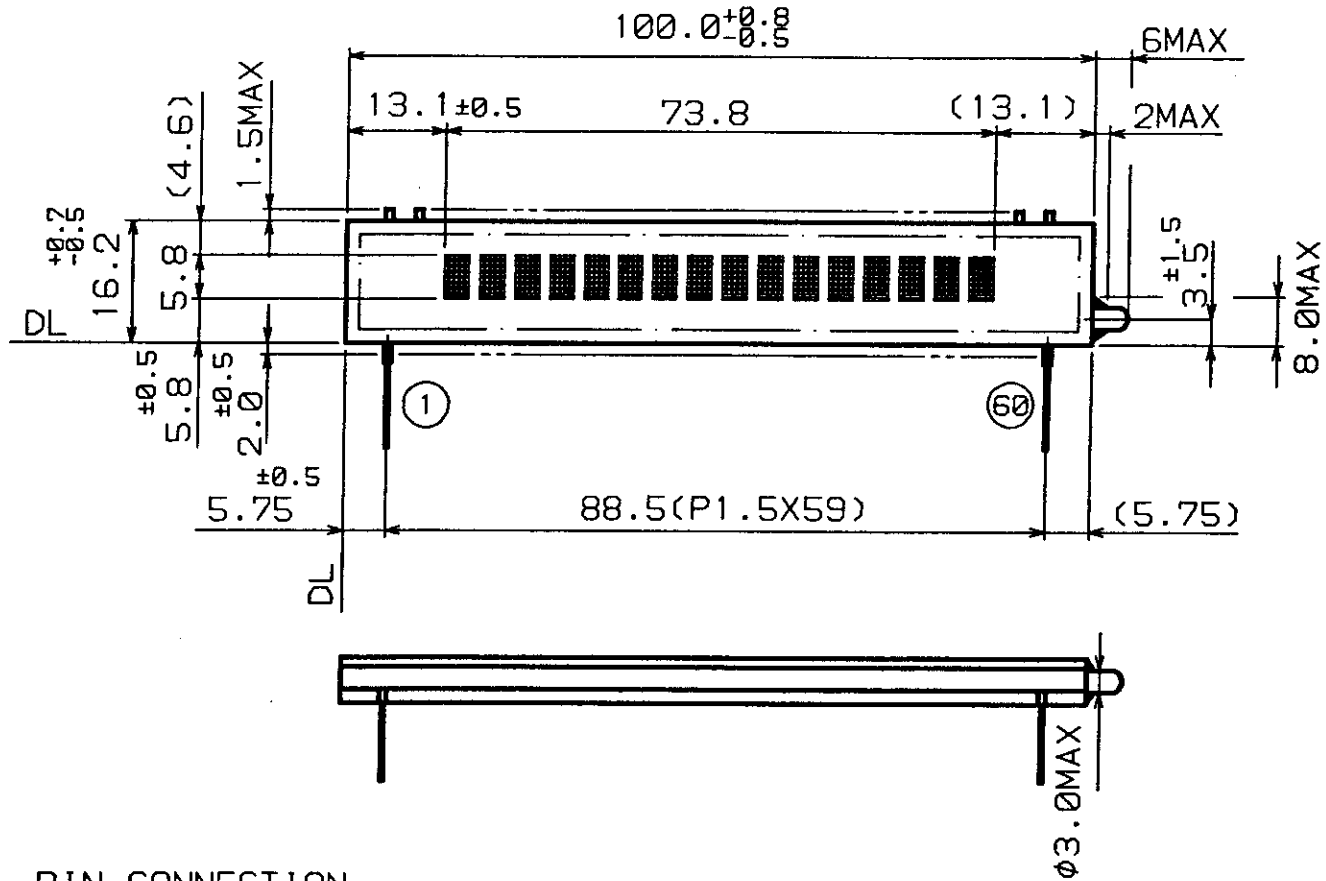
PIN CONNECTION

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CONNECTION	F	F	F	N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	5	
	1	1	1	P	5	5	5	5	5	6	6	6	6	6	7	7	7	7	7	7	R	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	4	4	4	4	4	4	4	4	4	4	5		

PIN NO.	5	5	5	5	5	5	5	5	5	6	
CONNECTION	1	5	4	3	2	1	1	N	F	F	F
	2	1	1	1	1	1	P	2	2	2	

- NOTE 1) F1, F2 --- Filament
2) NP ----- No pin
3) DL ----- Datum Line
4) 1G~16G --- Grid

16-SD-05GAK
OUTER DIMENSION



PIN CONNECTION

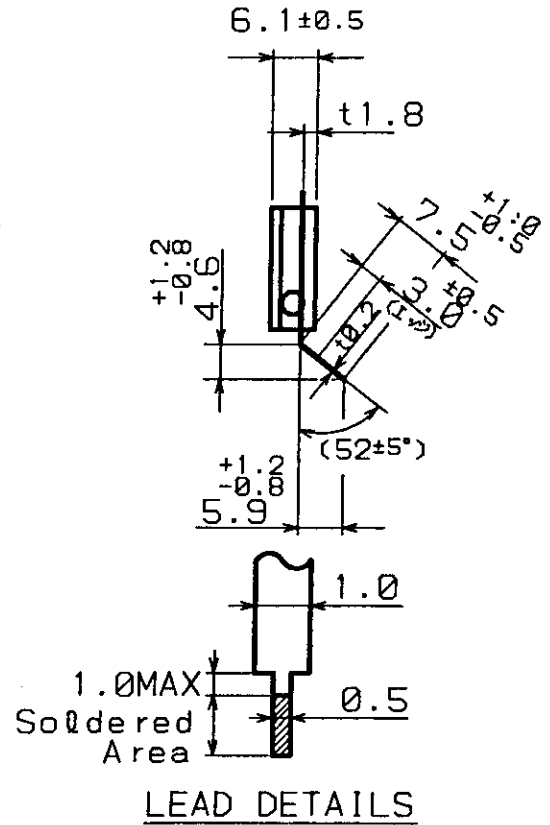
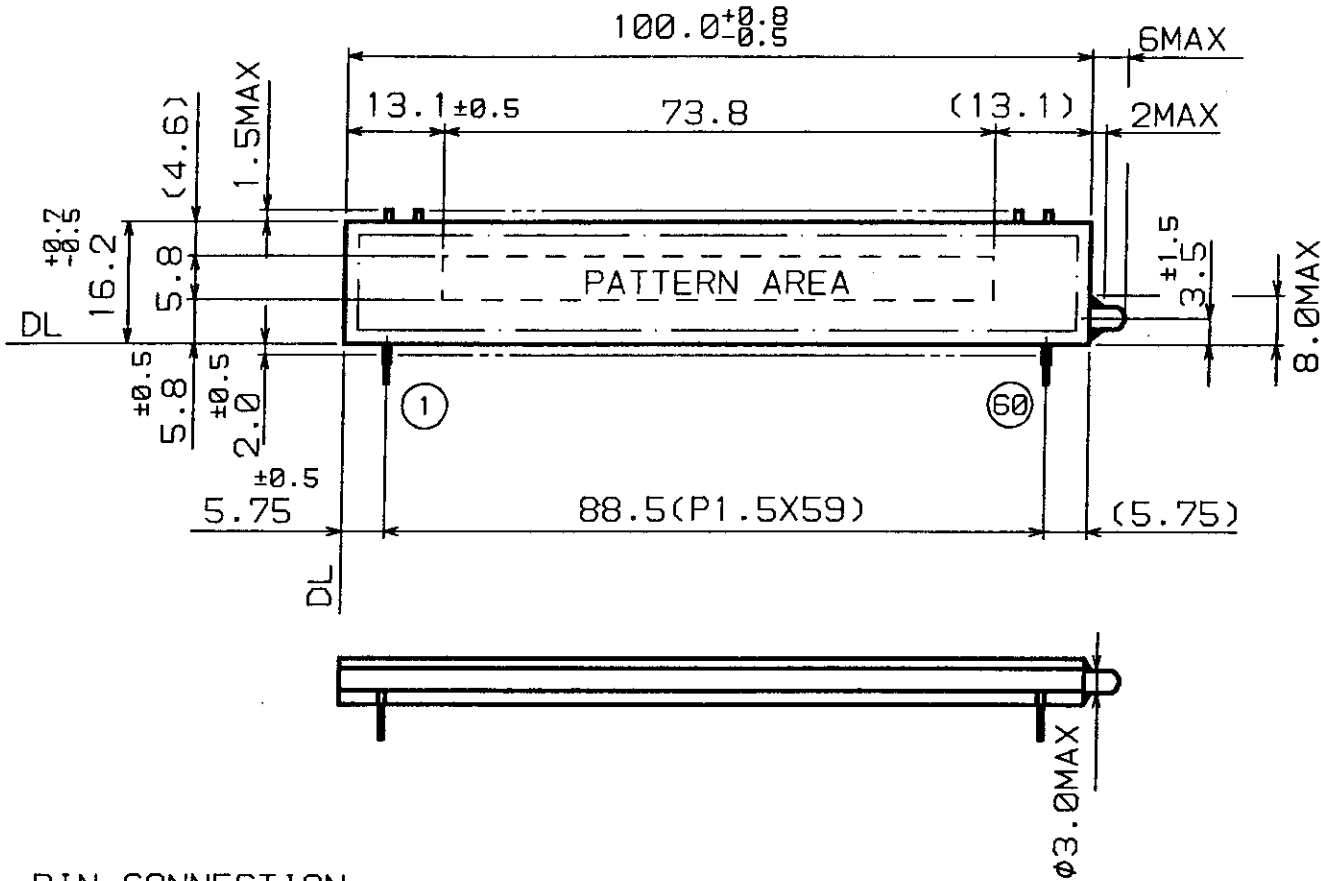
PIN NO.	1	2	3	4	5	6	7	8	9	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	5			
CONNECTION	F	F	F	N	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	
	1	1	1	P	5	5	5	5	5	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9

LEAD DETAILS

PIN NO.	5	5	5	5	5	5	5	5	6
CONNECTION	1	5	4	3	2	1	N	F	F
	2	1	1	1	1	1	P	2	2

- NOTE
- 1) F1, F2 --- Filament
 - 2) NP ----- No pin
 - 3) DL ----- Datum Line
 - 4) 1G~16G --- Grid

16-SD-05GA2K
OUTER DIMENSION



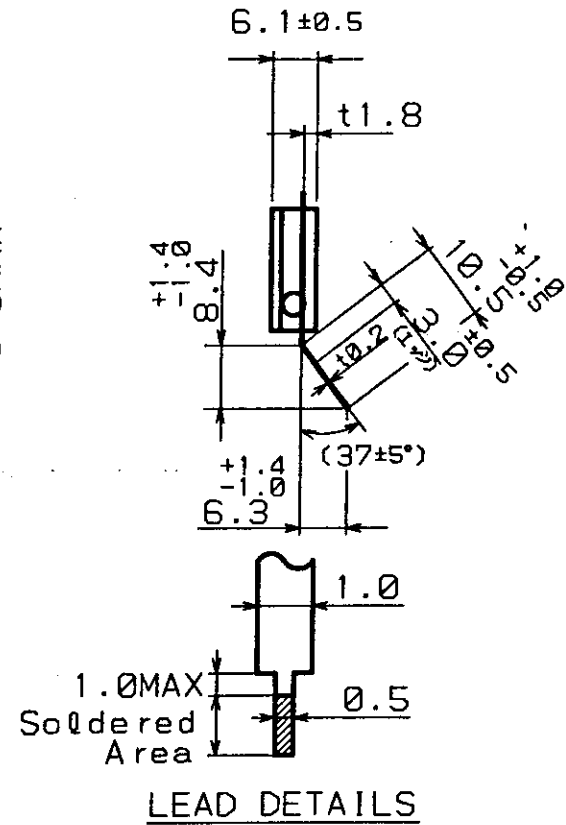
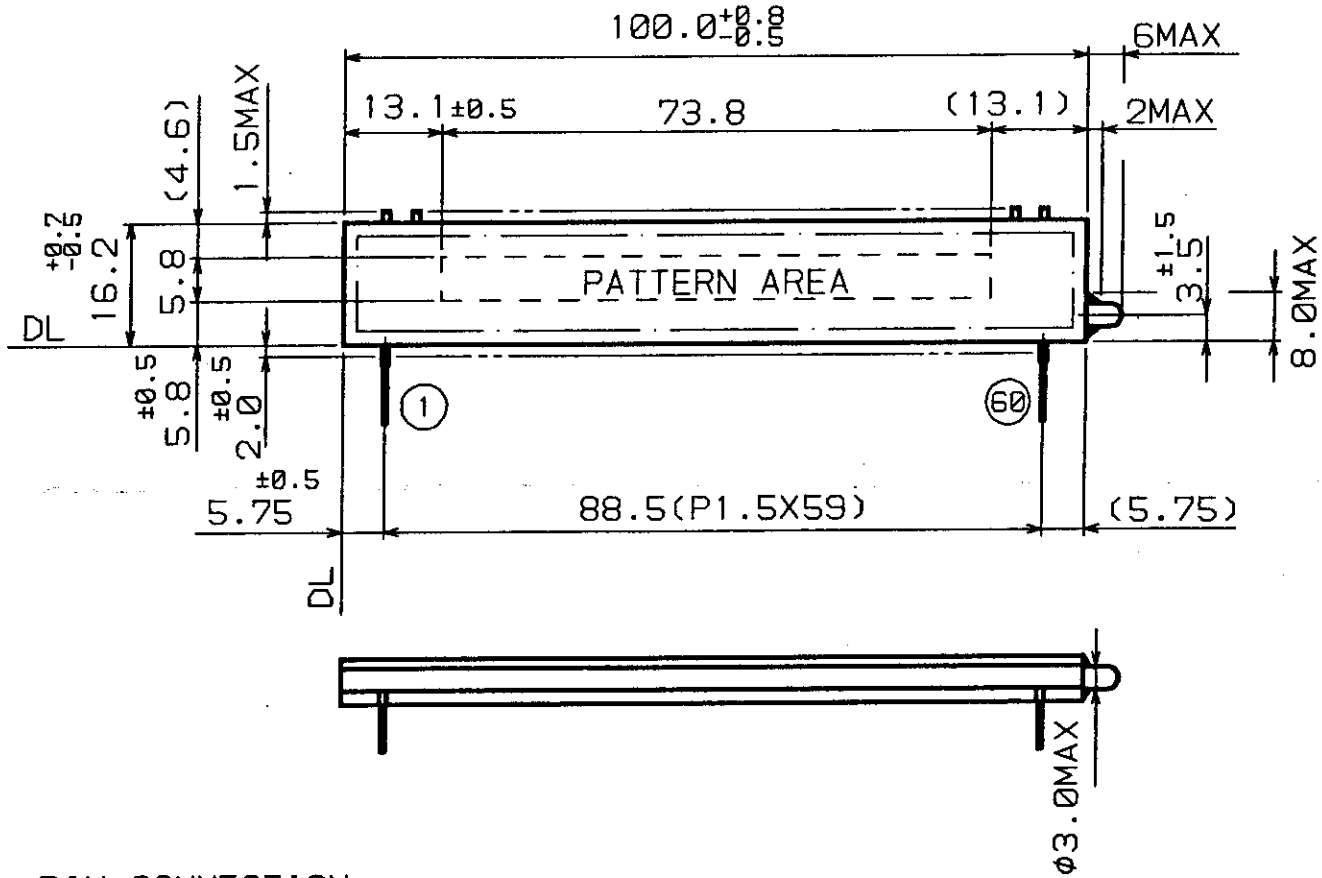
PIN CONNECTION

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	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50					
CONNECTION	F	F	F	N	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	R	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0				
	1	1	1	P	5	5	5	5	5	6	6	6	6	6	7	7	7	7	7	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PIN NO.	5	5	5	5	5	5	5	5	6
CONNECTION	1	5	4	3	2	1	N	F	F
	2	1	1	1	1	1	P	2	2

NOTE 1) F1, F2 --- Filament
 2) NP ----- No pin
 3) 1G~16G -- Grid

16-SD-05GK
 OUTER DIMENSION



PIN CONNECTION

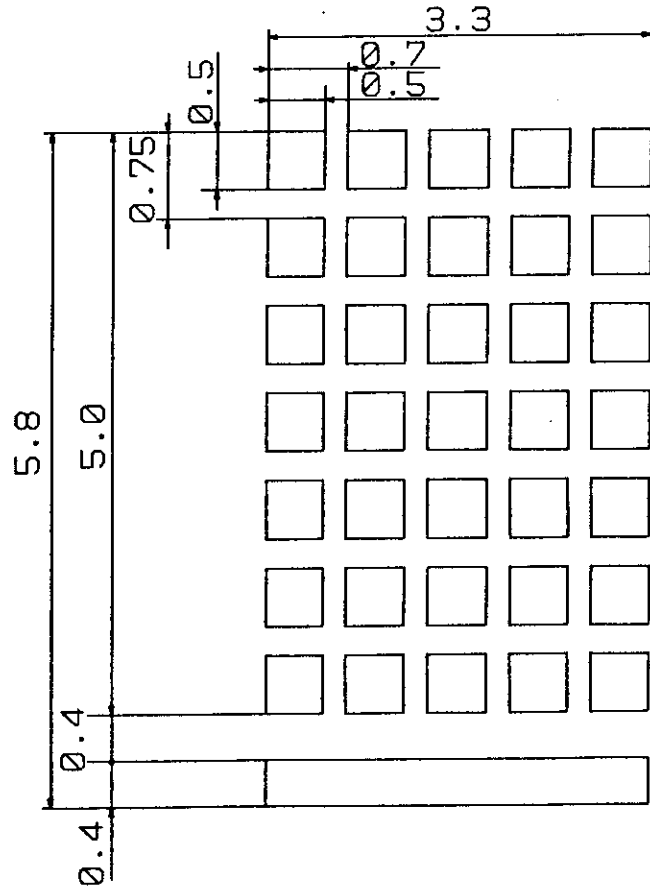
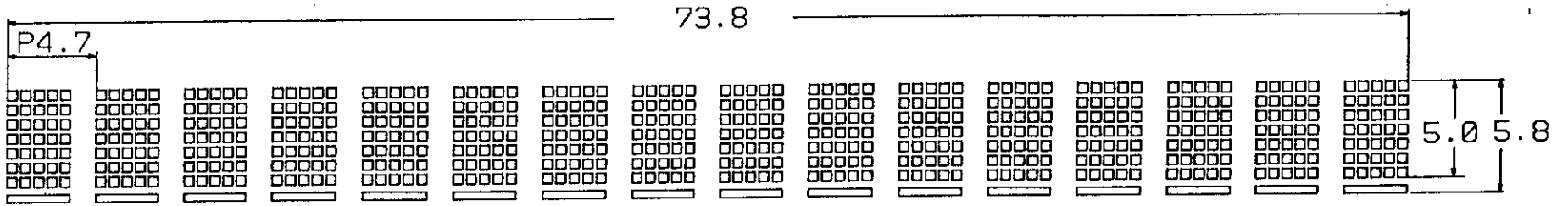
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CONNECTION					1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
	F	F	F	N	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0

PIN NO.	5	5	5	5	5	5	5	5	6				
CONNECTION	1	5	4	3	2	1	N	F	F	F	2	2	2

- NOTE
- 1) F1, F2 --- Filament
 - 2) NP ----- No pin
 - 3) DL -- Datum Line
 - 4) 1G~16G -- Grid

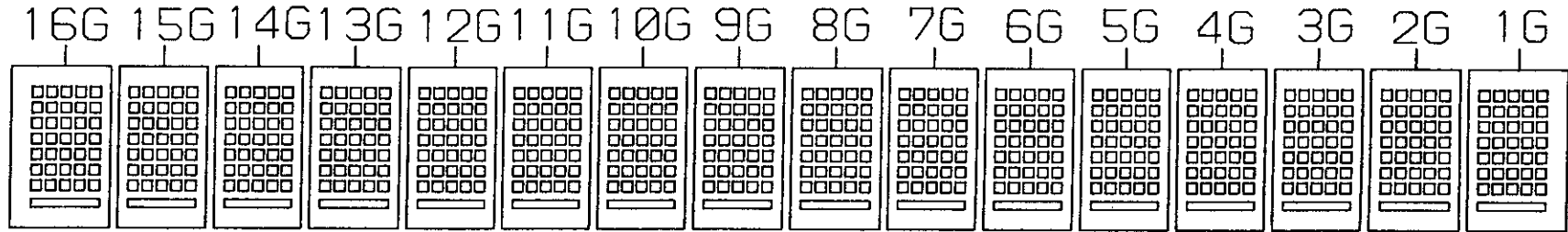
16-SD-05GA1K
OUTER DIMENSION

PATTERN DETAIL



16-SD-05GK/GSK/GAK
GAK/GAK
PATTERN DETAIL

GRID ASSIGNMENT



1-1	2-1	3-1	4-1	5-1
1-2	2-2	3-2	4-2	5-2
1-3	2-3	3-3	4-3	5-3
1-4	2-4	3-4	4-4	5-4
1-5	2-5	3-5	4-5	5-5
1-6	2-6	3-6	4-6	5-6
1-7	2-7	3-7	4-7	5-7

CURSOR

16-SD-05GK/GSK/GAK
GAK/GAK
 GRID ASSIGNMENT