

CD11GAS Series

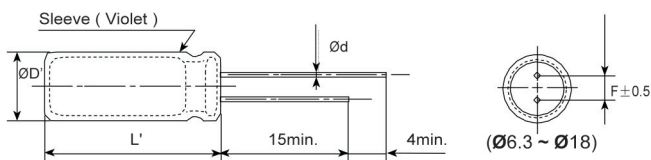
- Upgrades for CD11GA, longer life and better performance
- Life time: +130°C 2,000 hours, +105°C 10,000 hours
- Suitable for electronic ballast, electronic energy saving lamp
- RoHS Compliant



SPECIFICATIONS

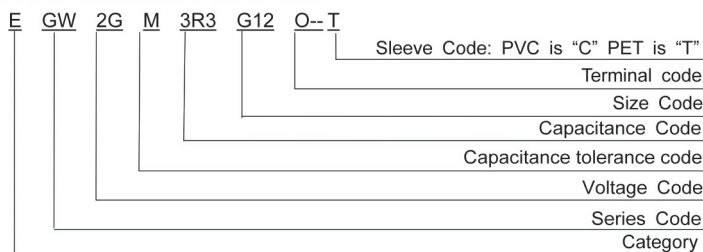
Item	Characteristics								
Temperature Range	-40 ~ +130℃(160 ~ 400V _{dc}) -25 ~ +130℃(450V _{dc}) -25 ~ +105℃(500V _{dc})								
Rated Voltage Range	160 ~ 500V _{dc}								
Capacitance Tolerance	±20%(M) (20℃, 120Hz)								
Leakage Current	160 ~ 400V _{dc}	450 ~ 500V _{dc}		I : Leakage Current(μA), C : Nominal capacitance(μF), V : Rated Voltage (V)					
	I ≤ 0.02CV+10μA	I ≤ 0.03CV+10μA		(20℃, 2minutes)					
Dissipation Factor (tanδ)	Rated Voltage(V _{dc})	160	200	250	350	400	450	500	(20℃, 120Hz)
	tanδ (Max.)	0.15	0.15	0.15	0.20	0.20	0.20	0.24	
Temperature Characteristics (Max.Impedance Ratio)	Rate Voltage(V _{dc})	160	200	250	350	400	450	500	(120Hz)
	Z(−25℃)/Z(+20℃)	3	3	3	5	5	6	6	
	Z(−40℃)/Z(+20℃)	6	6	6	6	6	--	--	
Endurance	After application of the rated DC voltage at 130℃ 2,000 hours (WV:160 ~ 450V _{dc}) or application of DC voltage with rated ripple current (the voltage peak is not more than rated voltage) at 105℃ 10,000 hours(WV:500V for 8,000 hours), measuring the parameters when the capacitors are restored to 20℃ ,the capacitors shall meet the requirements as below								
	Capacitance Change	≤±20% of the initial value							
	D.F.(tanδ)	≤200% of the initial specified value							
	Leakage Current	≤the initial specified value							
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 105℃ without voltage application.								
	Capacitance Change	≤±20% of the initial value							
	D.F.(tanδ)	≤200% of the initial specified value							
	Leakage Current	≤200% of the initial specified value							

DIMENSIONS [mm]



ØD	6.3	8	10	12.5	16	18
Ød	0.5	0.5	0.6	0.6	0.6	0.8
F	2.5	3.5	5.0	5.0	7.5	7.5
ØD'	ØD+0.5max.					
L'	L+2max.					

PART NUMBER SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

Freq.(Hz)	120	1k	10k	100k
WV(V _{dc})				
160 ~ 500	0.50	0.80	0.90	1.00

CD11GAS Series

◆ STANDARD RATINGS

WV (V _{dc})	Cap (μF)	Size ΦD×L(mm)	tanδ	Ripple current (mA _{rms} /105°C, 100kHz)
160V(2C)	1	6.3×9	0.15	40
		6.3×12	0.15	45
	1.5	6.3×12	0.15	50
	1.8	6.3×9	0.15	50
		6.3×12	0.15	55
	2.2	6.3×9	0.15	55
		6.3×12	0.15	61
	2.8	6.3×9	0.15	70
		6.3×12	0.15	78
	3.3	6.3×9	0.15	85
		6.3×12	0.15	92
	4.7	6.3×9	0.15	92
		8×12	0.15	100
	5.6	8×9	0.15	100
		8×12	0.15	107
	6.8	8×9	0.15	107
		8×16	0.15	115
	8.2	8×9	0.15	150
		8×16	0.15	189
	10	8×9	0.15	190
		8×16	0.15	275
200V(2D)	1	8×20	0.15	340
		10×9	0.15	280
	22	10×16	0.15	475
	33	10×20	0.15	650
	47	10×20	0.15	750
	68	12.5×20	0.15	1180
	100	12.5×20	0.15	1350
		12.5×25	0.15	1420
	150	16×25	0.15	1890
	220	18×25	0.15	2370
	1	6.3×9	0.15	50
		6.3×12	0.15	58
	1.2	6.3×9	0.15	55
	1.5	6.3×9	0.15	60
		6.3×12	0.15	66
	1.8	6.3×9	0.15	66
		6.3×12	0.15	70
	2.2	6.3×9	0.15	72
		6.3×12	0.15	81
	2.8	6.3×9	0.15	81
		6.3×12	0.15	88
	3.3	6.3×9	0.15	105
		6.3×12	0.15	112
	4.7	6.3×12	0.15	115
		8×9	0.15	117
	5.6	8×12	0.15	120
		8×9	0.15	120
	6.8	8×12	0.15	126
		8×9	0.15	126
	8.2	8×16	0.15	140
		10×9	0.15	200
	10	8×16	0.15	260
		10×9	0.15	275
	15	8×20	0.15	220
		8×20	0.15	345
	22	10×16	0.15	475
	33	10×20	0.15	650
		12.5×16	0.15	650
	47	12.5×16	0.15	880
		12.5×20	0.15	980
	68	12.5×25	0.15	1300
	82	16×20	0.15	1380
	100	16×25	0.15	1494
	150	16×30	0.15	1989

WV (V _{dc})	Cap (μF)	Size ΦD×L(mm)	tanδ	Ripple current (mA _{rms} /105°C, 100kHz)
250V(2E)	1	6.3×9	0.15	50
		6.3×12	0.15	58
	1.2	6.3×9	0.15	55
	1.5	6.3×9	0.15	60
		6.3×12	0.15	66
	1.8	6.3×9	0.15	70
		6.3×12	0.15	77
	2.2	6.3×9	0.15	72
		6.3×12	0.15	81
	2.8	6.3×9	0.15	81
		6.3×12	0.15	88
	3.3	6.3×12	0.15	112
		8×9	0.15	114
	4.7	8×9	0.15	116
		8×12	0.15	120
	5.6	8×9	0.15	120
		8×12	0.15	126
	6.8	8×9	0.15	145
		8×16	0.15	160
	8.2	10×9	0.15	150
		8×16	0.15	260
	10	10×9	0.15	200
		8×16	0.15	275
350V(2V)	15	8×20	0.15	378
	22	10×16	0.15	480
		10×20	0.15	500
	33	12.5×16	0.15	600
		12.5×20	0.15	660
	47	12.5×16	0.15	880
		12.5×20	0.15	980
	68	16×25	0.15	1320
	100	16×30	0.15	1500
	150	16×35	0.15	2000
	1	6.3×9	0.20	55
		6.3×12	0.20	60
	1.2	6.3×9	0.20	60
	1.5	6.3×9	0.20	65
		6.3×12	0.20	70
	1.8	6.3×9	0.20	72
		6.3×12	0.20	80
	2.2	8×9	0.20	82
		8×12	0.20	90
	2.8	8×9	0.20	86
		8×12	0.20	95
	3.3	8×12	0.20	100
		8×12	0.20	108
	4.7	8×16	0.20	128
		10×9	0.20	120
	5.6	8×16	0.20	162
		10×9	0.20	145
	6.8	8×20	0.20	215
	8.2	8×20	0.20	220
	10	8×20	0.20	260
	15	10×20	0.20	380
	22	12.5×20	0.20	525
	33	12.5×20	0.20	600
		16×20	0.20	650
	47	16×20	0.20	700
		18×20	0.20	780
	68	18×25	0.20	850
		18×25	0.20	1000

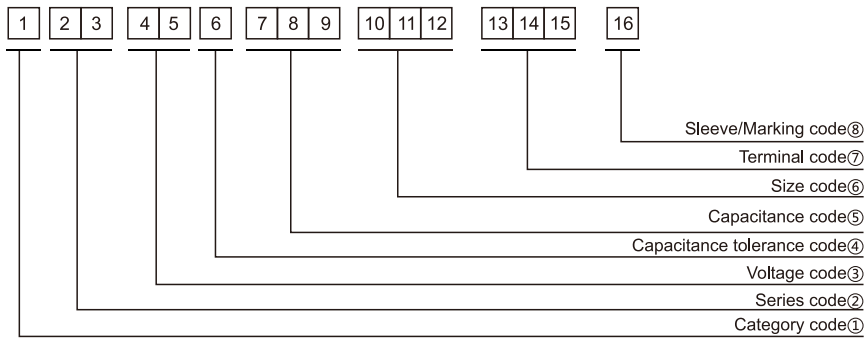
CD11GAS Series

◆ STANDARD RATINGS

WV (V _{dc})	Cap (μF)	Size ΦD×L(mm)	tanδ	Ripple current (mA _{rms} /105℃, 100kHz)
400V(2G)	1	6.3×9	0.20	65
		8×12	0.20	70
	1.2	6.3×9	0.20	68
	1.5	8×9	0.20	72
		8×12	0.20	76
	1.8	8×9	0.20	76
		8×12	0.20	85
	2.2	8×9	0.20	85
		8×12	0.20	90
	2.8	8×9	0.20	90
		8×16	0.20	99
	3.3	8×9	0.20	100
		8×16	0.20	108
	4.7	8×20	0.20	130
		10×9	0.20	120
	5.6	8×20	0.20	175
	6.8	10×16	0.20	215
	8.2	10×20	0.20	240
	10	10×20	0.20	275
	12	12.5×20	0.20	300
	15	12.5×16	0.20	324
		12.5×20	0.20	360
	22	12.5×25	0.20	500
		16×20	0.20	500
450V(2W)	1	6.3×9	0.20	76
		8×12	0.20	82
	1.2	8×9	0.20	80

WV (V _{dc})	Cap (μF)	Size ΦD×L(mm)	tanδ	Ripple current (mA _{rms} /105℃, 100kHz)
450V(2W)	1.5	8×9	0.20	82
		8×12	0.20	85
	1.8	8×12	0.20	88
		10×9	0.20	90
	2.2	8×16	0.20	95
		10×9	0.20	92
	2.8	8×16	0.20	99
		10×9	0.20	95
	3.3	8×16	0.20	100
		10×9	0.20	98
	3.9	10×9	0.20	115
	4.7	10×16	0.20	130
	5.6	10×20	0.20	177
	6.8	10×20	0.20	215
	8.2	10×20	0.20	230
	10	10×25	0.20	300
		12.5×16	0.20	280
	15	12.5×20	0.20	410
	22	12.5×25	0.20	530
		16×20	0.20	530
	33	16×25	0.20	670
	47	16×35	0.20	850
	56	18×30	0.20	1080
	68	18×35	0.20	1300
	100	18×40	0.20	1530
500V(2H)	10	12.5×20	0.24	288
		12.5×25	0.24	302
	15	12.5×25	0.24	396
		16×20	0.24	396
	22	12.5×35	0.24	504
		16×25	0.24	504
	33	18×25	0.24	630
	47	18×30	0.24	792

Part Numbering System



① Category code

Type	Code
	1
Electrolytic Capacitor	E
Conductive Polymer	S

③ Voltage code

WV (V _{dc})	Code	
	4	5
2.5	0	E
3	0	D
4	0	G
6.3	0	J
6.8	0	C
7	0	Q
7.5	0	A
10	1	A
12	1	T
16	1	C
25	1	E
35	1	V
40	1	G
50	1	H
63	1	J
80	1	B
100	1	K
120	2	B
160	2	C
180	2	L
200	2	D
220	2	N
250	2	E
315	2	F
350	2	V
380	2	P
400	2	G
420	2	T
450	2	W
500	2	H
550	2	J
600	2	K

④ Capacitance tolerance code

Tol. (%)	Code
	6
-10~+10	K
-20~+20	M
-10~+30	Q
-10~+20	V
0~+20	A
-5~+20	C
-10~-20	B
-5~+5	D
0~+10	E
-5~-20	F
-15~+5	N

⑤ Capacitance code

Cap (μF)	Code		
	7	8	9
0.10	R	1	0
0.22	R	2	2
0.33	R	3	3
0.47	R	4	7
0.68	R	6	8
1	0	1	0
2.2	2	R	2
3.3	3	R	3
4.7	4	R	7
6.8	6	R	8
10	1	0	0
22	2	2	0
33	3	3	0
47	4	7	0
68	6	8	0
100	1	0	1
220	2	2	1
330	3	3	1
470	4	7	1
680	6	8	1
1000	1	0	2
2200	2	2	2
3300	3	3	2
4700	4	7	2
6800	6	8	2
10000	1	0	3
22000	2	2	3
33000	3	3	3
68000	6	8	3

② Series code

Series name	Code	
	2	3
WH	W	H
CD11GE	G	E
CD11GES	G	X
CD11GAS	G	W
CD11GHS	G	S
NR	N	R
PZ	P	Z

⑥ Size code

ΦD (mm)	Code
	10
4	C
5	D
6.3	E
8	F
10	G
11	H
12	J
12.5	W
13	K
14	X
16	L
18	M
19	Z
20	N
22	O
25	P
30	Q
35	R
40	Y
51.6	S
64.3	T
76.9	U
91	V
100	A

L (mm)	Code	
	11	12
5	0	5
7	0	7
11	1	1
12	1	2
16	1	6
20	2	0
25	2	5
30	3	0
35	3	5
40	4	0
46	4	6
50	5	0
60	6	0
80	8	0
100	A	0
115	B	5
120	C	0
130	D	0
140	E	0
160	G	0
200	K	0
220	M	0
236	N	6
250	P	0

⑦ Terminal code

Specification	Code	Size	
	13	14	15
Bulk packing	O	-	-
Taping (SMD Type)	D	0	0
Φ4~8 Taping F=5.0mm	P	5	0
Φ10~12.5 Taping F=5.0mm	B	5	0
Lead Cut L=3.5mm	C	3	5
Lead Cut L=11.0mm	C	B	0
Lead Forming & Cut L=4.5mm	F	-	-
Kink & Cut L=4.5mm	J	-	-
Snap-in type Terminal 4.0mm in length	K	-	-
Three Terminals	T	-	-
Ring clip mounting standard design	A	0	0
Ring clip mounting special design	S	-	-

⑧ Sleeve/Marking code

Sleeve/Marking	Code
	16
PVC	C
PET	T
Dark blue	B
Bright red	R
Sky-blue	S
Light blue	T
Pink	Z
Black	H
Purple-blue	V
Red	O

Lead Forming

Taping Specifications

Fig.1 Code: X

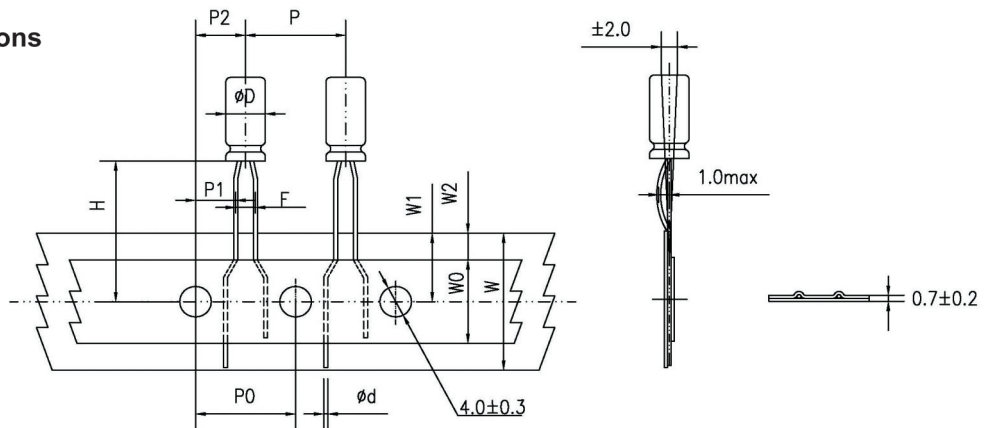


Fig.2 Code: B

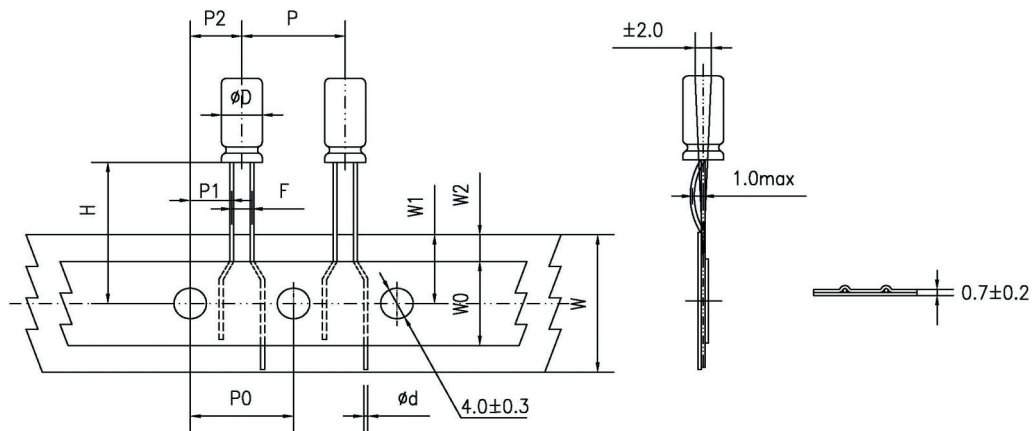


Fig.3 Code: B

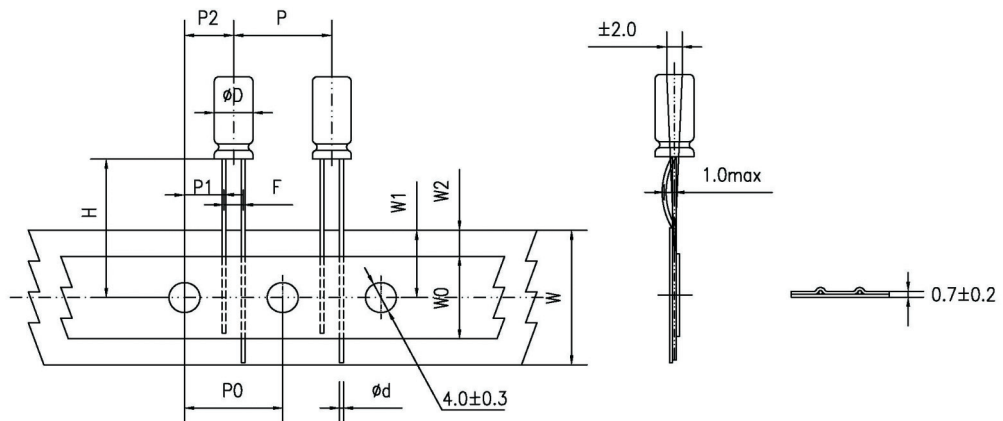
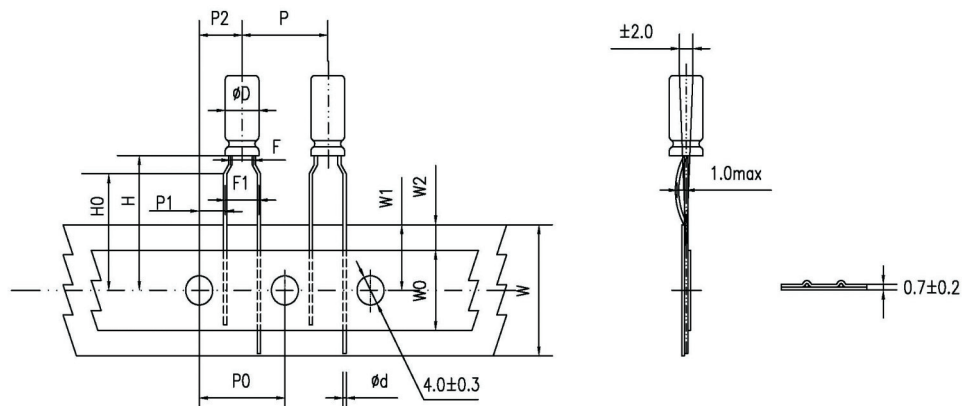


Fig.4 Code: P



Specification Fig.1 & Fig.2 & Fig.3

Items	Symbol	CASE SIZE											Tolerance	
		4x5 4x7		5x5 5x7		5x11		6.3x5	6.3x7 6.3x9	6.3x11 6.3x12	8x5/7 8x9/11 8x11.5 8x12	8x16 8x20		10x9/12 10x12.5 10x13/16 10x20/25
Pin Code		X	B	X	B	X	B	B	B	B	B	B	B	
Lead wire diameter	Φd	0.45		0.45		0.5		0.45	0.5	0.5	0.45/0.5	0.6	0.6	±0.05
Pitch of body	P	12.7		12.7		12.7		12.7	12.7	12.7	12.7	12.7	12.7	±1.0
Feed hole pitch	P0	12.7		12.7		12.7		12.7	12.7	12.7	12.7	12.7	12.7	±0.2
Hole center to lead distance	P1	5.1	5.6	5.1	5.35	5.1	5.35	5.1	5.1	5.1	4.6	4.6	3.85	±0.7
Feed hole center to body center distance	P2	6.35		6.35		6.35		6.35	6.35	6.35	6.35	6.35	6.35	±1.0
Lead to lead distance	F	2.5	1.5	2.5	2.0	2.5	2.0	2.5	2.5	2.5	3.5	3.5	5.0	±0.5
Height of body from tape center	H	18.5		18.5		18.5		18.5	18.5	18.5	18.5	18.5	18.5	±0.75
Base tape width	W	18.0		18.0		18.0		18.0	18.0	18.0	18.0	18.0	18.0	±0.5
Adhesive tape width	W0	11.0		11.0		11.0		11.0	11.0	11.0	11.0	11.0	11.0	min
Hole position	W1	9.0		9.0		9.0		9.0	9.0	9.0	9.0	9.0	9.0	+0.75 -0.5
Hole down tape position	W2	3.0		3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0	max

Specification Fig.4

Items	Symbol	CASE SIZE									Tolerance
		4x5 4x7	5x5	5x7	5x11	6.3x5	6.3x7 6.3x9	6.3x11 6.3x12	8x5/7 8x9/11 8x11.5/12	8x16 8x20	
Pin Code		P	P	P	P	P	P	P	P	P	
Lead wire diameter	Φd	0.45	0.45	0.45	0.5	0.45	0.5	0.5	0.45/0.5	0.6	± 0.05
Pitch of body	P	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	± 1.0
Feed hole pitch	P0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	± 0.2
Hole center to lead distance	P1	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	± 0.7
Feed hole center to body center distance	P2	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	± 1.0
Lead to lead distance	F	1.5	2.0	2.0	2.0	2.5	2.5	2.5	3.5	3.5	± 0.5
Lead to lead distance	F1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	+0.8 -0.2
Height of body from tape center	H	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	± 0.75
Lead wire clinch height	H0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	± 0.5
Base tape width	W	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	± 0.5
Adhesive tape width	W0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	min
Hole position	W1	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	+0.75 -0.5
Hole down tape position	W2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	max

Lead Forming & Cut

Code: C RANGE: $\Phi 4 \sim \Phi 18$			Code: F RANGE: $\Phi 4 \sim \Phi 8$		
ΦD	F	L	ΦD	F	L
4	1.5	3.0 ~ 12.0	4	5.0	3.5, 4.5, 5.0, 7.0
5	2.0	3.0 ~ 12.0	5	5.0	3.5, 4.5, 5.0, 7.0
6.3	2.5	3.0 ~ 12.0	6.3	5.0	3.5, 4.5, 5.0, 7.0
8	3.5	3.0 ~ 12.0	8	5.0	3.5, 4.5, 5.0, 7.0
10	5.0	3.0 ~ 12.0	-	-	-
12.5	5.0	3.0 ~ 12.0	-	-	-
16	7.5	3.0 ~ 12.0	-	-	-
18	7.5	3.0 ~ 12.0	-	-	-

Code: J RANGE: $\Phi 10 \sim \Phi 18$		
ΦD	F	L
10	5.0	4.0, 4.5, 5.0
12.5	5.0	4.0, 4.5, 5.0
16	7.5	4.0, 4.5, 5.0
18	7.5	4.0, 4.5, 5.0