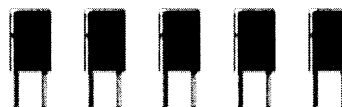


WIMA FKP 2



Polypropylene film and foil capacitors for pulse applications in PCM 5 mm

■ For all applications from the millivolt range up to 1000 VDC rated. ■ For substitution of polystyrene capacitors e.g. in audio applications and HF technique. ■ Close tolerances up to 1%. ■ Low loss and low damping capacitors with high resonant frequency. ■ Constantly negative TKc. ■ For all pulse applications with high repetition frequency like switch mode power supplies, ballasts, etc. ■ Available taped and reeled.

Technical Data / General Data

Dielectric: Polypropylene film.

Capacitor electrodes: Metal foil.

Encapsulation: Flame retardant plastic case, UL 94 V-0, with epoxy resin seal. Colour: Green. Marking: Black.

Temperature range: -55° C to +100° C.

Test specifications: In accordance with IEC 60384-13 and CECC 31800.

Test category: 55/100/56 in accordance with IEC.

Insulation resistance at +20° C:

$\geq 5 \times 10^5$ megohms (mean value: 1×10^6 megohms)

In accordance with IEC 60384-13 and CECC 31800.

Measuring voltage:

$V_r = 63$ V: $V_{test} = 50$ V/1 min.

$V_r \geq 100$ V: $V_{test} = 100$ V/1 min.

Capacitance tolerances: +/-10%, +/-5%, +/-2.5%, +/-1%,

Test voltage: 2 V_r , 2 sec.

Temperature coefficient: -200×10^{-6} per degree C (typical).

Maximum pulse rise time: 1000 V/microsecond for pulses equal to the rated voltage.

Dissipation factors at +20° C: tan delta

at f	$C \leq 1000 \text{ pF}$	$1000 \text{ pF} < C \leq 4700 \text{ pF}$	$4700 \text{ pF} < C \leq 0.033 \mu\text{F}$
1 kHz	$\leq 3 \times 10^{-4}$	$\leq 4 \times 10^{-4}$	$\leq 4 \times 10^{-4}$
10 kHz	$\leq 3 \times 10^{-4}$	$\leq 4 \times 10^{-4}$	$\leq 4 \times 10^{-4}$
100 kHz	$\leq 4 \times 10^{-4}$	$\leq 5 \times 10^{-4}$	-
1 MHz	$\leq 10 \times 10^{-4}$	-	-

Vibration: 6 hours at 10...2000 Hz and 0.75 mm displacement amplitude or 10 g in accordance with IEC 60068-2-6.

Low air density: 1 kPa = 10 mbar in accordance with IEC 60068-2-13.

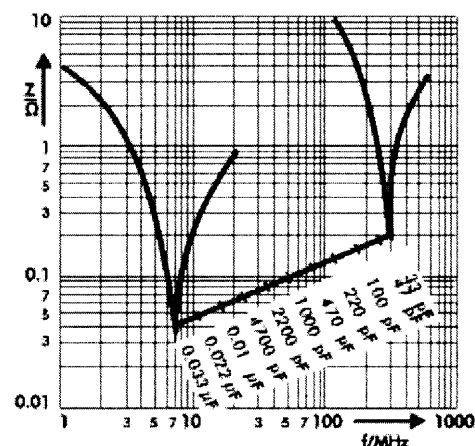
Bump test: 4000 bumps at 390 m/sec² in accordance with IEC 60068-2-29.

Voltage derating: A voltage derating factor of 1.35% per K must be applied from +85° C for DC voltages and from +75° C for AC voltages.

Graphs:

Taping:

Impedance change with frequency (general guide)



WIMA FKP 2

General Data / Technical Data

Capacitance	63 VDC/ 40 VAC*				100 VDC/ 63 VAC*				250 VDC/ 160 VAC*				400 VDC/ 220 VAC*				630 VDC/ 250 VAC*				800 VDC/ 250 VAC*				1000 VDC/ 250 VAC*			
	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**
33 pF					2.5	6.5	7.2	5	2.5	6.5	7.2	5	2.5	6.5	7.2	5	2.5	6.5	7.2	5								
47 "					2.5	6.5	7.2	5	2.5	6.5	7.2	5	2.5	6.5	7.2	5	2.5	6.5	7.2	5								
68 "					2.5	6.5	7.2	5	2.5	6.5	7.2	5	2.5	6.5	7.2	5	2.5	6.5	7.2	5								
100 pF					4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5
150 "					2.5	6.5	7.2	5	2.5	6.5	7.2	5	2.5	6.5	7.2	5	2.5	6.5	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5
220 "					4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5
330 "					4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5
470 "					4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	5.5	7	7.2	5	5.5	7	7.2	5
680 "					4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	5.5	7	7.2	5	5.5	7	7.2	5
1000pF					4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	5.5	7	7.2	5	7.2	8.5	7.2	5
1500 "					4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	4.5	6	7.2	5	5.5	7	7.2	5	8.5	10	7.2	5
2200 "					4.5	6	7.2	5	4.5	6	7.2	5	5.5	7	7.2	5	5.5	7	7.2	5	6.5	8	7.2	5				
3300 "	4.5	6	7.2	5	5.5	7	7.2	5	5.5	7	7.2	5	6.5	8	7.2	5	6.5	8	7.2	5	7.2	8.5	7.2	5				
4700 "	4.5	6	7.2	5	5.5	7	7.2	5	6.5	8	7.2	5	6.5	8	7.2	5	6.5	8	7.2	5	8.5	10	7.2	5				
6800 "	4.5	6	7.2	5	5.5	7	7.2	5	6.5	8	7.2	5	7.2	8.5	7.2	5	7.2	8.5	7.2	5								
0.01µF	5.5	7	7.2	5	6.5	8	7.2	5	7.2	8.5	7.2	5	8.5	10	7.2	5	8.5	10	7.2	5								
0.015 "	6.5	8	7.2	5	7.2	8.5	7.2	5	8.5	10	7.2	5																
0.022 "	7.2	8.5	7.2	5	8.5	10	7.2	5																				
0.033 "	8.5	10	7.2	5																								

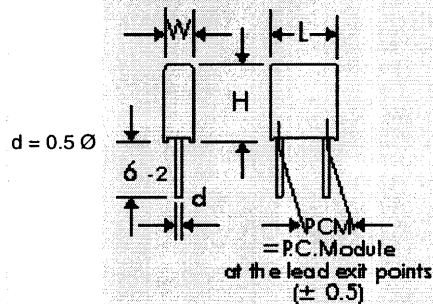
*AC voltage: $f \leq 1000 \text{ Hz}$;
 $1.4 \times V_{\text{rms}} + \text{VDC} \leq \text{VDC (rated)}$

**PCM = Printed circuit module = lead spacing.

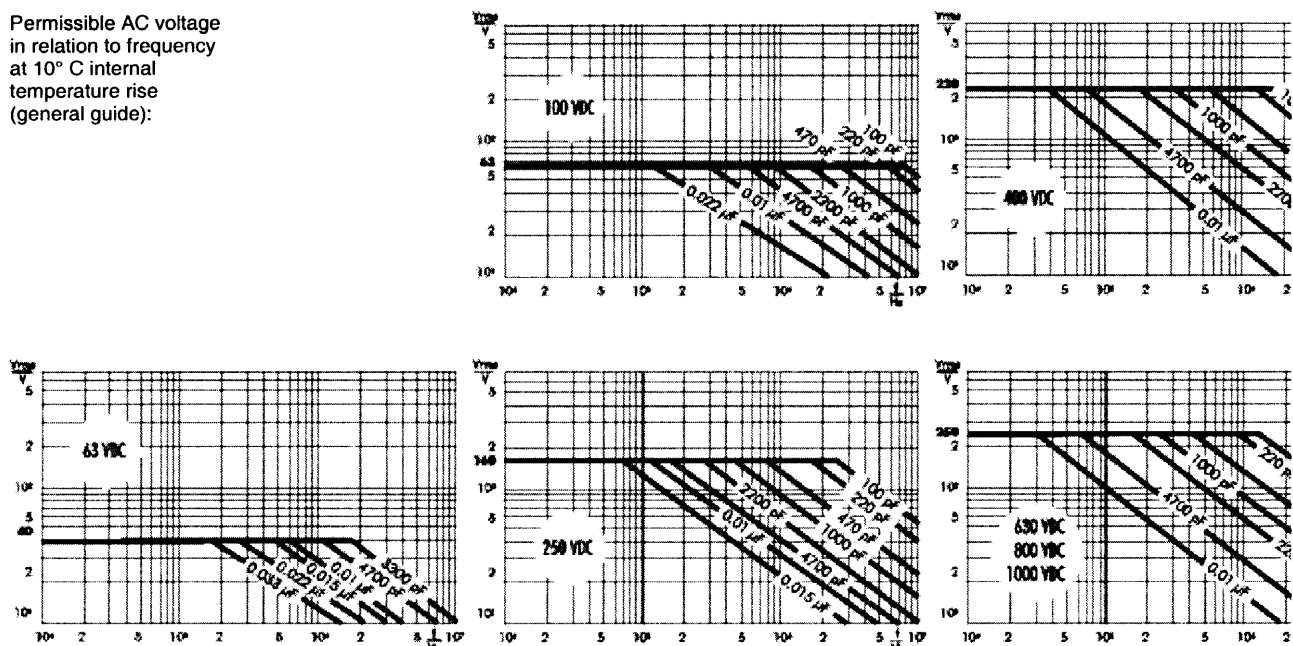
E12-values and individual values available from 27 pF on request.

Dims. in mm

Rights reserved to amend design data without prior notification.



Permissible AC voltage
 in relation to frequency
 at 10° C internal
 temperature rise
 (general guide):



Typical dimensions for taping configuration

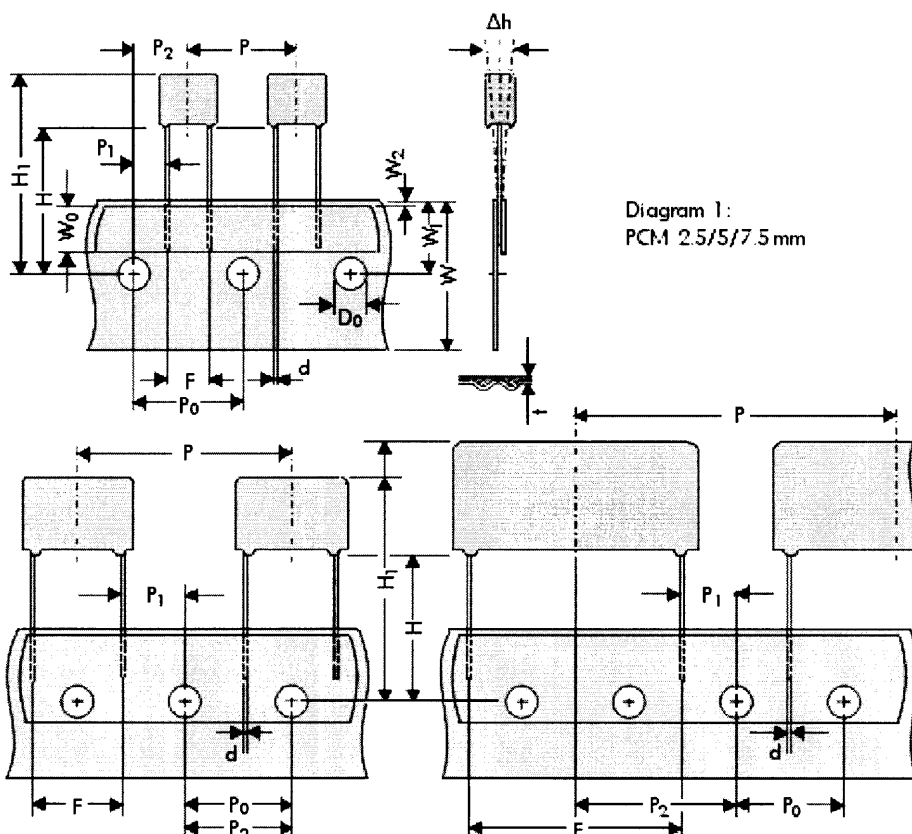


Diagram 1:
PCM 2.5/5/7.5 mm

Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm

*PCM 27.5 taping possible with two feed holes between components

		Dimensions for radial insertion						
Designation	Symbol	PCM 2.5	PCM 5	PCM 7.5	PCM 10**	PCM 15**	PCM 22.5	PCM 27.5
Carrier tape width	W	18.0 $\pm$ 0.5	18.0 $\pm$ 0.5	18.0 $\pm$ 0.5	18.0 $\pm$ 0.5	18.0 $\pm$ 0.5	18.0 $\pm$ 0.5	18.0 $\pm$ 0.5
Hold-down tape width	W0	6.0 for hot-sealing adhesive tape	6.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape
Hole position	W1	9.0 $\pm$ 0.5	9.0 $\pm$ 0.5	9.0 $\pm$ 0.5	9.0 $\pm$ 0.5	9.0 $\pm$ 0.5	9.0 $\pm$ 0.5	9.0 $\pm$ 0.5
Hold-down tape position	W2	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.
Feed hole diameter	D0	4.0 $\pm$ 0.2	4.0 $\pm$ 0.2	4.0 $\pm$ 0.2	4.0 $\pm$ 0.2	4.0 $\pm$ 0.2	4.0 $\pm$ 0.2	4.0 $\pm$ 0.2
Pitch of component	P	12.7 $\pm$ 1.0	12.7 $\pm$ 1.0	12.7 $\pm$ 1.0	25.4 $\pm$ 1.0	25.4 $\pm$ 1.0	38.1 $\pm$ 1.5	*38.1 $\pm$ 1.5 or 50.8 $\pm$ 1.5
Feed hole pitch	P0	12.7 $\pm$ 0.3 cumulative pitch error max. 1.0mm/20pitch	12.7 $\pm$ 0.3 cumulative pitch error max. 1.0mm/20pitch	12.7 $\pm$ 0.3 cumulative pitch error max. 1.0mm/20pitch	12.7 $\pm$ 0.3 cumulative pitch error max. 1.0mm/20pitch	12.7 $\pm$ 0.3 cumulative pitch error max. 1.0mm/20pitch	12.7 $\pm$ 0.3 cumulative pitch error max. 1.0mm/20pitch	12.7 $\pm$ 0.3 cumulative pitch error max. 1.0mm/20pitch
Feed hole centre to lead	P1	5.1 $\pm$ 0.5	3.85 $\pm$ 0.7	2.6 $\pm$ 0.7	7.7 $\pm$ 0.7	5.2 $\pm$ 0.7	7.8 $\pm$ 0.7	5.3 $\pm$ 0.7
Hole centre to component centre	P2	6.35 $\pm$ 1.3	6.35 $\pm$ 1.3	6.35 $\pm$ 1.3	12.7 $\pm$ 1.3	12.7 $\pm$ 1.3	19.05 $\pm$ 1.3	19.05 $\pm$ 1.3
Feed hole centre to bottom edge of the component	H**	16.5 $\pm$ 0.3	16.5 $\pm$ 0.3	16.5 $\pm$ 0.3	16.5 $\pm$ 0.3	16.5 $\pm$ 0.3	16.5 $\pm$ 0.3	16.5 $\pm$ 0.3
		18.5 $\pm$ 0.5	18.5 $\pm$ 0.5	18.5 $\pm$ 0.5	18.5 $\pm$ 0.5	18.5 $\pm$ 0.5	18.5 $\pm$ 0.5	18.5 $\pm$ 0.5

Feed hole centre to top edge of the component	H ₁	H+H _{component} < H ₁ 32.25 max.	H+H _{component} < H ₁ 32.25 max.	H+H _{component} < H ₁ 24.25 to 31.5	H+H _{component} < H ₁ 25.0 to 31.5.	H+H _{component} < H ₁ 26.0 to 37.0	H+H _{component} < H ₁ 30.0 to 43.0	H+H _{component} < H ₁ 35.0 to 45.0
Lead spacing	F	2.5±0.5	5+0.8/-0.2	7.5±0.8	10.0±0.8	15.0±0.8	22.5±0.8	27.5±0.8
Lead diameter	d	0.4+0.05	0.5+0.05	*0.5+0.05 or 0.7+0.07/-0.05	*0.5+0.05 or 0.7+0.07/-0.05	0.8+0.08/-0.05	0.8+0.08/-0.05	*0.8+0.08/-0.05 or 1.0+0.1/-0.05
Component alignment	delta h	+2.0 max.	+2.0 max.	+3.0 max.	+3.0 max.	+3.0 max.	+3.0 max.	+3.0 max.
Total tape thickness	t	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2
Package	**	ROLL / AMMO / REEL			AMMO / REEL			

**Please give "H" dimension and desired packaging type when ordering.

* Diameter of leads see General Data.

** PCM 10 and PCM 15 can be crimped to PCM 7.5 mm. Position of components according to PCM 7.5 (sketch 1). P₀ = 12.7 or 15.0 is possible.

Dims. in mm.

Minimum packing units for capacitors with radial leads

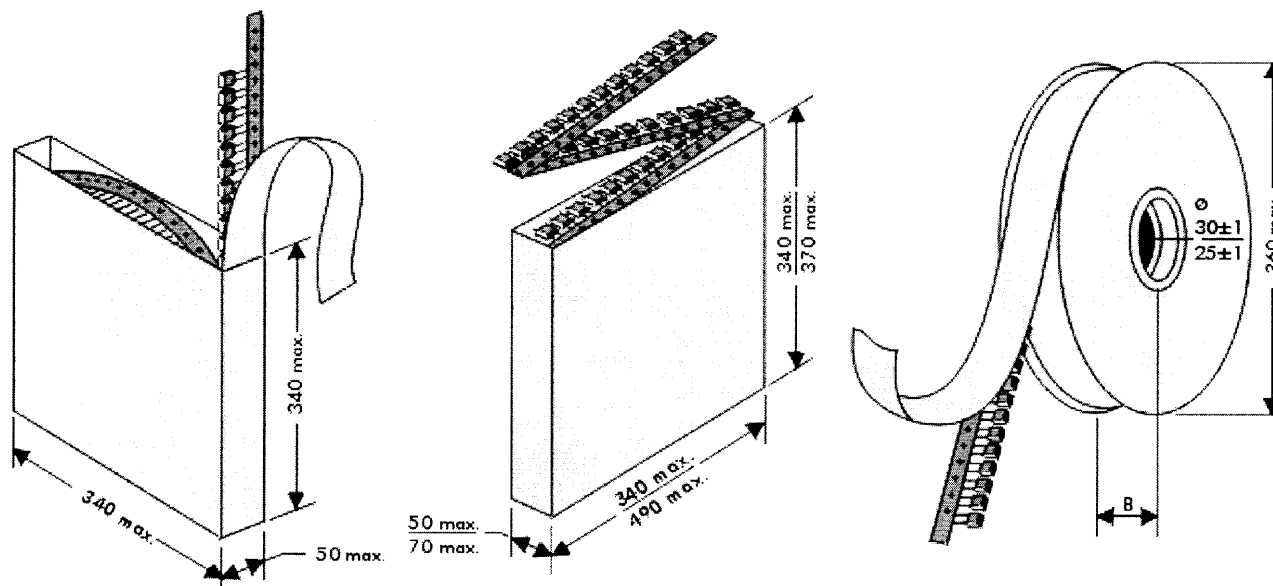
Please clarify customer-specific deviations with the manufacturer.

Types of tape packaging of capacitors for automatic radial insertion

■ ROLL packaging

■ AMMO packaging

■ REEL packaging



REEL $\varnothing 360 \text{ max.}$: B = $\frac{52+2}{58+2}$ or $\varnothing 500 \text{ max.}$: B = $\frac{54+2}{60+2}$ depending on PCM
 $\varnothing 30 \pm 1$ $\frac{66+2}{68+2}$ $\varnothing 25 \pm 1$ and component dimensions

For further details see packing units

Minimum packing units for capacitors with radial leads

PCM	Box size			pieces per packing unit						
				bulk	TPS*	ROLL	REEL		AMMO	
	W	H	L				Ø 360	Ø 500	340x340	490x370
PCM 2.5 mm	2.5	5.5	4.6	1000	-	2200	2500	-	2800	-
	2.5	7	4.6	1000	-	2200	2500	-	2800	-
	3	7.5	4.6	1000	-	2000	2300	-	2300	-
	3.8	8.5	4.6	1000	-	1500	1800	-	1800	-
	2.6	9	4.6	1000	-	1200	1500	-	1500	-
	5.5	10	4.6	1000	-	900	1200	-	1200	-
PCM 5 mm	2.5	5.5	7.2	1000	-	2200	2500	-	2800	-
	2.5	6.5	7.2	1000	-	2200	2500	-	2800	-
	3	7.5	7.2	1000	-	2000	2300	-	2300	-
	3.5	8.5	7.2	1000	-	1600	2000	-	2000	-
	4.5	6	7.2	500	-	1300	1500	-	1500	-
	4.5	8.5	7.2	500	-	1300	1500	-	1500	-
	4.5	9.5	7.2	500	-	1300	1500	-	1500	-
	5	9	7.2	500	-	1100	1400	-	1400	-
	5	10	7.2	500	-	1100	1400	-	1400	-
	5.5	7	7.2	500	-	1000	1200	-	1200	-
	5.5	11.5	7.2	500	-	1000	1200	-	1200	-
	6.5	8	7.2	500	-	800	1000	-	1000	-
	7.2	8.5	7.2	500	-	700	1000	-	1000	-
	7.2	13	7.2	500	-	700	1000	-	1000	-
	8.5	10	7.2	500	-	600	800	-	800	-
	8.5	14	7.2	500	-	600	800	-	800	-
PCM 7.5 mm	2.5	7	10	1000	-	-	2500	4400	2800	-
	3	8.5	10	500	-	-	2200	4300	2300	4150
	4	9	10	500	-	-	1700	3200	1700	3100
	4.5	9.5	10.3	500	-	-	1500	2900	1400	2800
	5	10.5	10.3	500	-	-	1300	2500	1300	-
	5.7	12.5	10.3	300	-	-	1000	2200	1100	-
PCM 10 mm	3	9	13	500	-	-	1100	2200	-	1950
	4	8.5	13.5	1000	-	-	900	1600	-	1450
	4	9	13	300	-	-	900	1600	-	1450
	4	9.5	13	300	-	-	900	1600	-	1450
	5	10	13.5	1000	-	-	700	1300	-	1200
	5	11	13	250	-	-	700	1300	-	1200
	6	12	13	200	-	-	550	1100	-	1000
	6	12.5	13	200	-	-	550	1100	-	1000
PCM 15 mm	4	10	18	250	-	-	700	1600	-	1500
	5	11	18	200	-	-	600	1200	-	1150
	5	13	19	1000	-	-	600	1200	-	1200
	6	12.5	18	250	-	-	500	1000	-	1000
	6	14	19	1000	-	-	500	1000	-	1000
	7	14	18	200	-	-	450	900	-	850
	7	15	19	1000	-	-	450	900	-	850
	8	15	18	200	-	-	400	800	-	740
	8	17	19	500	-	-	400	800	-	740
	9	16	18	150	-	-	350	700	-	650
	10	18	19	500	-	-	300	650	-	590
PCM 22.5 mm	5	14	26.5	-	180	-	-	800	-	770
	6	15	26.5	-	155	-	-	700	-	640
	7	16.5	26.5	-	130	-	-	600	-	550
	8	20	28	-	115	-	-	500	-	480
	8.5	18.5	26.5	-	110	-	-	480	-	450
	10	22	28	-	90	-	-	420	-	380
	10.5	19	26.5	-	85	-	-	400	-	360
	10.5	20.5	26.5	-	85	-	-	400	-	360
	11	21	26.5	-	85	-	-	380	-	350
	12	24	28	-	75	-	-	350	-	310
PCM 27.5 mm	9	19	31.5	-	80	-	-	460/340*	-	420
	11	21	31.5	-	68	-	-	380/280*	-	350
	13	24	31.5	-	56	-	-	300	-	290
	13	25	33	-	56	-	-	-	-	-
	15	26	31.5	-	48	-	-	270	-	250
	15	26	33	-	48	-	-	-	-	-
	17	29	31.5	-	44	-	-	-	-	-
	17	34.5	31.5	-	44	-	-	-	-	-
	20	32	33	-	36	-	-	-	-	-
	20	39.5	31.5	-	36	-	-	-	-	-

PCM 37.5 mm	9	19	41.5	-	60	-	-	-	-	-
	11	22	41.5	-	51	-	-	-	-	-
	13	24	41.5	-	42	-	-	-	-	-
	15	26	41.5	-	36	-	-	-	-	-
	17	29	41.5	-	33	-	-	-	-	-
	19	32	41.5	-	27	-	-	-	-	-
	20	39.5	41.5	-	27	-	-	-	-	-
	24	45.5	41.5	-	21	-	-	-	-	-

* for 2-inch transport pitches

* Tray-Packing-System