

2 Layer single side FCCL

DSflex® - 600

□ Features

- Excellent Folding Endurance
- Excellent Flexural Endurance
- Good Dimensional Stability
- Good bonding strength to bonding sheet/ prepreg

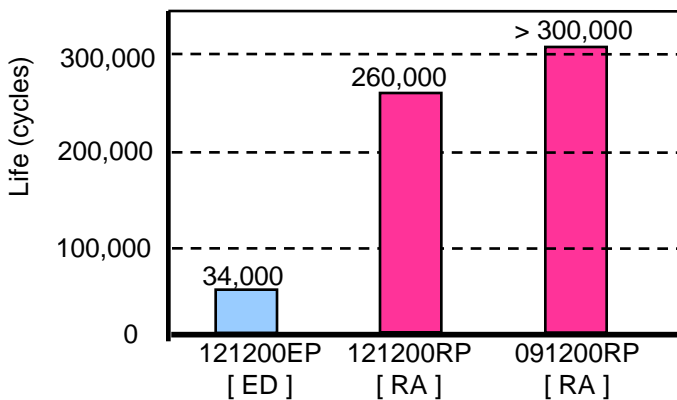


DSflex® 600

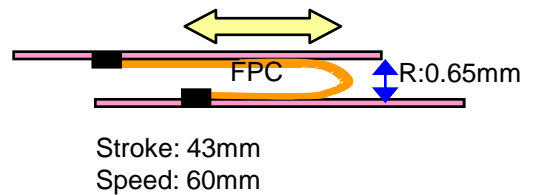
□ Special product for slim slide phone

- High Flexural Endurance - Bends Radius (R = 0.65 mm)
(Super flex RA cu has a best flexural endurance characteristics in case of low radius)

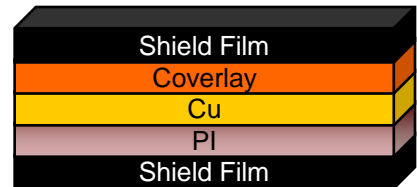
RA vs ED Slide Test (with Shield film)



Sliding Test Method

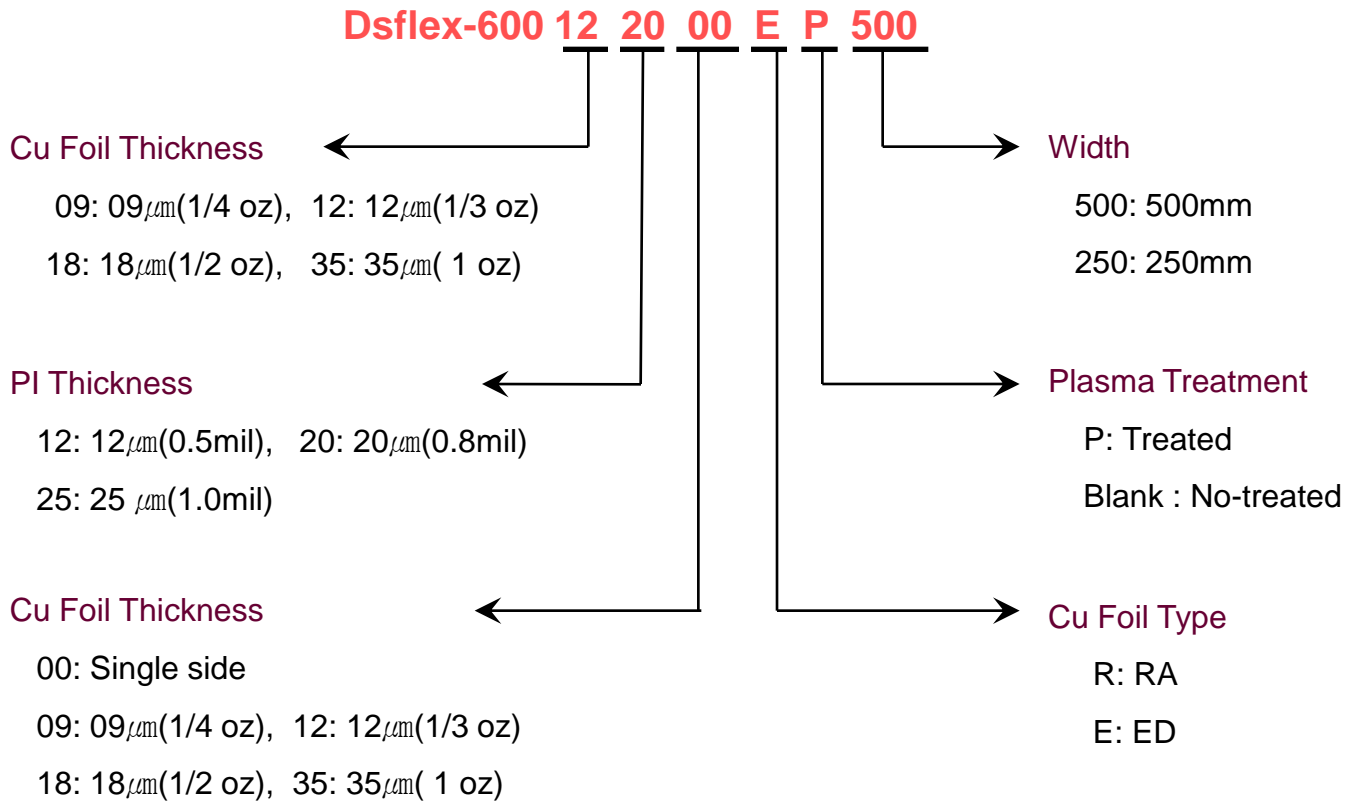


Sample structure



Properties	Unit	DSflex -600			Test method	
		091200R (HA)	121200R (HA)	121200E (EDI)		
Peel Strength	Kgf/cm	0.9	1.0	1.2	IPC-TM-650 2.4.9	
Dimensional Stability					IPC-TM-650 2.2.4	
After etching (MD/TD)	%	Max ± 0.1	Max ± 0.1	Max ± 0.1		
After thermal (MD/TD)	%	Max ± 0.1	Max ± 0.1	Max ± 0.1		
Flexural Endurance	MIT (R=0.38)	times	14,000	10,000	5,000	With C/L (HGCK-A305L)
	Slide(R=0.65)	cycles	> 300,000	260,000	30,000	With C/L (HGCK-A305L) With Shield (PC-5000)
Young's Modulus	Gpa	5.2	5.2	5.2		
Tensile strength	Mpa	210	210	210	IPC-TM-650 2.4.19	
Elongation	%	35	35	35		

□ Rule of product code for 2L FCCL



□ Definition

Adhesive-less 2 layer flexible copper clad can be used in fabrication of flexible printed circuits, offered in roll form with copper on one or both sides. Dsflex-600 is suitable for a wide variety of flexible circuit applications which need high performance, thermal resistance, fine pitch and high reliability.

2 Layer double side FCCL

DSFlex® - 600

□ Features

- Excellent Folding Endurance
- Excellent Flexural Endurance
- Good Dimensional Stability

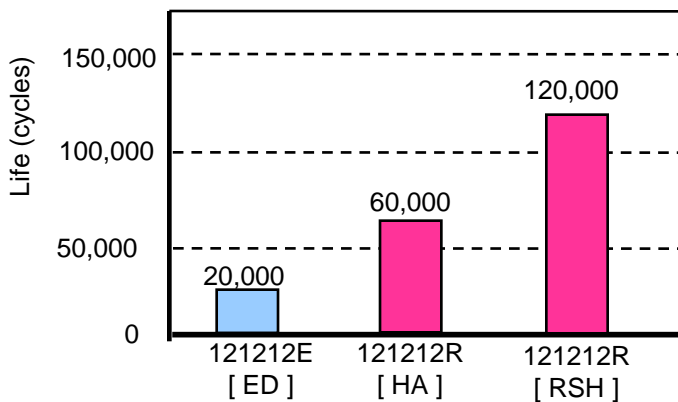


DSflex® 600

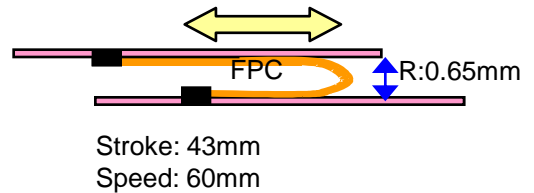
□ Special product for slim slide phone

- High Flexural Endurance - Bends Radius (R = 0.65 mm)
(Super flex RA cu has a best flexural endurance characteristics in case of low radius)

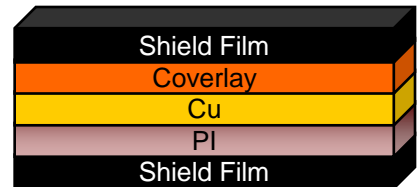
RA vs ED Slide Test (with Shield film)



Sliding Test Method

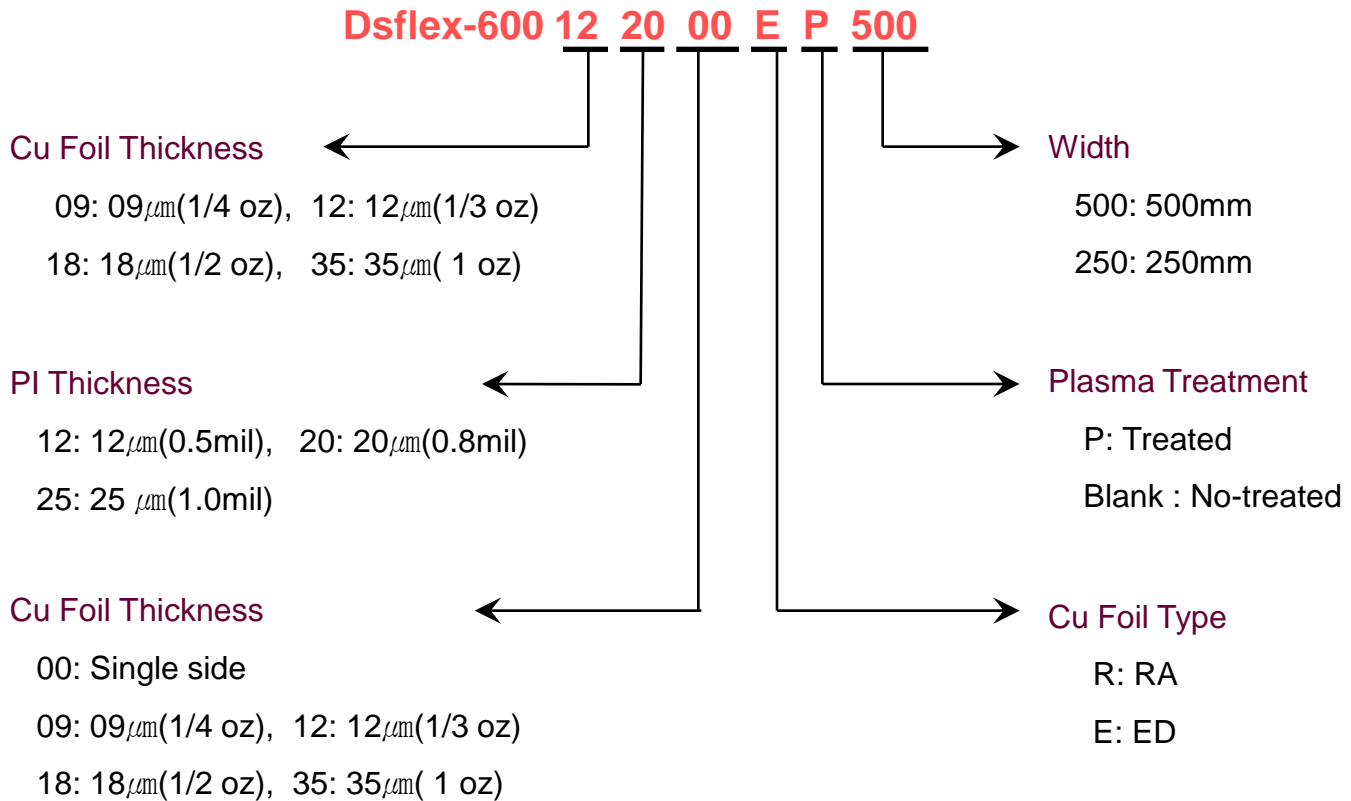


Sample structure



Properties	Unit	DSflex -600		Test method	
		121212R (RSH)	121212E (EDI)		
Peel Strength	Kgf/cm	1.1	1.2	IPC-TM-650 2.4.9	
Dimensional Stability					
After etching (MD/TD)	%	Max \pm 0.1	Max \pm 0.1	IPC-TM-650 2.2.4	
After thermal (MD/TD)		Max \pm 0.1	Max \pm 0.1		
Flexural Endurance	MIT (R=0.38)	times	7,000	6,000	With C/L (HGCK-A305L)
	Slide(R=0.65)	cycles	120,000	20,000	With C/L (HGCK-A305L) With Shield (PC-5000)
Young's Modulus	Gpa	5.3	5.3		
Tensile strength	Mpa	187	187	IPC-TM-650 2.4.19	
Elongation	%	55	55		

□ Rule of product code for 2-Layer FCCL



□ Definition

Adhesive-less 2 layer flexible copper clad can be used in fabrication of flexible printed circuits, offered in roll form with copper on one or both sides. Dsflex-600 is suitable for a wide variety of flexible circuit applications which need high performance, thermal resistance, fine pitch and high reliability.

DS-7408 BS (DF), DS-7409 BS (DF), DS-7402 BS (DF)

(ANSI: FR-4) NO FLOW, DUST-FREE BONDING PREPREG

Features

DS-7408 BS (DF)

- Very low dust in punching and cutting process
- Good adhesion strength

DS-7409 BS (DF)

- High Tg
- Excellent thermal resistance (>300 sec @288°C)
- Low CTE in Z-axis

DS-7402 BS (DF)

- Halogen-free and middle Tg
- Very low dust in punching and cutting process
- Low CTE in Z-axis

General Specification

G/F	Resin Content	Thickness (μm) after press
1015	53 ~ 66%	20 ± 2
1035		50 ± 3
1037		40 ± 3
1067		60 ± 3
1078		80 ± 3
3313		110 ± 5



General Properties

Test Item	Unit	Test Method	DS-7408 BS (DF)	DS-7409 BS (DF)	DS-7402 BS (DF)
Resin Flow	mm	IPC TM-650 2.3.17.2	less than 2.0mm		
Tg	°C	DSC	above 130	above 170	above 150
		TMA	above 120	above 160	above 140
Flammability	-	UL94	V-0	V-0	V-0
Solder Float (288°C)	sec	A	above 120	above 300	above 300
Peel Strength (1 oz Cu)	kgf/cm	A	above 1.4	above 1.4	above 1.4
Peel Strength (PI Base)	kgf/cm	A	above 1.2	above 1.0	above 1.0
Dielectric Constant (1GHz)	-	IPC TM-650 2.5.5.3	3.79	3.92	3.72
Dissipation Factor (1GHz)	-	IPC TM-650 2.5.5.3	0.016	0.016	0.016
Water Absorption	%	E-24/50+D-24/23	less than 0.20		

DS-7408 BS (DF), DS-7409 BS (DF), DS-7402 BS (DF)

(ANSI: FR-4) NO FLOW, DUST-FREE BONDING PREPREG

Prepreg Parameter

DS-7408 BS (DF)

G/F	R/C	Thickness (μm)
1015	53%	25 ±3
1027	54%	30 ±3
1035	57%, 61%	40,45 ±3
1037	61%	45 ±3
1067	66%	65 ±3
1078	66%61%	85 ±3
3313	52%, 56%	110~130 ±5
2116	48%	120 ±5

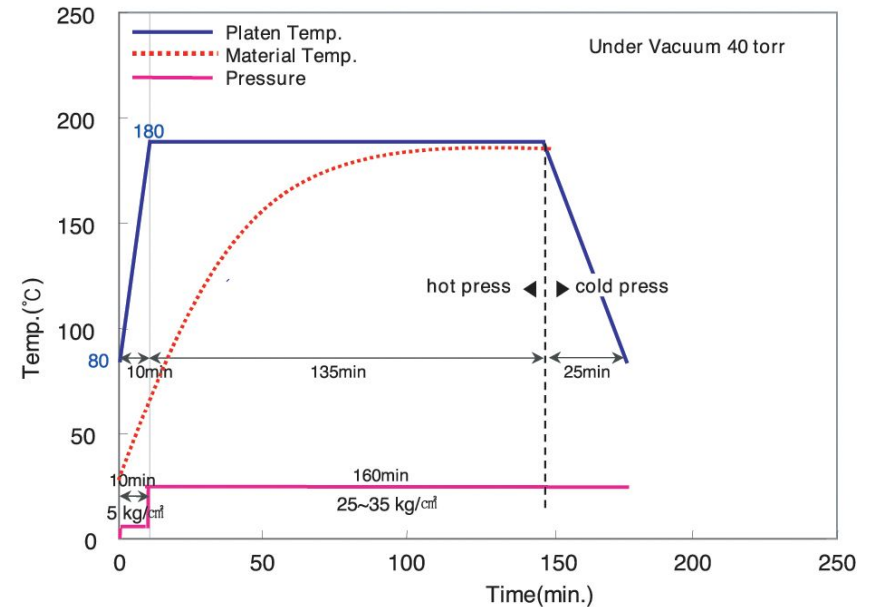
DS-7409 BS (DF)

G/F	R/C	Thickness (μm)
1027	54~60%	25 ±3
1035	61%	45 ±3
1037	61%	40,45 ±3
1067	66%	65 ±3
1078	52%, 54%	75 ±3
1080	65%	80 ±3
3313	52%	110 ±5
2116	53%	150 ±5

DS-7402 BS (DF)

G/F	R/C	Thickness (μm)
1035	62%,65%	45 ±3
1037	58~65%	45 ±3
1067	66%,68%	60 ±3
1078	62%,65%	85 ±3
3313	55%,58%	110 ±5
2116	50%,52%	120 ±5

Recommended Press Cycle



- Material heating rate : 5°C /min
- Curing condition : above 165°C 85min~

DS-7405 (ST), DS-7402 (ST), DS-7209 (ST)

(ANSI: FR-4, CEM-3) STIFFENER

Features

- Flammability (UL 94 V-0)
- Good thermal resistance
- Good punching property

DS-7402 (ST): Halogen-free

General Properties

Test Item	Unit	Test Method	DS-7405 (ST)	DS-7402 (ST)	DS-7209 (ST)
Tg	°C	DSC	135	130	130
CTE Z-axis	ppm/°C	TMA	60	60	55
Surface Resistance	ohm	IPC TM-650 2.5.17	1E13	1E13	1E13
Volume Resistance	ohm-cm	IPC TM-650 2.5.17	1E15	1E15	1E15
Flammability	-	UL 94	V-0	V-0	V-0

Purchasing Information

- **DS-7405 (ST), DS-7402 (ST)** : 0.1 ~ 2.0mm available
- **DS-7209 (ST)** : 0.2 ~ 0.4 mm (Low dust in drilling and punching)
-recommended for COF and FPCB

Standard Size	Tolerance(mm)
1,020 X 1,220mm (40" X 48") 1,020 X 1,020mm (40" X 40")	0 ~ +3