

ShinEtsuMicroSi®

Adhesiveless Products

Single-sided

PROPERTY	UNIT	KN28SR35A	KN28SR18A	KN20SR18A	KN16SR18A	KN28SE12C	KN28SE18D	KN28SE18E	Test Method
Product Composition									
Polyimidel ayer	µm	27	27	19	15	27	27	27	-
Copper Foil	-	1 oz (RA)	1/2oz (RA)	1/2oz (RA)	1/2oz (RA)	1/3oz ED	1/2oz (ED)	1/2oz (HTE)	
No. of sides of foil	-	1	1	1	1	1	1	1	
Thickness	µm	61	45	37	34	39	45	45	-
Peel Strength	N/cm	10.0	8.7	7.8	6.6	10.3	12.3	6.8	JIS C 6471
Resistance to solder heat (x°C x 30seconds)	°C	360<	360<	360<	360<	360<	360<	360<	JIS C 6471
Dimensional Satbility	%	MD -0.06 TD +0.05	MD -0.04 TD +0.02	MD -0.03 TD +0.04	MD -0.05 TD +0.04	MD -0.04 TD +0.03	MD -0.05 TD +0.02	MD 0.00 TD +0.07	IPC FC 241
Flexural Fatigue MIT*	times	MD 180 TD 270	MD 480 TD 510	MD 730 TD 900	MD 1,000 TD 1,080	MD 230 TD 220	MD 160 TD 165	MD 310 TD 330	JIS C 6471
Insulation Resistance	Ω	1.0 x 10 ¹⁴	1.0 x 10 ¹⁴	1.0 x 10 ¹⁴	1.0 x 10 ¹⁴	1.0 x 10 ¹⁴	1.0 x 10 ¹⁴	1.0 x 10 ¹⁴	IPC FC 241
Surface resistance	Ω	1.0 x 10 ¹³	1.0 x 10 ¹³	1.0 x 10 ¹³	1.0 x 10 ¹³	1.0 x 10 ¹³	1.0 x 10 ¹³	1.0 x 10 ¹³	JIS C 6481
Volume resistivity	Ω·cm	1.0 x 10 ¹⁶	1.0 x 10 ¹⁶	1.0 x 10 ¹⁶	1.0 x 10 ¹⁶	1.0 x 10 ¹⁶	1.0 x 10 ¹⁶	1.0 x 10 ¹⁶	JIS C 6481
Dielectric constant (1MHz)	-	3.2	3.2	3.2	2.9	3.2	3.2	3.2	JIS C 6481
Dielectric dissipation factor (1MHz)	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	JIS C 6481
Chemical Resistance** Toluene MEK IPA	-	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	JIS C 6481
Tg	°C	420	420	420	420	420	420	420	DMA method
Flammability UL94 (UL File No./Designation)	-	V-0 (E98177/KNS)	V-0 (E98177/KNS)	V-0 (E98177/KNS)	V-0 (E98177/KNS)	V-0 (E98177/KNS)	V-0 (E98177/KNS)	V-0 (E98177/KNS)	UL 94

* Radius = 0.8mm, Tension = 4.9N in case of KN28S & KN16S, and 2.45N in case of KN16S.

** Dipped for 15 minutes at room temperature

The above figures are typical data, but not assured by us.

Double-sided

PROPERTY	UNIT	KV25DR18J	KV25DR12J	KV25DE18E	KV25DE12C	KV25DE09C	Test Method
Product Composition							
Polyimidelayer	µm	25	25	25	25	25	-
Copper Foil	-	1/2 oz - RA	1/3 oz - RA	1/2 oz - ED	1/3 oz - ED	1/4oz - ED	
No. of sides of foil	-	2	2	2	2	2	
Thickness	µm	59	49	57	48	41	-
Peel Strength	N/cm	12.0	10.0	9.0	10.0	9.4	JIS C 6471
Resistance to solder heat (x°C x 30seconds)	°C	300	300	300	300	300	JIS C 6471
Dimensional Satbility	%	MD -0.09 TD +0.07	MD -0.10 TD +0.06	MD -0.17 TD +0.13	MD -0.16 TD +0.14	MD -0.17 TD +0.12	IPC FC 241
Flexural Fatigue MIT*	times	MD 310 TD 330	MD 320 TD 340	MD 225 TD 225	MD 160 TD 160	MD 140 TD 160	JIS C 6471
Insulation Resistance	Ω	10 ¹³	10 ¹³	10 ¹³	10 ¹³	10 ¹³	IPC FC 241
Surface resistance	Ω	10 ¹²	10 ¹²	10 ¹²	10 ¹²	10 ¹²	JIS C 6481
Volume resistivity	Ω·cm	10 ¹⁶	10 ¹⁶	10 ¹⁶	10 ¹⁶	10 ¹⁶	JIS C 6481
Dielectric constant (1MHz)	-	3.2	3.2	3.2	3.2	3.2	JIS C 6481
Dielectric dissipation factor (1MHz)	-	10 ⁻²	10 ⁻²	10 ⁻²	10 ⁻²	10 ⁻²	JIS C 6481
Chemical Resistance** Toluene MEK IPA	-	Good	Good	Good	Good	Good	JIS C 6481
Tg	°C	255	255	255	255	255	DMA method
Flammability UL94 (UL File No./Designation)	-	V-0 (E98177/KVT)	V-0 (E98177/KVT)	V-0 (E98177/KVT)	V-0 (E98177/KVT)	Equivalent to V-0	UL 94

* Radius = 0.8mm, Tension = 4.9N

** Dipped for 15 minutes at room temperature

The above figures are typical data, but not assured by us.