

Panasonic Industrial Devices Materials Europe GmbH

Specification Sheet

Specification sheet # IPC-4101C/127
 Reinforcement 1: Woven E-Glass 2: N/A
 Resin System: Primary: Epoxy
 Secondary 1: Multifunctional Epoxy Secondary 2: N/A
 Flam retardant mechanism Phosphorous Minimum UL94 Requirement: V1
 Fillers: Inorganic fillers
 ID Reverence: UL/ANSI: FR-4 Mil-S-13949: N/A
 ANSI: FR4 / 127
 secondary: 92/93/94/95/122/125/128
 110°C minimum

Glass transition (TG): 110°C minimum

Product name	Laminate: R-1566 / R-1566W	Prepreg: R-1551 / R-1551W
UL - Designation	R-1566	R-1551

1. Laminate		IPC Specification < 0, 5mm	IPC Specification ≥ 0, 5mm	Units	Typical Values < 0, 5mm	Typical Values ≥ 0, 5mm	Methode IPC-TM-650 (or as noted)
Physical Property							
Peel strength, minimum A: Low profile and very low profile copper foil, all copper foils > 18µm B: Standard profile copper foil 1. after thermal stress 2. at 125°C 3. after process solutions	18µm	0,7	0,7	N/mm	-	-	2.4.8 2.4.8.2 2.4.8.3
	35µm	-	-		-	-	
	1. after thermal stress	0,8	1,05		1,5	1,6	
	2. at 125°C	0,7	0,7		1,4	1,5	
	3. after process solutions	0,55	0,8		1,5	1,6	
Moisture Absorptions, maximum		-	0,8	%	-	0,11	2.6.2.1
Flexural strength, minimum	A: Length direction	-	415	N/mm ²	-	595	2.4.4
	B: Cross direction	-	345		-	412	
Flammability (Laminate and prepreg as laminated)		V1 min.	V1 min	Rating	V0	V0	UL 94
CTE (pre / post Tg)							
Z		-	-	ppm/°C	-	40/180	2.4.24
X		-	-		-	13	
Y		-	-		-	15	
T260 (TMA)	copper removed	-	-	minutes	-	>120	2.4.24.1
T288 / T300 (TMA)	copper removed	-	-	minutes	-	22 / NA	2.4.24.1
Density		-	-	g/cm ³	2,0	2,0	
Decomposition Temperature		-	-	°C	-	350	TGA
Electrical Property							
Volume resistivity, minimum	A: 96 / 35 / 90	1,0 E+06	-	MΩm-cm	5 E+07	-	2.5.17.1
	B: after moisture resistance	-	1,0 E+06		-	1,0 E+07	
	C: at elevated temp. E-24/125	1,0 E+03	1,0 E+03		5,0 E+06	5,0 E+06	
Surface resistivity, minimum	A: 96 / 35 / 90	1,0 E+04	-	MΩm	5,0 E+08	-	2.5.17.1
	B: after moisture resistance	-	1,0 E+04		-	N/A	
	C: at elevated temp. E-24/125	1,0 E+03	1,0 E+03		N/A	N/A	
Dielectric breakdown, minimum		-	40	kV	-	> 50	2.5.6
Permittivity, maximum (laminate and prepreg as laminated)	at 1 MHz	5,4	5,4	-	N/A	4,95	2.5.5.2/3/9
	at 1 GHz	-	-	-	N/A	4,7	
Loss tangent, maximum (laminate and prepreg as laminated)	at 1 MHz	0,035	0,035	-	0,014	0,014	2.5.5.2/3/9
	at 1 GHz	-	-	-	0,011	0,011	
Arc resistance, minimum		60	60	sec	NI	NI	2.5.1
Electrical strength, minimum / laminate and prepreg as laminated		30	-	kV/mm	49	-	2.5.6.2
CTI (comparative tracking index)		-	-	V	-	500	IEC 112
CAF resistance		-	AABUS	pass/fail	-	pass	2.6.25
Thermal Property							
Thermal stress 10 sec at 288°C, minimum	A: unetched	Pass	Pass	Rating	Pass	Pass	2.4.13.1
	B: etched	Pass	Pass		Pass	Pass	
Tg by DSC (TMA / DMA)		110 min.	110min	°C	152,7	153(145/180)	2.4.25
Thermal conductivity		-	-	W/mK	-	0,62	Laser flash
Specific heat		-	-	J/kgK	-	950	DSC
2. Prepreg Property		IPC-Specification		Units	Typical Values		
Shelf life, minimum (from date of delivery)	A: Condition <20°C, rel. H. <50%	90		Days	60		AABUS
	B: Condition < 5°C	180			180		
Volatile content, maximum		0,75		%	meets requirements		2.3.19
Prepreg parameters		-		-	AABUS		AABUS

AABUS= As agreed between user and supplier

Note:

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