

BASE MATERIALS AND THEIR SPECIFIC KEY DATA

Charcteristics	FR-4-86	VT-42	DE104	MC-100MS	VT-42C	FR-4-86-Py	NP-155F	NP-175F	IS 410	TU-722	IS 400	TU-668	VT-481	R-1755M	IS 420	PCL 370 HR	TU-768	VT-47	R-1755V	NPG	NPG-170	R-1566	TU-742 HF	VT-441	VT-447	I-Tera	ThunderClad 3	Megtron 6R-5775	RO4003	RO4350B
Manufacturer	N	V	I	P	V	N	N	N	I	T	I	T	V	P	I	I	T	V	P	N	N	P	T	V	V	I	T	P		RO
IPC classes	21	21	21	21	0	0	24/99/101	26/99/126	24	21/24/97/98/99/101	21/24/97/101	24/98/99/101	21/24/97/98/99/101	21/24/97/98/99/101	21/24/26/98/99/101	21/24/26/98/99/101	21/24/26/28/98/99/101	21/24/26/97/98/99/101	21/24/26/97/98/99/101	92/94	94	127/92/93/122	127/128	94	94	102/91	102/91	102/91	102/91	102/91
Tg (DSC) in °C	140	140	130	130	130	140	150	170	170	175	150	150	150	150	170	170	180	170	170	150	170	150	155	150	180	200	220	210	-	-
Continuous load °C approx.	-	-	120	-	-	-	-	-	155	-	135	-	-	-	155	165	-	-	-	-	-	-	-	-	-	130	130	130	-	-
Td 5 % (TGA) in °C	310	310	310	310	310	310	350	350	360	330	330	340	345	355	340	340	350	345	340	345	350	330	370	340	370	360	390	410	-	-
T 260 (minimum) ≥	15	20	15	15	25	15	60	60	60	30	60	60	75	120	60	60	60	60	65	60	60	60	60	60	60	60	60	120	-	-
T 288 (minimum) ≥	2	2	2	2	2	2	30	30	30	5	5	15	25	30	15	10	15	20	15	20	20	30	60	20	30	60	60	120	-	-
CTE z (ppm/k) – values are maximum	70	50	70	70	40	70	55	55	55	50	40	45	40	40	40	45	40	35	45	50	50	40	40	38	40	2.8 %	2.7 %	2.7 %	-	-
Cycles -40 °C to +125 °C values "more than"	500	-	-	-	-	-	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	-	500	500	-	-	-	-	-
Cycles -40 °C to +140 °C values "more than" (only filled for over 1,000, otherwise –)	-	-	-	-	-	-	-	-	-	-	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	-	-	-	-	-	-	-	-
CTI minimum value	175	175	175	175	600	600	175	175	175	175	175	175	175	175	175	175	175	175	175	250	250	500	175	175	175	-	-	-	-	-
CAF resistant	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	-	x	-	-	-
High-frequency material	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x
Dk @ 10 GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.38 o. 3.45	3.4	3.61	3.33 – 3.43	3.43 – 3.53
Df @ 10 GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0036	0.0025	0.0040	0.0037	0.0037



Standard FR4
High Tg material
Filled material



Halogen-free material
High-frequency material

I = Isola
P = Panasonic

N = NanYa (Taiwan)
T = TUC (Taiwan)
V = Ventec (China)
RO = Rogers (USA)

IMS materials:
W/mk: 0.3 / 1.3 / 1.6 / 2.0 / 2.2
Aluminium thicknesses: 0.5 / 0.8 / 1.0 / 1.5 / 2.0 / 3.0 mm
Dielectric: 75, 100, 125, 150 µm