PSA 信昌電子陶瓷股份有限公司
PROSPERITY DIELECTRICS CO., LTD.

Ceramic Dielectric Materials

MAIN PRODUCTS

- Barium Titanate
- MLCC Formulations
- Microwave Applications
- Low Temperature Co-fire Ceramic
- Disc Type Dry Pressing Process
- Disc Type Wet Extrusion Process

Barium Titanate
鈦酸鋇基材

Features	Narrow particle size distribution 粒度分布窄
	Excellent sinterability 燒結特性佳
	Relatively inert to manufacturing process 製程條件寬
	Excellent workability for forming 成型特性優
	Consistent lot-to-lot uniformity 批間穩定好

Barium Titanate
鈦酸鋇基材

Designation	BaO/TiO_2	Purity	Impurities(Max·%)				SEM Size (D_{50}.μm)
	Mole ratio	Min.%	SrO	Nb_2O_5	Al_2O_3	SiO_2	
BTP-B	1.005	98.0	1.50	0.15	0.20	0.20	1.0 - 1.5
BTP-M	1.000	98.0	1.50	0.15	0.20	0.20	1.0 - 1.5
BTP-T	0.996	98.0	1.50	0.15	0.20	0.20	1.0 - 1.5
BTP-HB	1.003	99.5	0.05	0.01	0.10	0.10	0.8 - 1.0
BTP-HM	1.000	99.5	0.05	0.01	0.10	0.10	0.8 - 1.0
BTP-HT	0.996	99.5	0.05	0.01	0.10	0.10	0.8 - 1.0
BTP-2H	0.996	99.5	0.05	0.01	0.10	0.05	0.8 - 1.0
BTP-4H	0.996	99.5	0.05	0.01	0.10	0.05	0.5 - 0.65
BTP-6H	0.996	99.5	0.05	0.01	0.10	0.05	0.35 - 0.50
BTP-7H	0.996	99.8	0.05	0.00	0.05	0.05	0.20 - 0.30
BTP-8H	0.996	99.8	0.05	0.00	0.05	0.05	0.15 - 0.25

MLCC Formulations
積層電容瓷粉

Features	Full series without Cd and Pb free (All Green) 全系列為綠色產品
	Narrow particles size distribution 粒度分布窄
	Broad firing temperature range 燒結溫度區間大
	Lot to lot consistency 批間穩定性佳
	High performance 高效能

MLCC Formulations
積層電容瓷粉

PME- NP0 Series

Designation	Electric Properties			Electrode compatible	Reference Firing Temperature,℃
	K value	D.F.	TCC		
CG620	62	≦0.1%	COG	Pd30 Ag70	1125℃
CG880	80	≦0.1%	COG	Pd30 Ag70	1125℃
CG101G	100	≦0.1%	COG	Pd30 Ag70	1140℃
UCG290	29	≦0.05%	COG	Pd10 Ag90	980℃
UCG400	40	≦0.1%	COG	Pd10 Ag90	980℃
UCG980V	99	≦0.1%	COG	Pd10 Ag90	980℃
ECG140	14	≦0.1%	COG	Pd 5 Ag95	930℃
ECG840	80	≦0.1%	COG	Pd 5 Ag95	925℃
ECG970	95	≦0.1%	COG	Pd 5 Ag95	925℃
TCG350	30	≦0.1%	COG	Pd 3 Ag97 ~ 100Ag	875℃
TCG820	78	≦0.1%	COG	Pd 3 Ag97 ~ 100Ag	875℃

MLCC Formulations
積層電容瓷粉

PME- X7R X8R Series

Designation	Electric Properties			Electrode compatible	Reference Firing Temperature,℃
	K value	D.F.	TCC		
LF-X7R222	2400	≦1%	X7R	Pd15 Ag85	1060℃
LF-X8R202	2000	≦ 1%	X8R	Pd20 Ag80	1090℃
LF-X7R202	2000	≦ 1%	X7R/BX	Pd20 Ag80	1120℃
LF-X7R282F	2300	≦2.5%	X7R	Pd30 Ag70	1140℃
LF-X7R302	2800	≦2.5%	X7R	Pd30 Ag70	1140℃

MLCC Formulations
積層電容瓷粉

BME Series

Designation	Electric Properties			Electrode compatible	Reference Firing Temperature,℃
	K value	D.F.	TCC		
BME-Y5V	15000	≦7.0%	Y5V	Ni	1250℃
BME-X7R	2500	≦3.5%	X7R	Ni	1260~1280℃
BME-X7R	2500	≦3.5%	X7R	Ni	1280~1320℃
BME-X7R	2900	≦3.5%	X7R	Ni	1260~1300℃
BME-X7R	3400	≦3.5%	X7R	Ni	1320℃
BME-NPO	31	≦0.1%	COG	Ni	1300℃

Microwave Applications
微波瓷粉

Features	Specific tuning capability of ceramic characteristics 依設計需求可調整材料特性
	A wide variety of K value 多種介電常數組成成份
	High Q value 高品質係數
	Stable temperature coefficient 穩定的溫度系數
Application	Dielectric resonator/filter 陶瓷共振器、濾波器
	Patch Antenna 陶瓷天線
	Substrate for MIC 微波積體回路用基板
	Single layered capacitor for HF 圓板型高頻電容器

Microwave Applications
微波瓷粉

Designation	ε_r*	τ_f (ppm/℃)	Q × f (1GHz)	I.R. (Ω-cm)	ρs (g/c.c)	Reference Firing Temperature,℃
NPO-10M	~ 8	-15~+15	>12,000	$>1\times10^{13}$	3.2	1355℃
NPO-13M	~13	-15~+15	>40,000	$>1\times10^{13}$	3.4	1355℃
NPO-20MS	~20	-10~+10	>50,000	$>1\times10^{13}$	3.7	1365℃
NPO-37M	~36	-10~+10	>40,000	$>1\times10^{13}$	4.5	1180℃
NPO-40M	~38	-10~+10	>50,000	$>1\times10^{13}$	4.5	1375℃
NPO-45M	~45	-10~+10	>15,000	$>1\times10^{13}$	5.0	1335℃
NPO-45MF	~47	-10~+10	>15,000	$>1\times10^{13}$	4.7	1300℃
NPO-45Q	~45	-10~+10	>50,000	$>1\times10^{13}$	4.6	1500℃
NPO-65M	~65	-10~+10	>10,000	$>1\times10^{13}$	5.2	1305℃
NPO-90M	~87	-10~+10	>5,500	$>1\times10^{13}$	5.5	1295℃
NPO-90ML	~95	-10~+10	>5,500	$>1\times10^{13}$	5.6	1290℃
NPO-100M	~100	-20~+20	>4,000	$>1\times10^{13}$	5.6	1325℃
NPO-130M	~130	-30~+30	>1,500	$>1\times10^{13}$	5.8	1255℃

Low Temperature Co-fire Ceramic
低温共燒陶瓷粉

Features	Ultra-Low tangent loss at high frequency 高頻低切損耗
	100% Ag inner Electrode Compatibility 純銀電極相容
	Excellent co-fired behavior with Ag electrode (non-diffusion & non –warpage) 與銀電極具有出色的共燒性能
	Excellent Insulation Resistance after Plating 良好的絕緣電阻
	High Flexural Strength 高機械強度

Low Temperature Co-fire Ceramic
低温共燒陶瓷粉

Glasses System

Designation	Reference Firing Temperature	K value (1MHz)	DF (%)	Sintering density (g/cm^3)	Radial Shrinkage (%)
PL-4.7	900℃ Keep 30 min	4.70±0.20	<0.10	2.25±0.20	13.00±1.00
PL-6	820-880℃ Keep 30 min	6.30±0.20	<0.10	2.80±0.20	11.00±1.00
PL-7		7.00±0.20	<0.10	2.80±0.20	11.00±1.00
PL-8		7.90±0.20	<.0.0	3.00±0.20	13.00±1.00
PL-8-B		7.90±0.20	<0.10	3.00±0.20	13.00±1.00

Glasses System material is for RF inductor application.

Low Temperature Co-fire Ceramic
低温共燒陶瓷粉

Ceramics System

Designation	Reference Firing Temperature	K value (1MHz)	DF (%)	Sintering density (g/cm^3)	Radial Shrinkage (%)
ER-5	850~870℃ Keep 30 min	5.00±2.00	<0.05	3.00±0.20	15.00±2.00
ER-12	890℃ Keep 120 min	12.00±2.00	<0.05	4.00±0.20	15.00±2.00
ER-21		20.00±2.00	<0.05	4.00±0.20	15.00±2.00
ER-10	900℃ Keep 240 min	10.00±2.00	<0.05	5.80±0.20	15.00±2.00
ER-20		19.00±2.00	<0.05	5.80±0.20	15.00±2.00
ER-40		38.00±2.00	<0.05	5.80±0.20	15.00±2.00

Dielectric powder for Dry Process
乾式加壓成型用

Type	Class I - Temperature Compensation Type (第一類 溫度補償型)
	Class II -High-K Typ (第二類 高介電常數型)

Dielectric powder for Dry Process
乾式加壓成型用

Class I - Temperature Compensation Type

Designation	Electric Properties			Reference Code		Reference Firing Temperature, °C	Addition of Low Melt Additive
	K-value at 1MHz	Q Factor Min.	I.R. Min. Ω	JIS	EIA		
NPO-20B	23±1	3000	10^5	CG	COG	1330±10	-
NPO-40B	48.0±1.5	3000	10^5	CG	COG	1210±10	-
NPO-110B	100±10	3000	10^5	CG	COG	1270±10	O
SL-330B	325±25	2000	10^5	SL	-	1360±10	O
SL-290B	285±25	3000	10^5	SL	-	1360±20	O

Dielectric powder for Dry Process
乾式加壓成型用

Class II - High-K Type

Designation	Electric Properties			Reference Code		Reference Firing Temperature, °C	Addition of Low Melt Additive
	K-value at 25°C	D.F. Max.%	I.R. Min. Ω	JIS	EIA		
Z5U103B	10000±1000	0.6	10^4	ZE	Z5U	1360±10	-
Z5V213B	20000±3000	0.7	10^4	ZF	Z5V	1380±10	-
Y5U852B	11000±1000	0.7	10^4	YE	Y5U	1390±20	-
Y5V163B	17000±1000	0.6	10^4	YF	Y5V	1360±20	-
Y5E162B	1675±125	0.65	10^4	YA	Y5E	1255±10	O
Y5P302B	3000±300	1.0	10^4	YB	Y5P	1375±10	O
Y5P412B	4000±500	1.5	10^4	YB	Y5P	1390±10	O
X7R342B	3600±300	1.5	10^4	-	X7R	1360±10	O

Dielectric powder for Wet Process
濕式擠出成型用

Type	Class I - Temperature Compensation Type (第一類 溫度補償型)
	Class II – High-K Typ (第二類 高介電常數型)
	Semiconductive Type (第三類高介電常數型)

Dielectric powder for Wet Process
濕式擠出成型用

Class I - Temperature Compensation Type

Designation	Electric Properties			Reference Code		Reference Firing Temperature, ℃	Addition of Low Melt Additive
	K-value at 1MHz	Q Factor Min.	I.R. Min. MΩ	JIS	EIA		
NPO-10	10.0±1.0	2000	10^5	CH	COH	1320±10	-
NPO-13	13.0±1.0	3000	10^5	CG	COG	1330±10	-
NPO-20	23.0±1.0	3000	10^5	CG	COG	1330±10	-
NPO-40	44.0±1.5	3000	10^5	CG	COG	1210±10	-
NPO-110	107±3	3000	10^5	CG	COG	1270±10	O
N750	100±15	2000	10^5	UH	U2H	1230±10	-
SL-330	325±15	2000	10^5	SL	-	1355±10	O

Dielectric powder for Wet Process
濕式擠出成型用

Class II - High-K Type

Designation	Electric Properties			Reference Code		Reference Firing Temperature, ℃	Addition of Low Melt Additive
	K-value at 25℃	D.F. Max.%	I.R. Min. Ω	JIS	EIA		
Z5U	11500±1500	1.0	10^4	ZE	Z5U	1360±10	-
Z5V	20000±3000	1.0	10^4	ZF	Z5V	1380±10	-
Y5U	8500±850	1.0	10^4	YE	Y5U	1330±10	-
Y5E	1710±100	1.0	10^4	YA	Y5E	1255±10	O
Y5P	3650±200	1.5	10^4	YB	Y5P	1390±10	O
Y5V	15500±2000	1.0	10^4	YF	Y5V	1380±10	-
X7R	3300±330	2.0	10^4		X7R	1355±10	O

Dielectric powder for Wet Process
濕式擠出成型用

Class III - Semi-conductive Type

Designation	Electric Properties			Reference Code		Reference Firing Temperature, ℃	Addition of Low Melt Additive
	K-value at 25℃	D.F. Max.%	I.R. Min. Ω	JIS	EIA		
SBL— Y5V	12000±1000	0.45	10^4	YF	Y5V	1300±10	-
SBL— Y5U	8500±500	0.50	10^4	YE	Y5U	1325±10	-