

Piezoelectric ceramic of material list

No.	Performance Parameter	符号	指标									允许公差
			P-33	P-41	P-42	P-44	P-51	P-52	P-53	P-61	P-81	
1	机电耦合系数 Electromechanical coupling coefficient	K_p	0.60	0.56	0.58	0.60	0.65	0.64	0.68	0.53	0.53	±6.0%
		K_{31}	0.36	0.33	0.34	0.36	0.38	0.37	0.33	0.30	0.31	
		K_{33}	0.70	0.66	0.67	0.70	0.74	0.76	0.76		0.63	
		K_{15}	0.70	0.66	0.67	0.70	0.72	0.75	0.76	0.61	0.66	
		K_t	0.47	0.48	0.48	0.48	0.50	0.49	0.55	0.47	0.47	
2	自由相对电容率 Free relative permittivity	ϵ_{r3}^T	1725	1050	1275	1350	2100	3250	3000	1100	1025	±12.5%
		ϵ_{r1}^T	1725	1450	1700	1900	2400	3500	4100	1100	1400	
3	介质损耗 Dielectric loss	$\text{tg}\delta$	0.020	0.005	0.006	0.005	0.020	0.020	0.020	0.008	0.004	≤
4	弹性柔顺常数 ($\times 10^{-12} \text{m}^2/\text{N}$) Soft elastic constants	S_{11}^E	15	12.0	11.5	13	15	15.5	15		11.0	±10%
		S_{33}^D	9.0	8.5	8.0	8.5	9.0	9.0	8.8		8.5	
		SD	25	21.0	21.0	21.5	22.0	23.0	22.0		21.0	

		55										
5	压电应变常数 ($\times 10^{-12}\text{m/v}$ 或 C/N) Piezoelectric strain constants	d_{31}	160	-110	-130	-150	-210	-260	-270		-100	±12.5%
		d_{33}	390	250	290	320	450	575	590		225	
		d_{15}	480	460	500	530	710	950	1050		450	
6	机械品质因素 Mechanical quality factor	Q_m	75	500	500	400	70	65	65	800	800	≥
7	频率常数 (Hz·m) Frequency constant	N_d	1950	2250	2200	2200	2000	1940	1950	2350	2300	±5%
		N_1	1470	1650	1700	1600	1450	1450	1480	1700	1700	
		N_3	1880	1950	2050	2000	1900	1900	1900		1960	
		N_5	1130	1230	1230	1230	1200	1200	1200	1300	1230	
		N_t	2250	2270	2300	2300	2250	2300	2300	2300	2280	
8	声速 (m/s) velocity	V_t	3000	3460	3500	3300	3000	3010	3040		3500	±5%
		V_1	2940	3300	3400	3200	2900	2900	2900		3400	
		V_3	3760	3900	4100	4000	3800	3800	3800		3920	
		V_5	2260	2460	2460	2460	2400	2400	2400		2460	
		V_t	4500	4540	4600	4600	4500	4600	4700		4560	
No.	性能参数名称	符号	指 标									允许

	Performance parameter name		P-33	P-41	P-42	P-44	P-51	P-52	P-53	P-61	P-81	公差
10	居里温度(°C) Curie temperature	T_c	335	310	300	300	260	180	200	320	300	\geq
11	十倍时间变化率 (%) Ten times the time rate	A_{Nd}	0.20	1.3	1.3	1.2	0.35	0.35	1.3	0.1	1.3	
		A_{Kp}	-0.25	-2.5	-2.0	-1.8	-0.4	-0.25	-1.7	0.5	-2.0	
		A_ϵ	-1.5	-4.5	-4.5	-4.0	-1.5	-2.0	-3.8	0.8	-4.0	
12	温度相对变化率(%)-10°C-50°C基准 25°C Temperature variation	$\Delta Nd/N$	1.0	1.0	1.5	1.0	1.5	2.0	2.0	0.35	1.5	
		$\Delta \epsilon/\epsilon$	15	9.5	9.5	9.0	20	40	40		9.0	
13	强场介电性能 T=25°C E=400V Strong field of dielectric properties	$tg\delta$		0.04	0.04	0.04					0.01	\leq
		$\Delta \epsilon/\epsilon$		0.18	0.20	0.17					0.06	\leq

Note: 1, the performance parameters except watch Curie temperature and density, after ten days for the polarization of the measured values