

Typical value of piezoelectric ceramic materials performance

Lead free piezo material BaTiO3			Lead-free Material
Properties			BaTiO3
Dielectric Constant	ϵ_{r3}^T		1260
Coupling factor	K_p		0.34
	K_{31}		0.196
	K_{33}		0.43
	K_t		0.32
Piezoelectric coefficient	d_{31}	10^{-12}m/v	-60
	d_{33}	10^{-12}m/v	160
	g_{31}	10^{-3}vm/n	-5.4
	g_{33}	10^{-3}vm/n	14.3
Frequency coefficients	N_p		3180
	N_1		2280
	N_3		
	N_t		2675
Elastic compliance coefficient	S_{11}^e	$10^{-12} \text{m}^2/\text{n}$	8.4
Machanical quality factor	Q_m		1200
Dielectric loss factor	$T_g \delta$	%	0.5
Density	ρ	g/cm^3	5.6
Curie Temperature	T_c	$^{\circ}\text{C}$	115
Young's modulus	Y_{11}^E	$<10^9 \text{N/m}^3$	119
Poison Ratio			0.33