



## TF2400

### PZT thick film based on Ferroperm Pz24

Pz24 is a hard PZT material with very low dielectric constant, a very low dielectric loss, and high piezoelectric voltage constant. The low dielectric constant of this material can simplify the driving electronics for transducers. It is therefore for example a more sensitive alternative to Lead Titanate for single element medical transducers. Because of its high voltage constant, Pz24 has also gained popularity in accelerometer special applications.

The material is highly compatible with thick film technology and the properties are almost fully conserved in the change from bulk to thick film. The change in properties is mainly attributed to increased porosity in the thick film compared to the bulk material.

Typical applications are:

- High frequency medical imaging
- Miniaturised triaxial accelerometers
- Integrated miniaturised phased array ultrasound scanners

Main characteristics of TF2400			
	Symbol	Unit	TF2400
<b>Electrical properties</b>			
Relative dielectric constant at 1 kHz	$K_{33}^T$		320
Dielectric dissipation factor at 1 kHz	$\tan \delta$	$10^{-3}$	0.8
<b>Electromechanical properties</b>			
Coupling coefficients	$k_p$		27
	$k_t$		50
Piezoelectric charge coefficients	$d_{33}$	pC/N	150
	$d_{31}$	pC/N	-35
Piezoelectric voltage coefficients	$g_{33}$	$10^{-3}$ Vm/N	53
	$g_{31}$		-13
<b>Mechanical properties</b>			
Porosity	$p$		0.18
Mechanical Quality Factor	$Q_{m,t}$		100