

## Tcera material datasheet

			TP53	TP56	TP5L	TP82
Description			General purpose soft material		Low sintering temp.	Hard material
Equivalent to ~			PZT-5H	PZT-5H		PZT-4
			LQ-S2	LQ-S1		HQ3/MQ
1	Sintering Temp.	°C	1250	1270	950	1250
2	$\epsilon_{33}/\epsilon_0$	-	2000	5600	3800	1250
3	Kp	%	68	66	66	60
4	K31*	%	-	36	-	-
5	S11E*	$10^{-12} \text{m}^2/\text{N}$	-	16.6	-	-
6	d31*	$-10^{-12} \text{m}/\text{V}$	-	310	-	-
7	d33	$10^{-12} \text{m}/\text{V}$	550	930	700	300
8	d15	$10^{-12} \text{m}/\text{V}$	800	-	-	-
9	$\sigma$	-	0.32	0.32	0.32	0.3
10	Qm	-	90	70	120	1800
11	Tan $\delta$	%	2	2	2	0.5
12	Tc	°C	295	130	130	300
13	$\rho$	$\text{g}/\text{cm}^3$	7.7	7.7	7.7	7.7
<b>Application</b>						
General Actuator/Bender				★		
Speaker					★	
Ultrasonic			★			★
Parts Feeder						★
Energy Harvesting			★			

D33 test specimen : R=13mm, T=0.5mm

D31 test specimen : L\*W\*T = 12\*3\*0.8mm