LGS

$La_3Ga_5SiO_{14}$

DESCRIPTION

LGS can be used to fabricate piezoelectric and electro-optical devices. It has high temperature piezoelectric properties. The electromechanical coupling coefficient is 3 times of quartz, and the phase transition temperature is high (from room temperature to melting point 1470°C). The use temperature is up to 900. It is available for manufacturing SAW, BAW, high temperature sensors and high power, high repetition rate electro-optic Q-switches.

FEATURES

- High thermal stability
- Low equivalent series resistance
- The electromechanical coupling coefficient is 3-4 times larger than that of quartz

APPLICATIONS

- SAW device
- BAW device
- Sensor

PARAMETERS

Property	Value
Crystal structure	Trigeminal system
Point cloud	32
Space group	P321
Lattice constant(Å)	a=b=0.8162, c=0.5087
Melting Point	1470°C
Density(g/cm3)	5.75
Mohs hardness (Mohs)	6.5
Dielectric constant	$\varepsilon_{11}/\varepsilon_0$=18.27 $\varepsilon_{33}/\varepsilon_0$=56.26
Piezoelectric strain constant (10-12)C/N	d_{11}=6.3 d_{14}=-5.4
Phase velocity(m/s)	2750～2850
lectromechanical coupling coefficient, K[%]	0.28～0.46
Solubility	None
Coefficient of thermal expansion	$a_{11}=5.15\times10^{-6}K^{-1}$ $a_{33}=3.65\times10^{-6}K^{-1}$

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