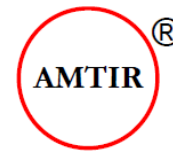


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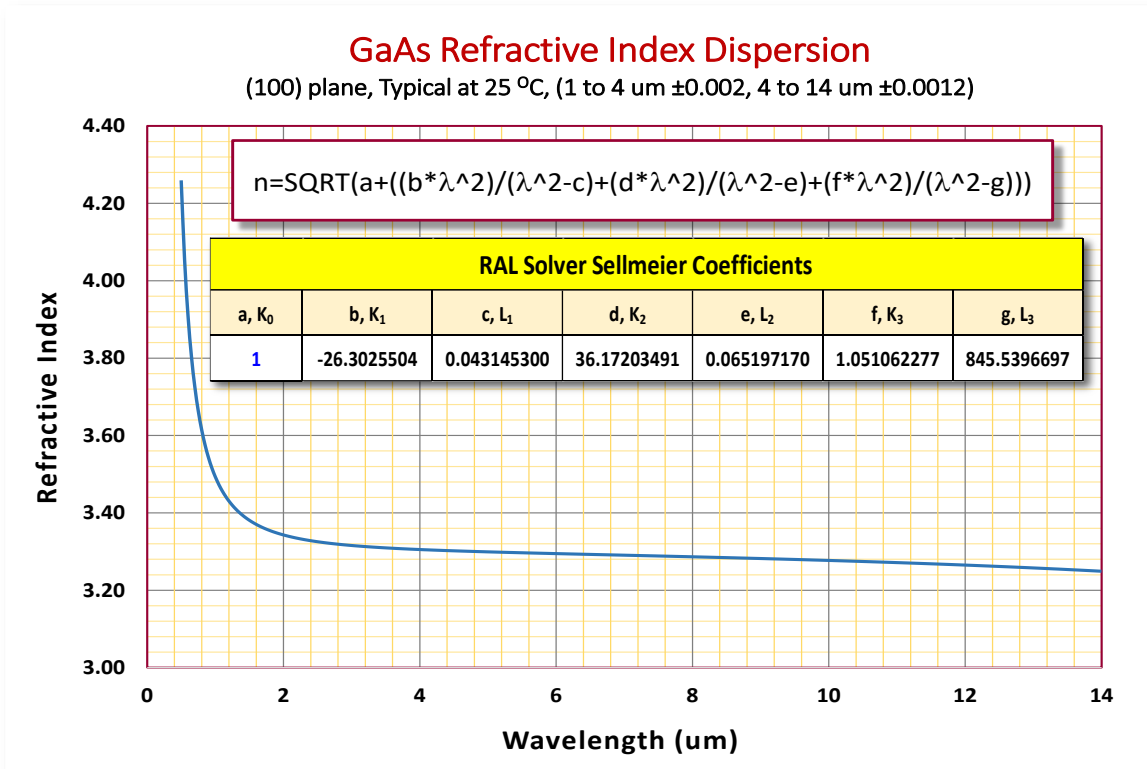
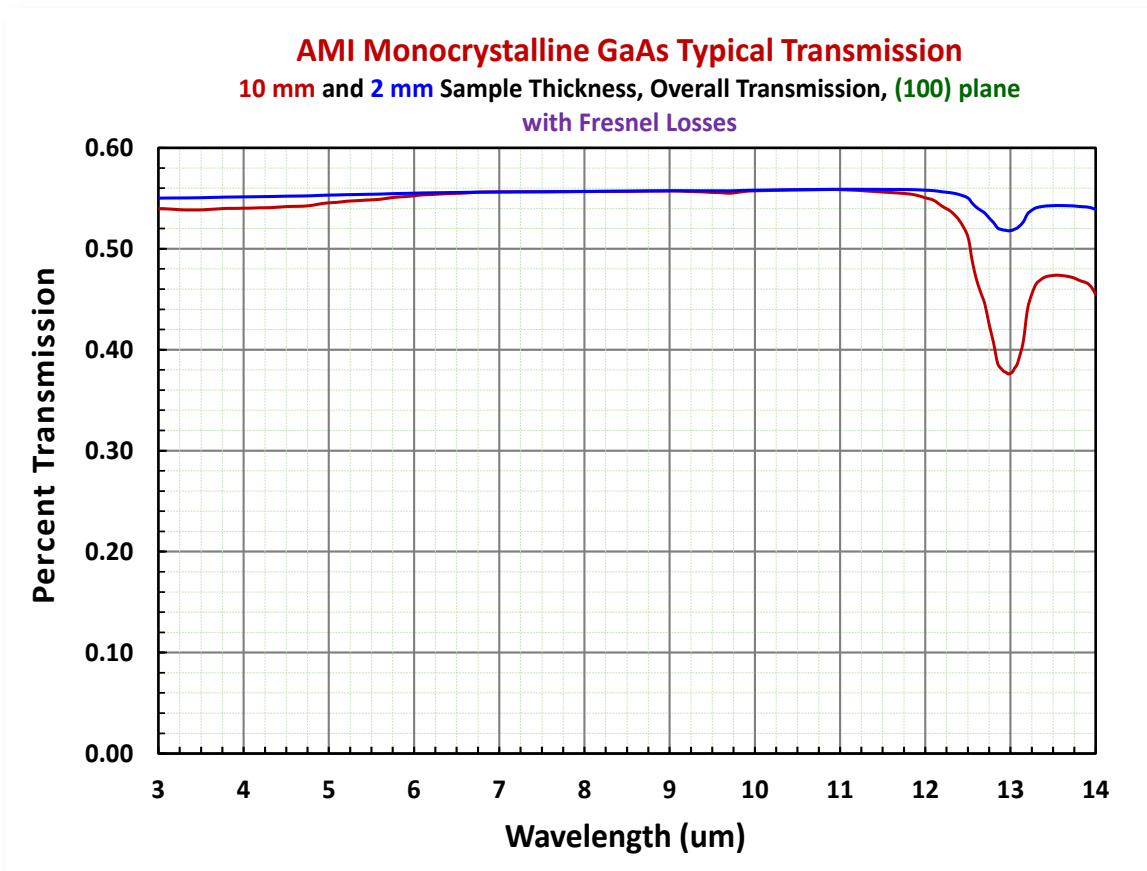
MANUFACTURER OF IR MATERIALS



AMI Monocrystalline GaAs Material Properties

Property	METRIC UNITS	ENGLISH UNITS
Composition	Monocrystalline GaAs (100) plane	
Absorption Coefficient (2 to 5 cm ⁻¹)	< 0.025	
Absorption Coefficient (5 to 12 cm ⁻¹)	<0.006	
Specific Heat	0.35 J/gm-K	0.084 BTU/lb-°F
Melting Point	1238 °C	2261 °F
Thermal Expansion Coefficient	5.73 ppm / °C	3.18 ppm / °F
Thermal Conductivity (@ 25 °C)	13.1 x 10 ⁻² cal /sec-cm-K	31.8 BTU/ Hr-ft-°F
Knoop Hardness / (Vickers)	748 / (715)	
Young's Modulus (E)	85.9 GPa	12.46 x 10 ⁶ lbs /in ²
Bulk Modulus (B)	75.3 GPa	10.92 x 10 ⁶ lbs/ in ²
Poisson's Ratio	0.31	
Rupture Modulus (ASTM-C158)	136 MPa	19,700 lbs / in ²
Density	5.318 gm/cm ³	332.0 lbs/ft ³
Dielectric Constant (High Freq.)	10.9	
Dielectric Constant (static)	12.9	
Band Gap	1.42 eV	
Resistivity (@100Hz)	>1 x 10 ⁷ ohm-cm	>3.9 x 10 ⁶ ohm-in
Refractive Index @ 3.0 um (25 °C)	3.3159	
Refractive Index @ 8.0 um (25 °C)	3.2867	
Refractive Index @ 12.0 um (25 °C)	3.2653	
SWIR Abbe Value	1 to 2 um	16
MWIR Abbe Value	3 to 5 um	140
LWIR Abbe Value	8 to 12 um	106
Δn/ΔT @ 3.0 um	0.000242	
Δn/ΔT @ 8.0 um	0.000174	
Δn/ΔT @ 12.0 um	0.000157	
Chemical Durability (weight loss in milligrams in a 4 Hour Period)		
Solution	Temperature (°C)	Milligrams
H ₂ O	90 °C	0
2% KOH	60 °C	110
HBr, HCl (low and High Conc.)	60 °C	fully-soluble

NOTE: All data provided on these datasheets are typical melt values and believed to be accurate and representative of standard AMI practice, at the time of publication. Industry standard tolerances apply to all categories. Current maximum blank/boule size available meeting standard quality specifications is Ø150 mm x 100 mm thick. (Larger diameters may be available in the future.) *(See AMI Supplemental Datasheet for Monocrystalline GasAs Zemax Optic Studio and Synopsis Code-V information.)*



Monocrystalline GaAs Refractive Index Properties (25 °C)

Wavelength (microns)	Refractive Index 25 °C	Average $\Delta n/\Delta T$
0.5000	4.2596	0.000865
1.0000	3.4936	0.000643
1.5000	3.3811	0.000483
2.0000	3.3432	0.000370
3.0000	3.3159	0.000242
4.0000	3.3055	0.000192
5.0000	3.2995	0.000179
6.0000	3.2950	0.000178
7.0000	3.2909	0.000177
8.0000	3.2867	0.000174
9.0000	3.2823	0.000170
10.0000	3.2773	0.000165
11.0000	3.2717	0.000160
12.0000	3.2653	0.000157
13.0000	3.2579	0.000153
14.0000	3.2494	0.000149

NOTE: Refractive Index values are typical production values for monocrystalline GaAs production at 25 °C and may vary by about ± 0.002 from 1 to 4 um and by about ± 0.0012 from 4 to 14 um, boule to boule. $\Delta n/\Delta T$ values are group relative constants and do not vary significantly in the 6th decimal place.