

M-QFN	Brand-Model	Attributes	CTE
Molding Compound	Sumitomo EME-G770H	Dielectric Constant Dk = 4.1 Dissipation Factor Df = 0.005 Tg=130°C  Pb Free Br/Sb Free Multi-Aromatic Low Warp UL-94 V-0 class	$\alpha_1$ 7 x 10 <sup>-6</sup> /°C $\alpha_2$ 34 x 10 <sup>-6</sup> /°C
Lead Frame Base Material	Olin C194 K65  ASTM Material Nbr C19400	Cu97.45 / Fe2.4 / Zn 0.12 / P 0.03  Short: CuFe2P	16.7 x 10 <sup>-6</sup> /°C $\alpha$ @ 25°C  17.6 x 10 <sup>-6</sup> /°C $\alpha$ @ 250°C
Surface Treatment Lead Frame	Pre-plated NiPdAu	Ni 0.50~2.00µm Pd 0.02~0.15µm Au 0.003~0.015µm	Ni = 13 x 10 <sup>-6</sup> /°C $\alpha$ @ 25°C  Pd = 12 x 10 <sup>-6</sup> /°C $\alpha$ @ 25°C  Au = 14 x 10 <sup>-6</sup> /°C $\alpha$ @ 25°C

Lids	Brand-Model	Attributes	CTE
Ceramic	Alumina 92% Al <sub>2</sub> O <sub>3</sub>	Dk = 8.9 Dielectric Constant	7.4 x 10 <sup>-6</sup> /°C
BT	Mitsubishi Gas & Chem HL832NS	Young's Modulus @25oC GPa 26 X,Y 11 Z	X/Y = 12 x 10 <sup>-6</sup> /°C Z = 57 x 10 <sup>-6</sup> /°C
Rogers	Rogers RO-4003C	Dk = 3.38 Dielectric Constant Df = 0.0027 Dissipation Factor	X = 11 x 10 <sup>-6</sup> /°C Y = 14 x 10 <sup>-6</sup> /°C Z = 46 x 10 <sup>-6</sup> /°C