Units

$ppm := 10^{-6}$

Constants

$T_{ref} := 25\ °C$

$R_{ref} := 47\Omega$

Utility Functions

$f(R_{ref}, \alpha, T_1, T_{ref}) := R_{ref} \cdot [1 + \alpha \cdot (T_1 - T_{ref})]$

Analysis

Digitized Vendor Resistance vs Temperature Characteristic

$r_{1500} :=$

	0	1
0	-31.924	-7.89
1	-31.899	...

$r_{2700} :=$

	0	1
0	-31.868	-15.527
1	-31.844	...

$r_{3900} :=$

	0	1
0	-31.994	-22.425
1	-31.97	...

Interpolated Resistance Curve

$$\lambda(\tau) := \begin{pmatrix} interp(cspline(r_{1500}^{\langle 0 \rangle}, r_{1500}^{\langle 1 \rangle}), r_{1500}^{\langle 0 \rangle}, r_{1500}^{\langle 1 \rangle}, \tau) \\ interp(cspline(r_{2700}^{\langle 0 \rangle}, r_{2700}^{\langle 1 \rangle}), r_{2700}^{\langle 0 \rangle}, r_{2700}^{\langle 1 \rangle}, \tau) \\ interp(cspline(r_{3900}^{\langle 0 \rangle}, r_{3900}^{\langle 1 \rangle}), r_{3900}^{\langle 0 \rangle}, r_{3900}^{\langle 1 \rangle}, \tau) \end{pmatrix}$$

$$\kappa(\tau, \sigma) := interp\left[cspline\left[\begin{pmatrix} 1500 \\ 2700 \\ 3900 \end{pmatrix} \cdot ppm, \lambda(\tau)\right], \begin{pmatrix} 1500 \\ 2700 \\ 3900 \end{pmatrix} \cdot ppm, \lambda(\tau), \sigma\right]$$

2-Dimensional Interpolation

Comparison

$T1 := (-30)\ °C, (-29)\ °C .. 125\ °C$

$T_{ref} := 25\ °C$