



[www.niccomp.com](http://www.niccomp.com) | Technical Support: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)

Date: October 2009

Sub: Frequency – Temperature Characteristics

RE: **Aluminum Electrolytic Capacitors**

Type: Liquid electrolyte construction

**2200uF / 10VDC / 12.5X14 case size**

Page 2 – **NACEW** series, Standard Type with Extended Temperature  
ESR over frequency (100Hz ~ 1MHz) at temperatures from -55°C ~ +105°C

Page 3 – **NACZ** series, Low ESR Type  
ESR over frequency (100Hz ~ 1MHz) at temperatures from -55°C ~ +105°C

Page 4 - **NACK** series, Low ESR Type  
ESR over frequency (100Hz ~ 1MHz) at temperatures from -55°C ~ +105°C

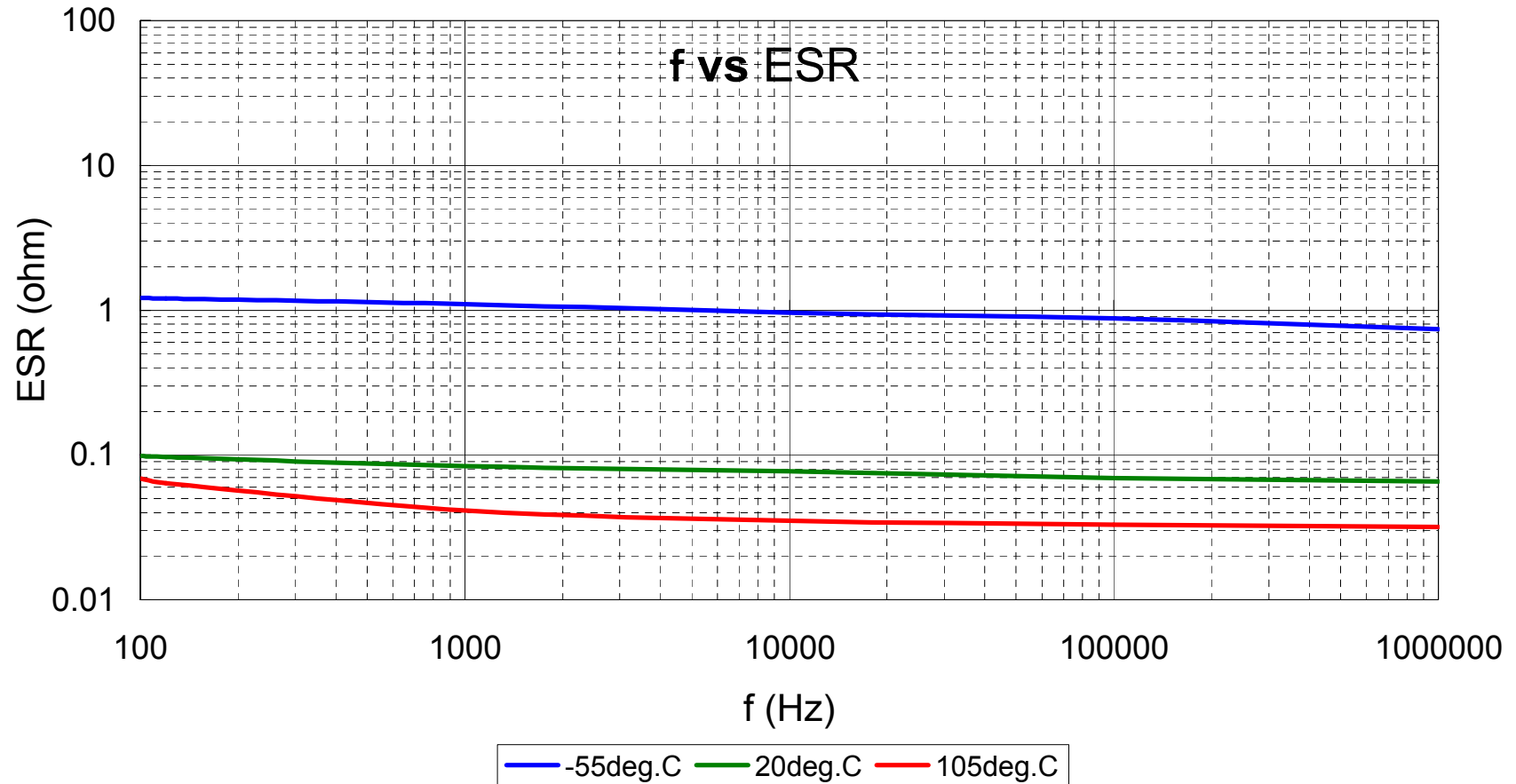
**ESR Comparison: 2200uF / 10VDC / 12.5X14 case size**

Series	ESR @ -55°C		ESR @ +20°C		ESR @ +105°C	
	1KHz	100KHz	1KHz	100KHz	1KHz	100KHz
<b>NACEW</b>	1.10	0.87	0.084	0.069	0.041	0.033
<b>NACZ</b>	0.42	0.31	0.050	0.040	0.037	0.025
<b>NACK</b>	0.90	0.68	0.058	0.048	0.038	0.029

Prepared by:  
Jim Wright, NIC Components Corp.  
[jwright@niccomp.com](mailto:jwright@niccomp.com) 631-396-7500 x213

# Frequency Characteristics

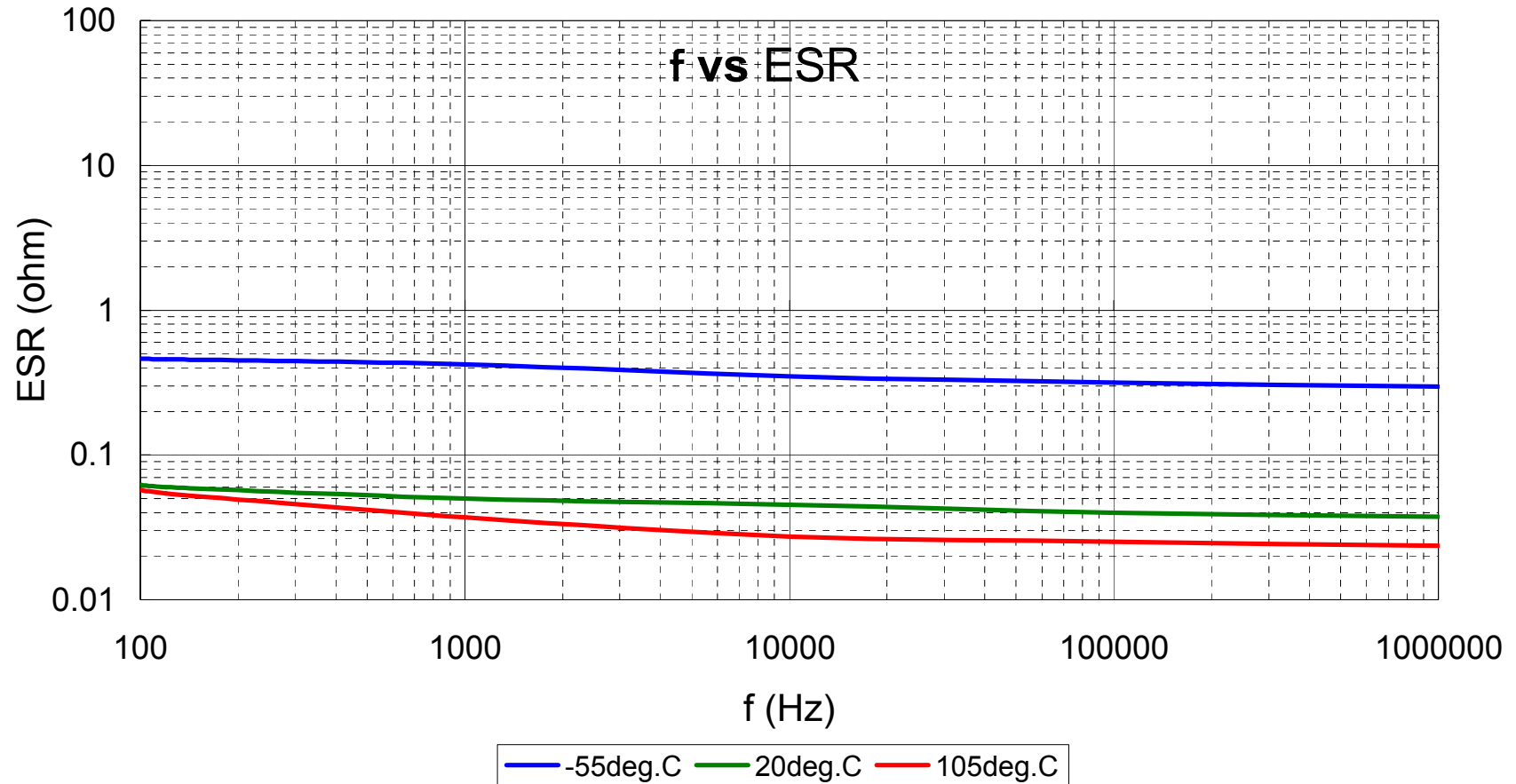
NACEW222M10V12.5X14TR13F (actual value)



f (Hz)	100	120	1k	10k	100k	1M
-55deg.C ESR (ohm)	1.215	1.205	1.102	0.960	0.875	0.737
20deg.C ESR (ohm)	0.099	0.096	0.084	0.077	0.069	0.066
105deg.C ESR (ohm)	0.069	0.064	0.041	0.035	0.033	0.032

# Frequency Characteristics

NACZ222M10V12.5X14TRF (actual value)



f (Hz)	100	120	1k	10k	100k	1M
-55deg.C ESR (ohm)	0.462	0.458	0.423	0.348	0.316	0.297
20deg.C ESR (ohm)	0.062	0.060	0.050	0.045	0.040	0.038
105deg.C ESR (ohm)	0.057	0.054	0.037	0.027	0.025	0.024

## ESR - Temperature Characteristics

PN: NACK222M10V12.5X14 (2200uF / 10VDC / 12.5mm diameter)

