Power over coax (PoC) filter solution for automotive application
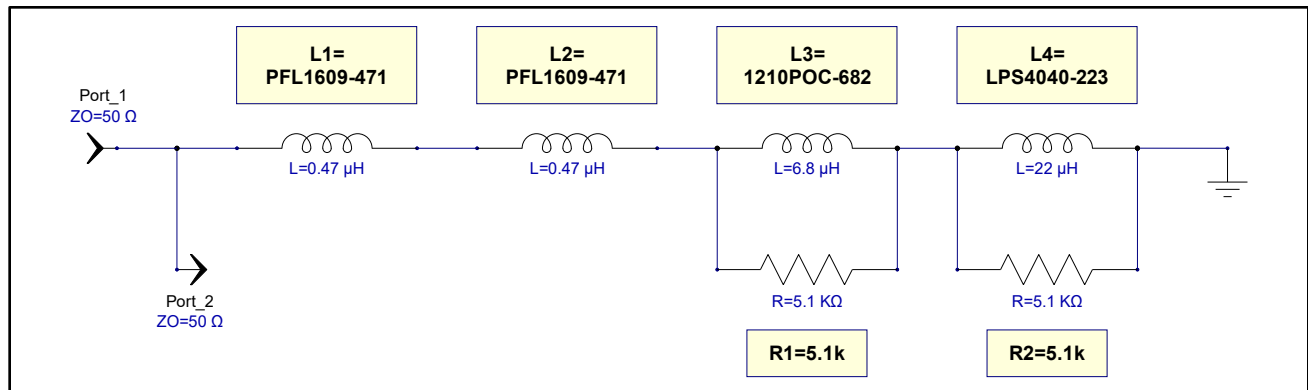
SMD-POC-024F

Date:- 8th November, 2019

Overview:

Following application is designed to cover the frequency range from 8 MHz to 3 GHz for an impedance of 1kΩ, and 0.5A Isat and 0.6A Irms max current. The measurement of S-parameters are done on complete POC system in which two solution boards are connected through Leoni Decar-302 automotive cable with different lengths . In complete POC system, different currents up to max rating of the current are injected to get S-parameters under different loads at different temperatures.

Coilcraft Solution:

Inductors	DCR (Ohms) (max) @25C	DCR (Ohms) (max) @125C	Max Area (mm²)	Current (A)		Notes
				Irms	Isat (30%)	
PFL1609-471 (0.47uH)	0.100	0.139	1.926	0.73 (15C rise)	0.630	
PFL1609-471 (0.47uH)	0.100	0.139	1.926	0.73 (15C rise)	0.630	
1210POC-682 (6.8uH)	0.240	0.332	8.811	0.90 (15C rise)	1.000	5.1k resistor in parallel
LPS4040-223 (22uH)	0.210	0.291	15.81	1.0 (40C rise)	0.60	5.1k resistor in parallel
Total	0.65	0.901	28			

Schematic:

Coilcraft Complete POC System S-Parameters Measurements at Different Temperature with Max Load Current:-

S11 Parameters For SMD-POC-024F at 500mA at 2m Cable

Legend: 25C, 85C, 105C, 125C

Y-axis: Noise (dB), X-axis: Frequency (MHz)

S21 Parameters For SMD-POC-024F at 500mA at 2m Cable

Legend: 25C, 85C, 105C, 125C

Y-axis: Noise (dB), X-axis: Frequency (MHz)

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S11 Parameters For SMD-POC-024F at 500mA at 10m Cable

S21 Parameters for SMD-POC-024F at 500mA at 10m Cable

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