



R-C Thermal Model Parameters

DESCRIPTION

The parametric values in the R-C thermal model have been derived using curve-fitting techniques. R-C values for the electrical circuit in the Foster/tank and Cauer/filter configurations are included. When implemented in PSpice, these values have matching characteristic curves to the single-pulse transient thermal impedance curves for the MOSFET.

These RC values can be used in the PSpice simulation to evaluate the thermal behavior of the MOSFET junction temperature under a defined power profile. These techniques are described in application note AN609, "Thermal Simulation of Power MOSFETs on the PSpice Platform".

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION						
THERMAL RESISTANCE (°C/W)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
RT1	4.7578	4.0590	1.1309	367.2298m	n/a	n/a
RT2	11.9415	9.7455	2.5368	84.8250m	n/a	n/a
RT3	13.2005	14.2174	509m	732.8703m	n/a	n/a
RT4	32.1002	26.9781	1.3233	65.0749m	n/a	n/a
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CT1	1.0026m	9.2645m	1.0130m	173.0664u	n/a	n/a
CT2	23.6202m	84.9051m	2.0278m	116.3055m	n/a	n/a
CT3	1.0352	1.3182	159.2063u	3.5077m	n/a	n/a
CT4	3.7935	3.6475	12.1007m	185.8356m	n/a	n/a

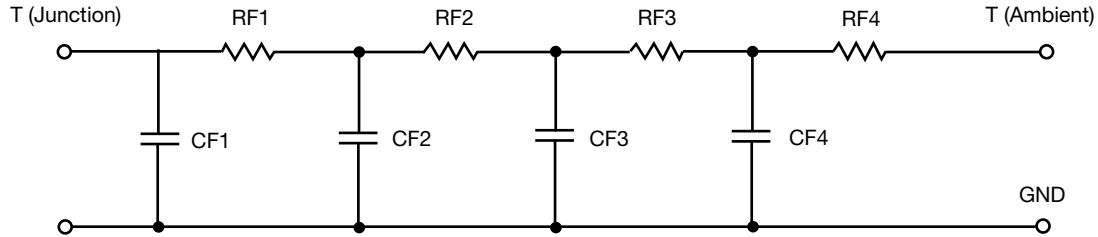
Note

- n/a indicates not applicable

This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.



R-C THERMAL MODEL FOR FILTER CONFIGURATION



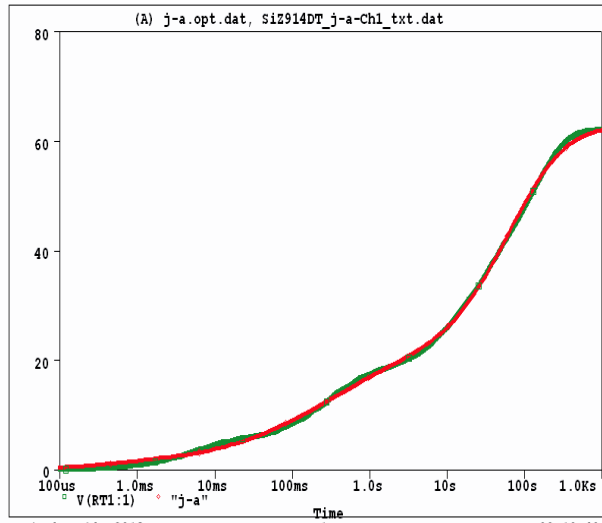
R-C VALUES FOR FILTER CONFIGURATION						
THERMAL RESISTANCE (°C/W)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
RF1	4.9019	4.3609	1.1950	401.7289m	n/a	n/a
RF2	11.8978	9.0644	1.3598	682.3304m	n/a	n/a
RF3	19.7491	16.1235	1.7730	84.4823m	n/a	n/a
RF4	25.4512	25.4512	1.1722	81.4584m	n/a	n/a
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CF1	895.3129u	7.4337m	183.0964u	150.2958u	n/a	n/a
CF2	20.0472m	54.6189m	597.1732u	3.3142m	n/a	n/a
CF3	724.5687m	586.4865m	913.2001u	715.8987u	n/a	n/a
CF4	3.9215	2.4799	4.1504m	152.4589m	n/a	n/a

Note

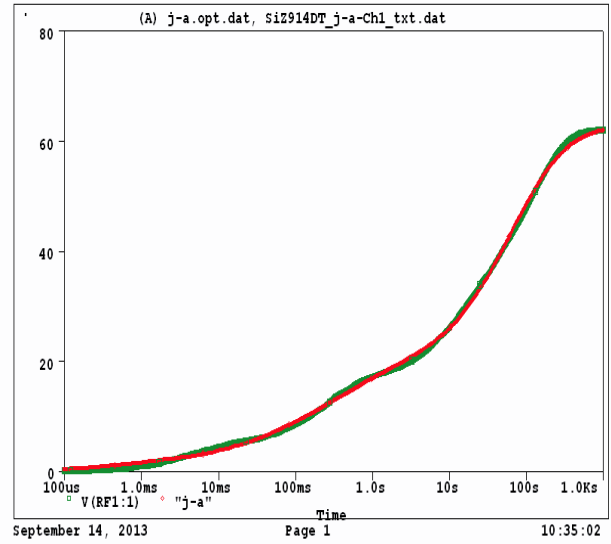
- n/a indicates not applicable



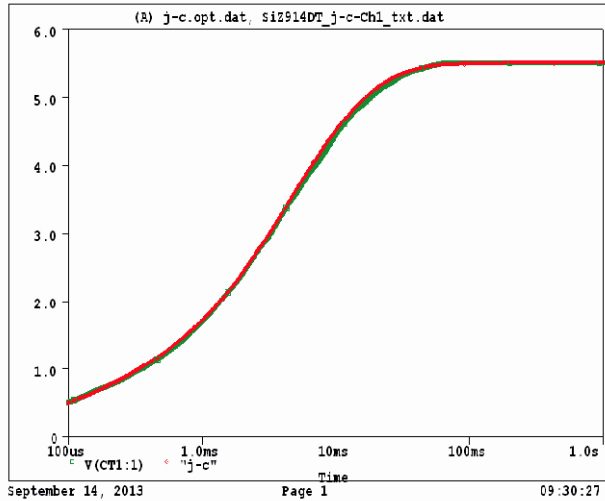
SiZ914DT Tank j-a Ch1 Temperature: 27.0



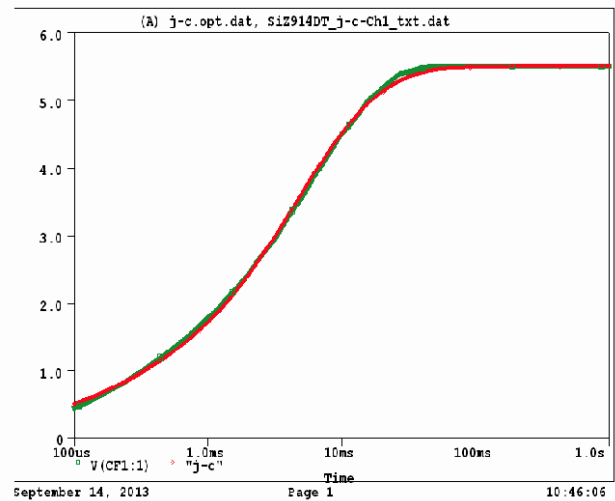
SiZ914DT Filter j-a Ch1 Temperature: 27.0



SiZ914DT Tank j-c Ch1 Temperature: 27.0

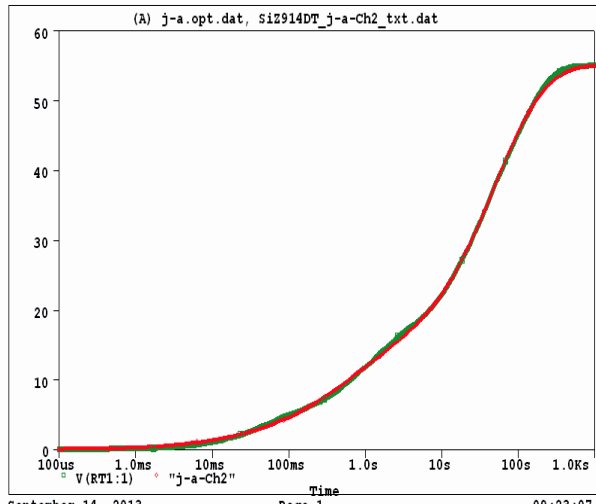


SiZ914DT Filter j-c Ch1 Temperature: 27.0

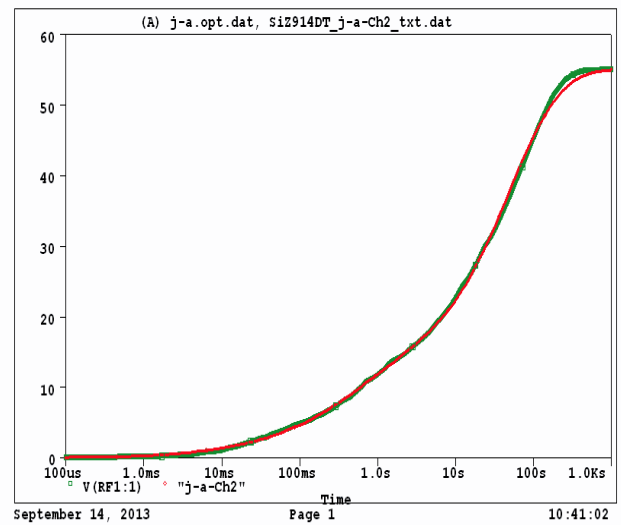




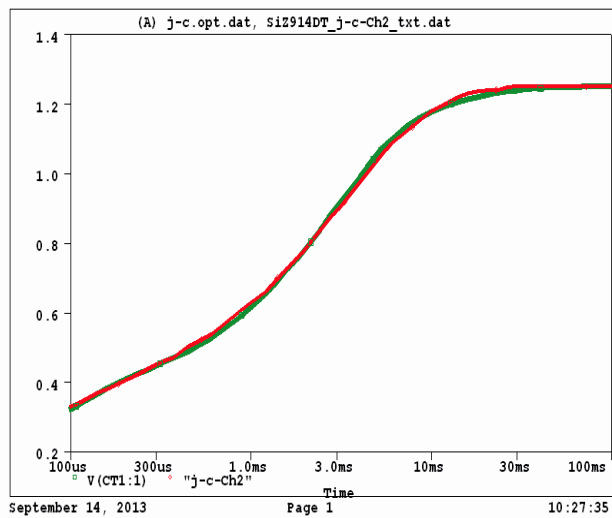
SiZ914DT Tank j-a Ch2 Temperature: 27.0



SiZ914DT Filter j-a Ch2 Temperature: 27.0



SiZ914DT Tank j-c Ch2 Temperature: 27.0



SiZ914DT Filter j-c Ch2 Temperature: 27.0

