

R-C Thermal Model Parameters

DESCRIPTION

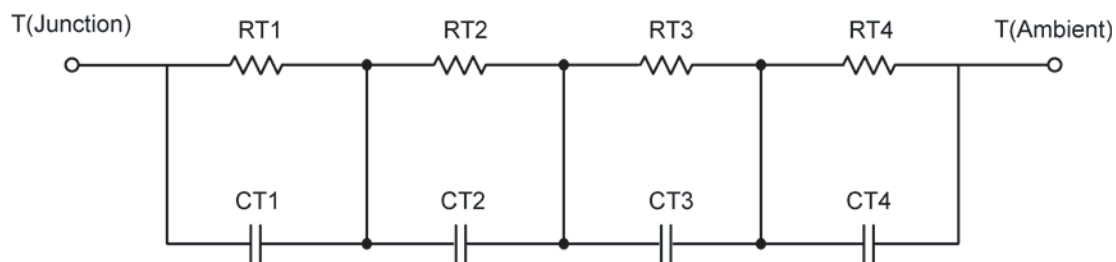
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse Transient Thermal Impedance curves for the MOSFET.

R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included.

Note:

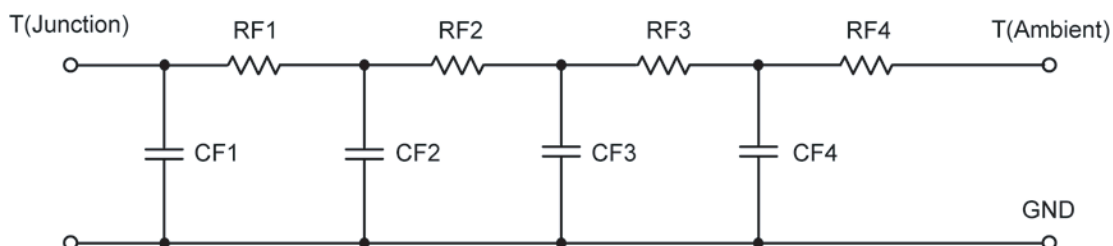
For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).

R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	10.4113	N/A	6.0448
RT2	3.9640	N/A	2.0658
RT3	20.2637	N/A	4.5367
RT4	55.1735	N/A	7.3694
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	23.2596 m	N/A	37.9136 m
CT2	3.6109 m	N/A	1.4121 m
CT3	97.4843 m	N/A	11.6129 m
CT4	1.5032	N/A	200.6871 m

This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet 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
RF1	6.6798	N/A	3.0102
RF2	20.1253	N/A	8.1843
RF3	14.8475	N/A	6.6156
RF4	48.7035	N/A	2.2015
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	3.0324 m	N/A	1.3575 m
CF2	27.3271 m	N/A	8.4713 m
CF3	257.9096 m	N/A	85.1777 m
CF4	1.5513	N/A	578.1296 m

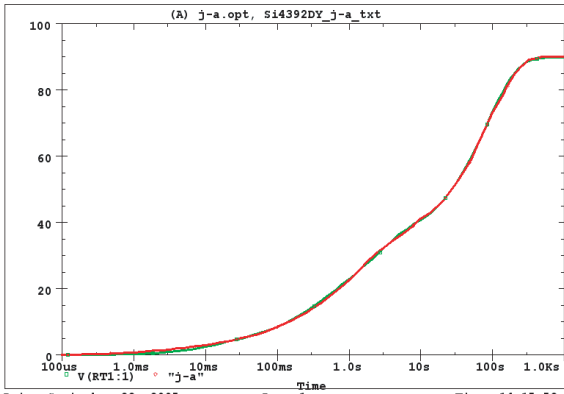
Note: NA indicates not applicable

Reference:

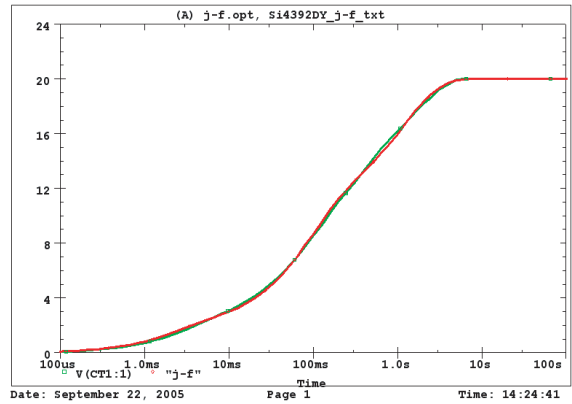
[1] "A Simple Method of Generating Thermal Models for a Power MOSFET" by Wharton McDaniel and Kandarp Pandya. IEEE / SEMITHERM 2002



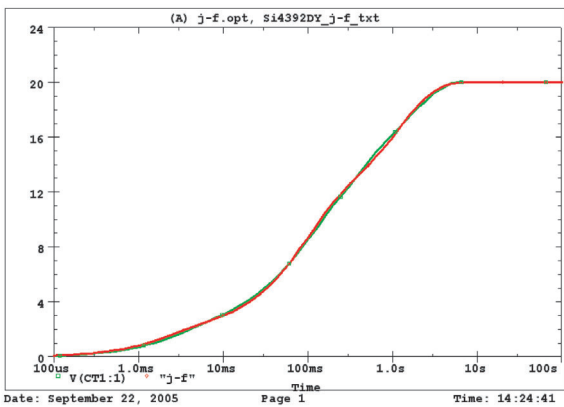
Si4392DY Tank j-a Temperature: 27.0



Si4392DY Tank j-f Temperature: 27.0



Si4392DY Tank j-f Temperature: 27.0



Si4392DY Filter j-f Temperature: 27.0

