

R-C Thermal Model Parameters

DESCRIPTION

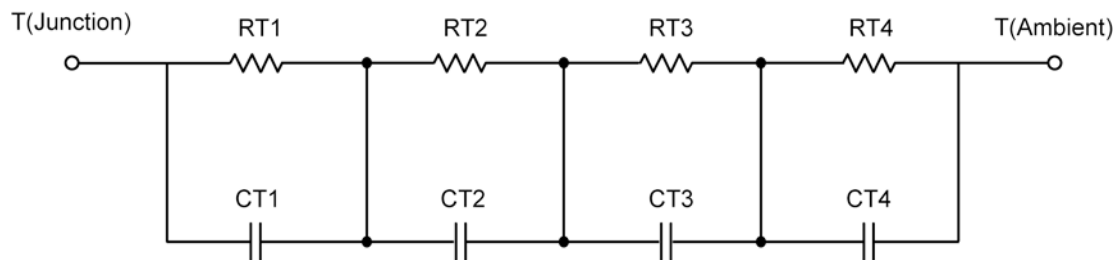
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse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

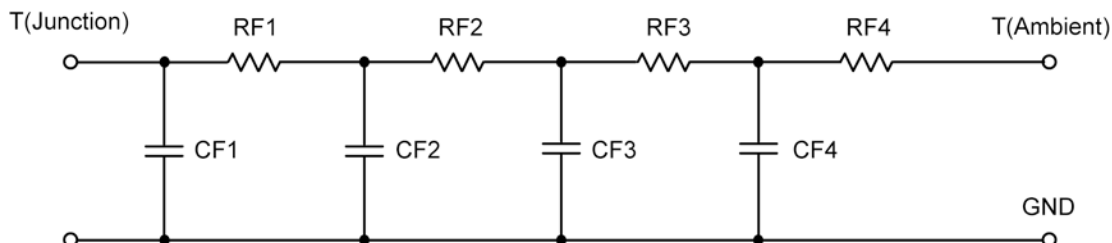


R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	11.3184	974.3587 m	N/A
RT2	18.1974	388.2192 m	N/A
RT3	3.2838	186.3095 m	N/A
RT4	17.2004	751.1126 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	82.1329 m	7.2904 m	N/A
CT2	1.8256	501.7344 m	N/A
CT3	6.2908 m	3.1414 m	N/A
CT4	2.7865	2.2090 m	N/A

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	1.9925	664.2629 m	N/A
RF2	10.0248	791.9197 m	N/A
RF3	10.8604	455.2247 m	N/A
RF4	27.1223	388.5927 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	2.0747 m	913.1204 u	N/A
CF2	39.3278 m	1.4991 m	N/A
CF3	392.1734 m	10.4323 m	N/A
CF4	1.0598	290.5889 m	N/A

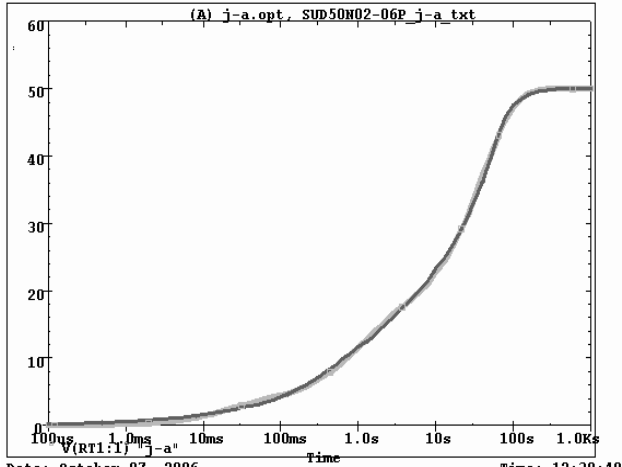
Note: NA indicates not applicable

Reference:

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

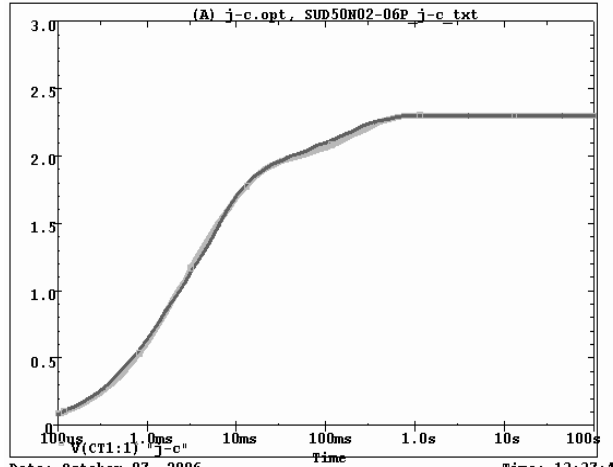


SUD50N02-06P Tank j-a Temperature: 27.0



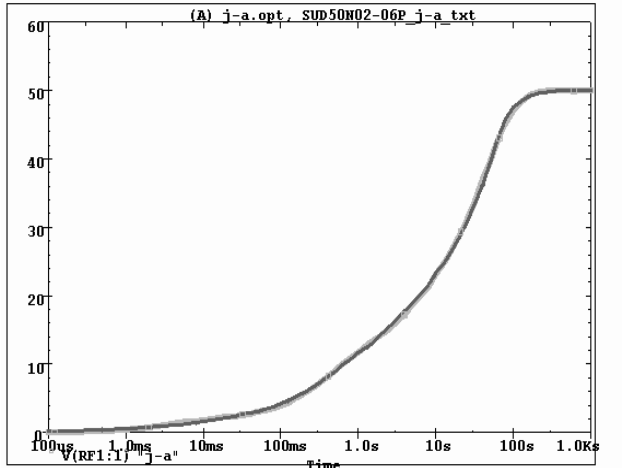
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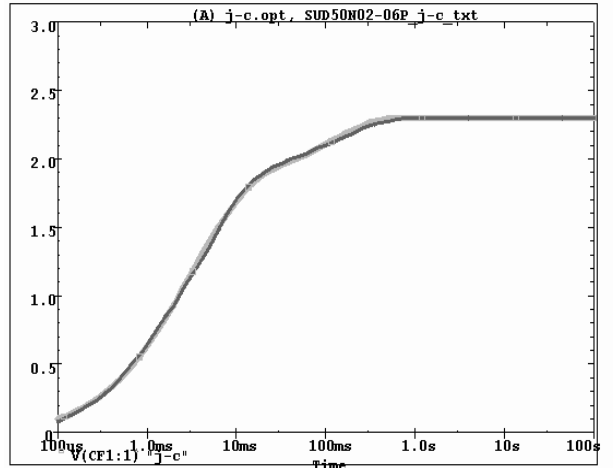
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SUD50N02-06P Filter j-a Temperature: 27.0



Date: October 07, 2006 Time: 11:11:21

SUD50N02-06P Filter j-c Temperature: 27.0



Date: October 07, 2006 Time: 13:46:17