R-C Thermal Model Parameters

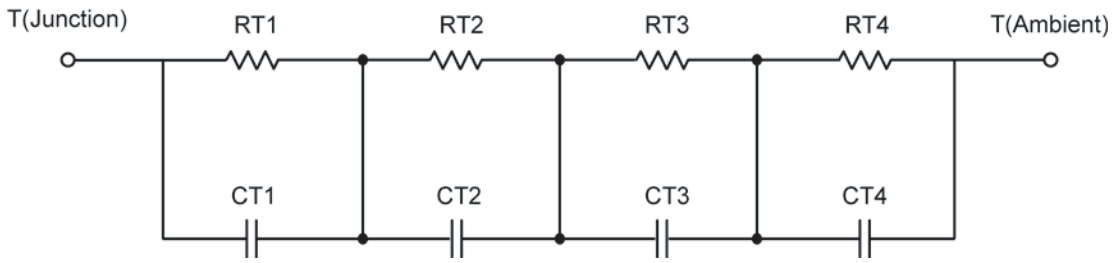
DESCRIPTION

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.

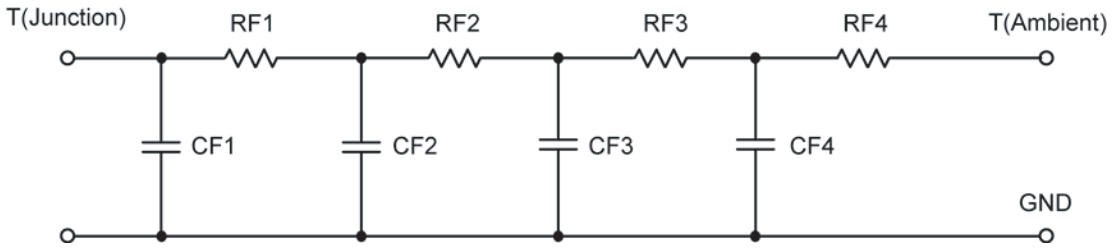
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	13.3312	N/A	8.6072
RT2	16.6030	N/A	1.1928
RT3	8.6883	N/A	3.2165
RT4	46.1721	N/A	6.9605
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	6.4860 m	N/A	2.9728 m
CT2	1.1631 m	N/A	736.7198 u
CT3	161.8455 m	N/A	13.6910 m
CT4	1.2544	N/A	3.4065 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



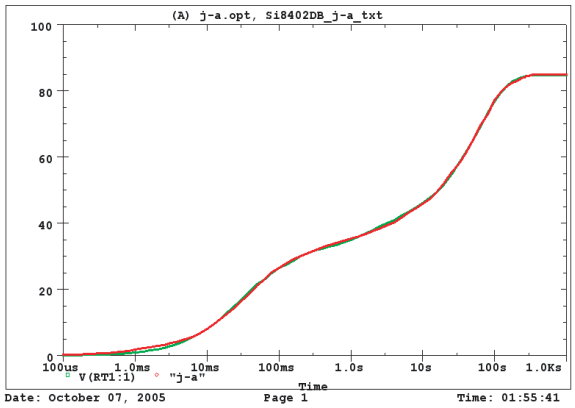
R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	20.4833	N/A	2.5658
RF2	13.1870	N/A	7.6718
RF3	12.6172	N/A	7.3434
RF4	38.5821	N/A	2.3883
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	913.9546 u	N/A	483.1876 u
CF2	8.1690 m	N/A	956.2648 u
CF3	404.4938 m	N/A	212.3417 u
CF4	1.0914	N/A	1.9046 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

Si8402DB Tank j-a Temperature: 27.0



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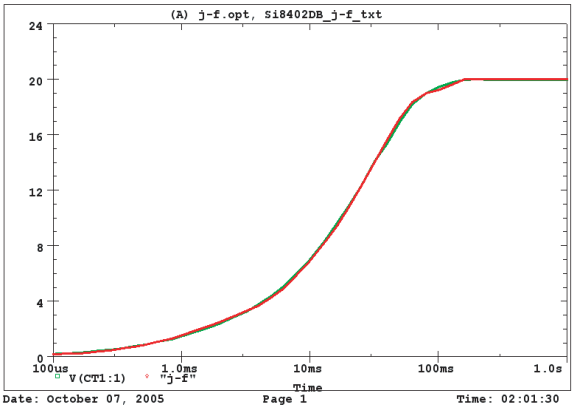
Si8402DB Tank j-f Temperature: 27.0



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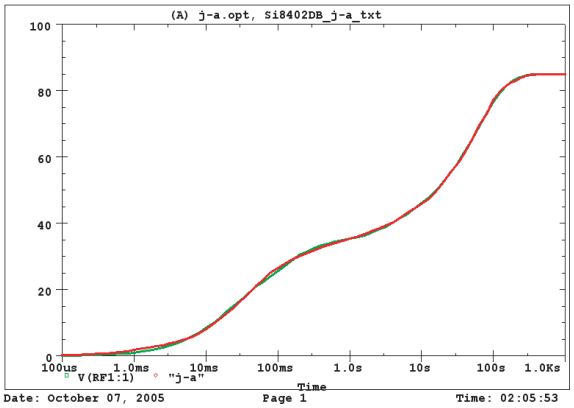
Si8402DB Filter j-a Temperature: 27.0



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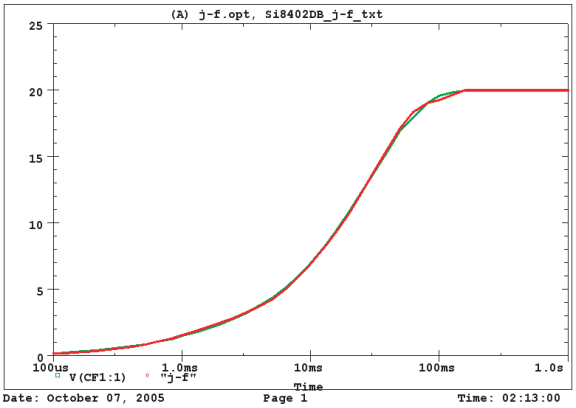
Si8402DB Filter j-f Temperature: 27.0



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