R-C Thermal Model Parameters

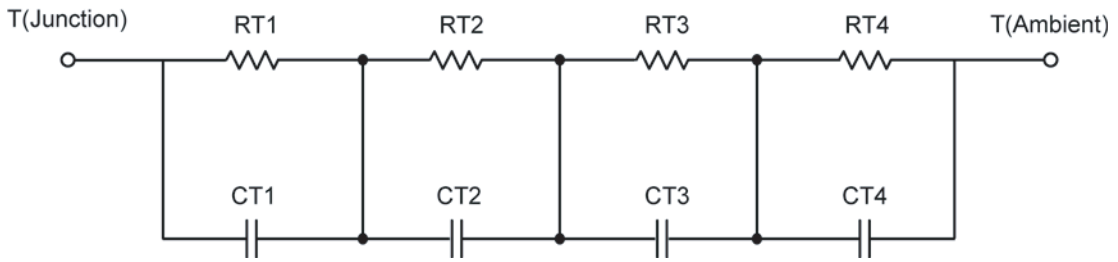
DESCRIPTION

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 configuration are included. The corresponding values for the Cauer/Filter configuration are available upon request.

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.

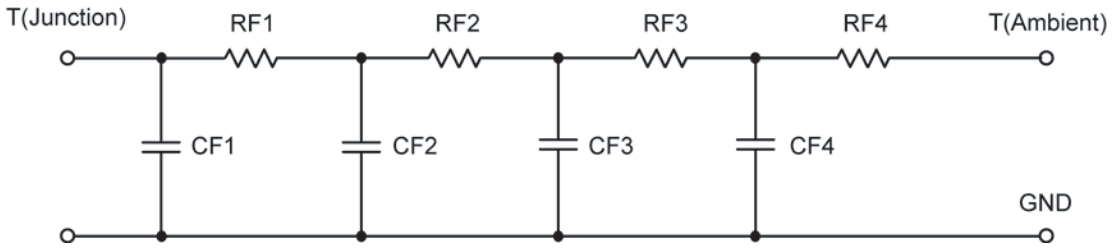
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	2.7427	N/A	295.2058 m
RT2	28.2942	N/A	4.9892
RT3	30.2729	N/A	7.3456
RT4	23.9546	N/A	5.2956
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	11.6164 m	N/A	19.8634 m
CT2	40.4911 m	N/A	136.8264 m
CT3	1.9161	N/A	200.8471 m
CT4	4.8112	N/A	9.7046 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

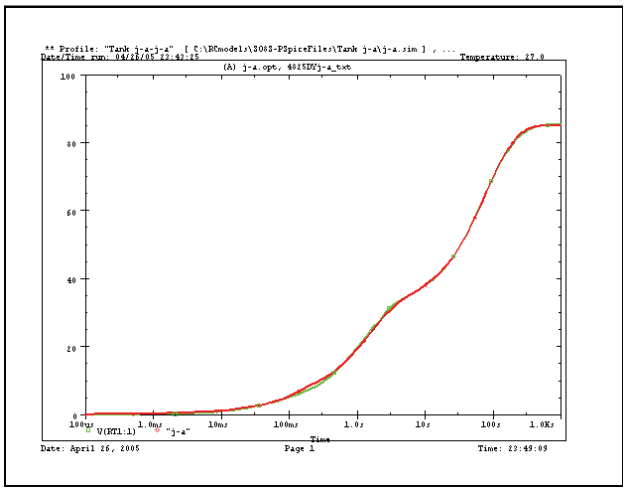


R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	3.8763	N/A	3.2479
RF2	28.2881	N/A	4.6112
RF3	27.2423	N/A	6.3565
RF4	25.8659	N/V	3.6323
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	6.9709 m	N/A	5.6845 m
CF2	30.8175 m	N/A	10.3060 m
CF3	1.1588	N/A	94.6268 m
CF4	1.2584	N/A	25.0449 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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60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
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100s
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Time
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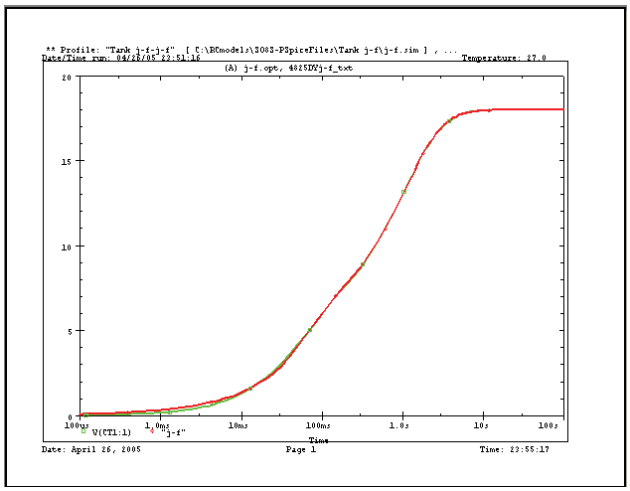
Page 1
Time: 23:49:09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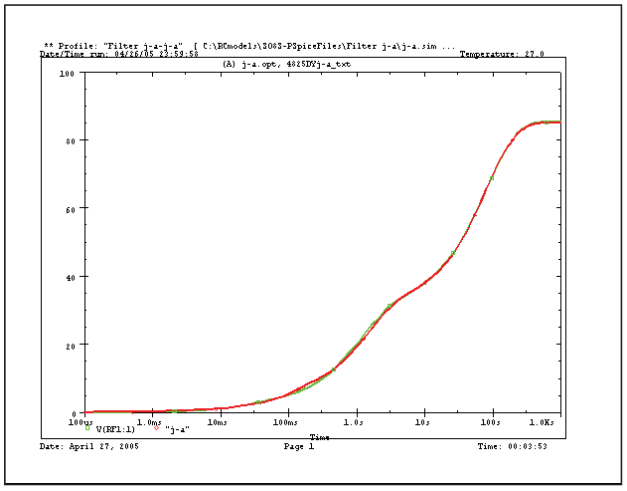
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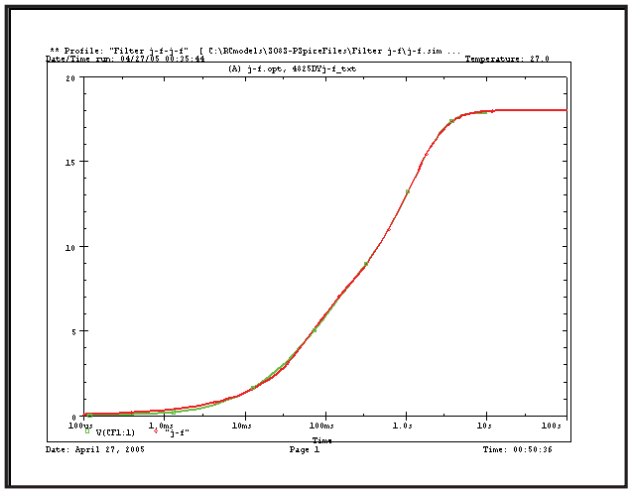
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