R-C Thermal Model Parameters

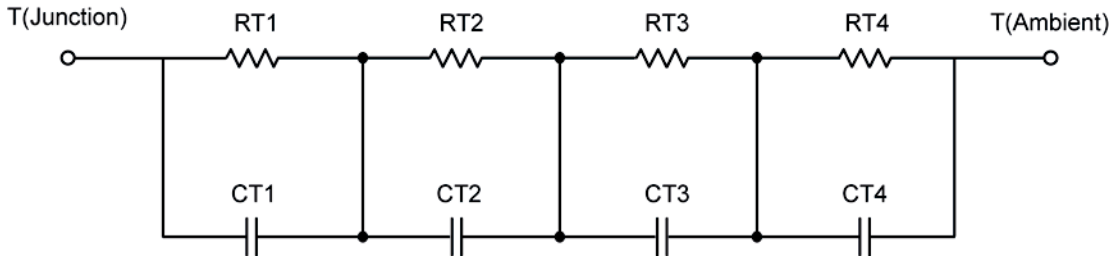
DESCRIPTION

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.

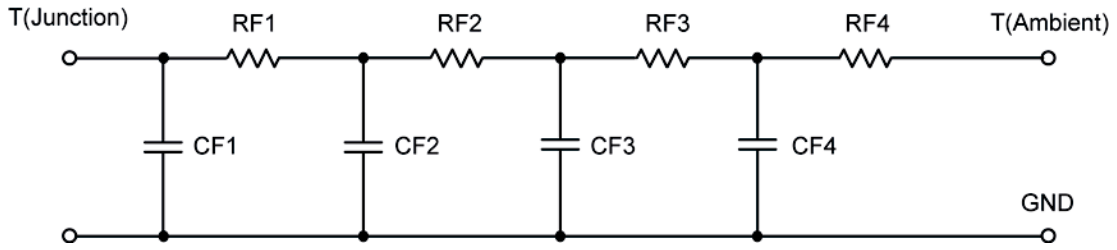
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	58.1246	N/A	53.7210
RT2	151.3374	N/A	8.3952
RT3	79.5048	N/A	105.9072
RT4	140.9226	N/A	170.3383
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	388.5822 u	N/A	816.5486 u
CT2	7.7443 m	N/A	29.1511 u
CT3	377.0046 m	N/A	76.7814 m
CT4	2.0908 m	N/A	2.9830 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

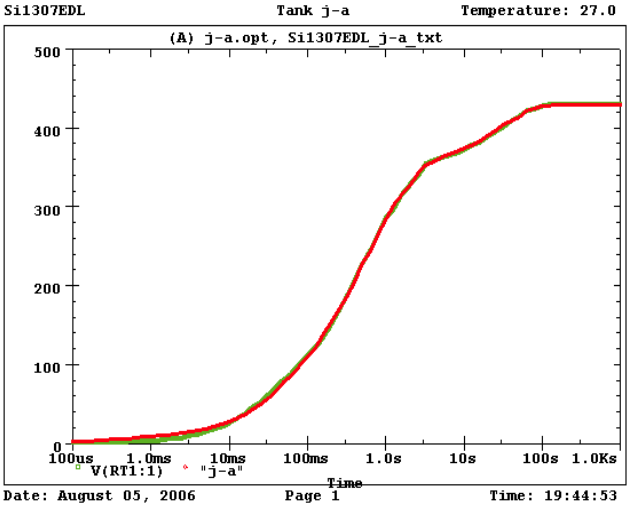


R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	31.2680	N/A	22.1739
RF2	119.8309	N/A	113.3663
RF3	193.6060	N/A	117.7104
RF4	84.7049	N/A	85.9654
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	169.5891 u	N/A	170.2769 u
CF2	550.8285 u	N/A	877.6562 u
CF3	2.7041 m	N/A	4.0290 m
CF4	284.5609 m	N/A	98.7777 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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300
200
100
0
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Time
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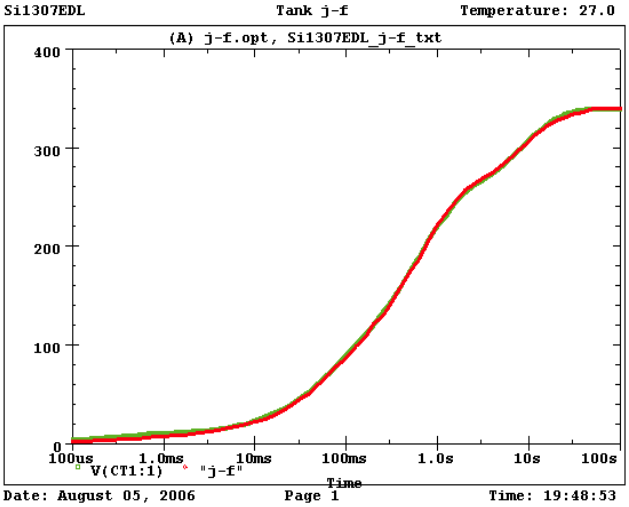
Page 1
Time: 19:44:53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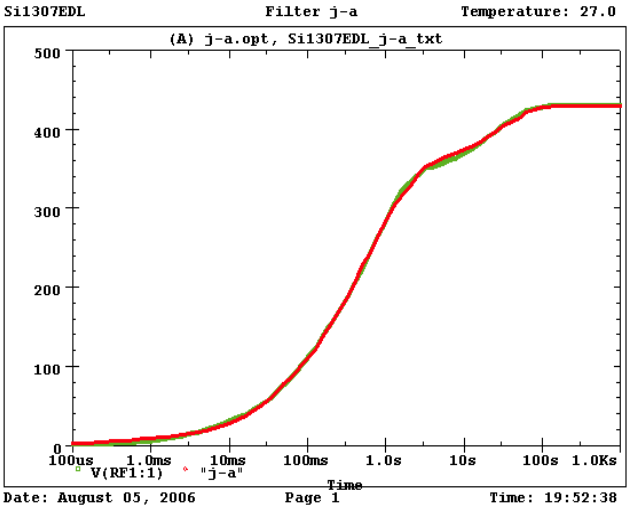
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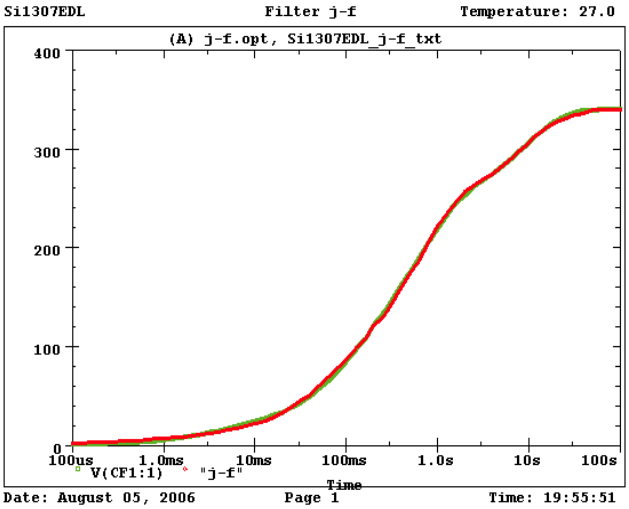
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300
200
100
0
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