R-C Thermal Model Parameters

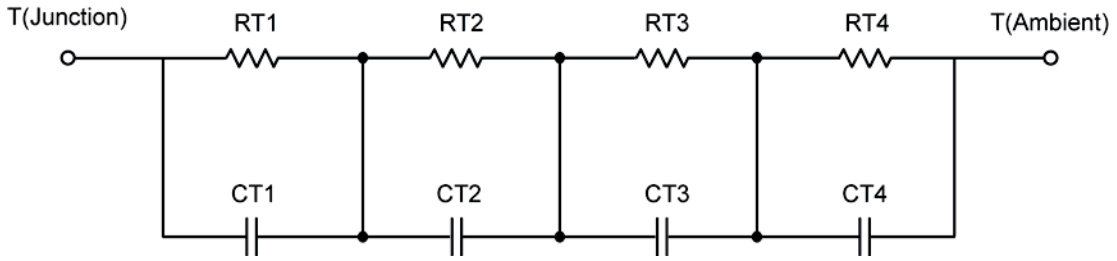
DESCRIPTION

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.

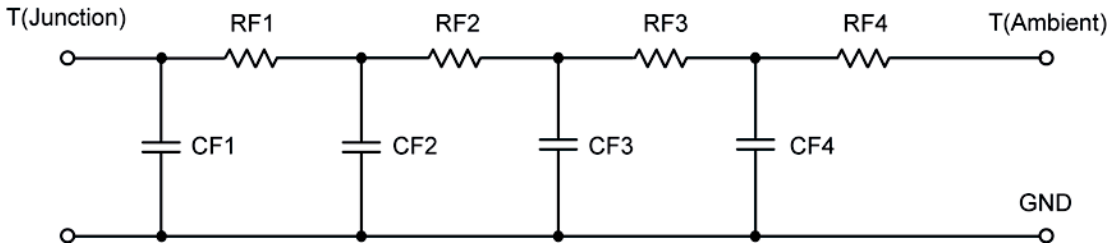
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	26.0025	N/A	12.5279
RT2	7.7918	N/A	12.7388
RT3	33.0733	N/A	3.9481
RT4	37.9661	N/A	15.6048
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	13.8912 m	N/A	3.8275 m
CT2	1.4536 m	N/A	19.0195 m
CT3	99.1119 m	N/A	336.4608 u
CT4	1.5006	N/A	121.4757 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

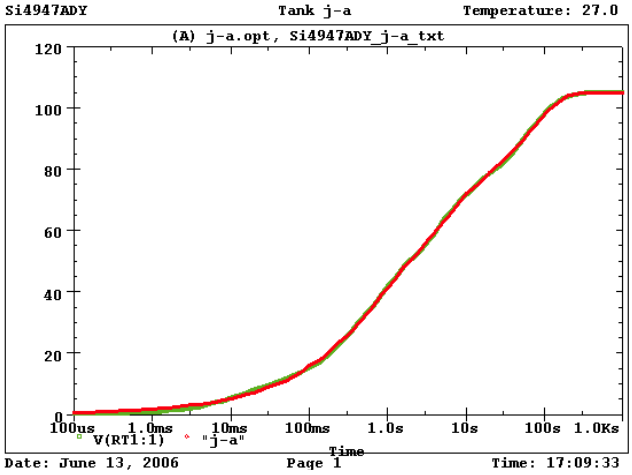


R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	9.1483	N/A	6.3767
RF2	30.4821	N/A	19.4285
RF3	31.8171	N/A	15.1924
RF4	33.4122	N/A	3.9571
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.2749 m	N/A	427.4671 u
CF2	10.2837 m	N/A	3.6939 m
CF3	87.4286 m	N/A	49.0857 m
CF4	1.6304	N/A	848.3959 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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80
60
40
20
0
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Page 1
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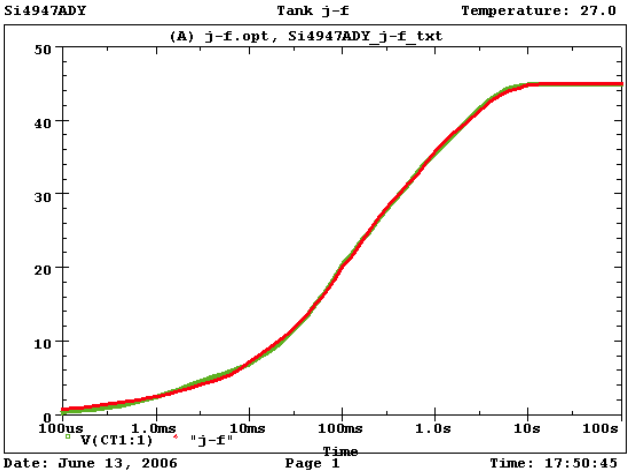
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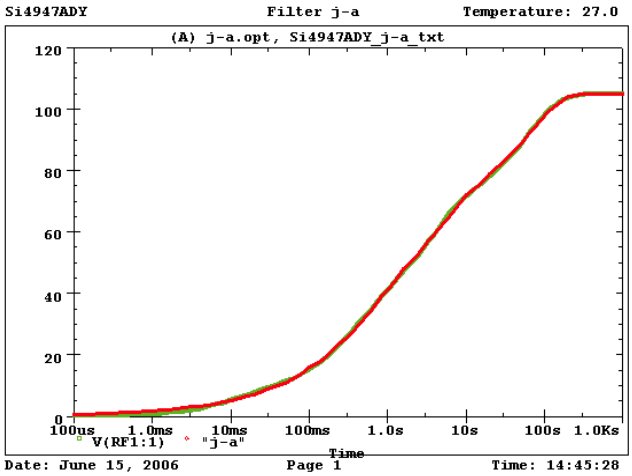
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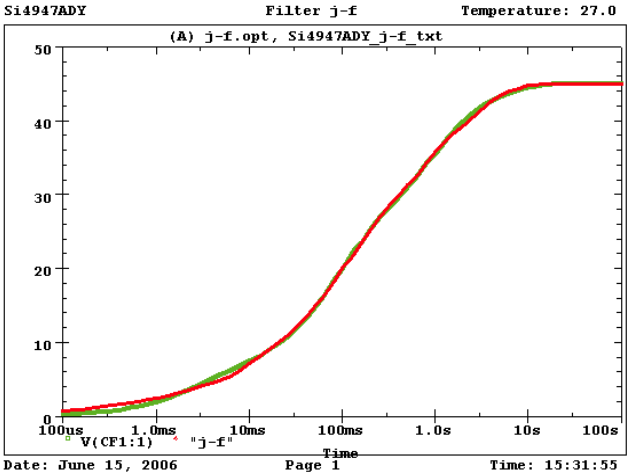
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Filter j-f
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30
20
10
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