R-C Thermal Model Parameters

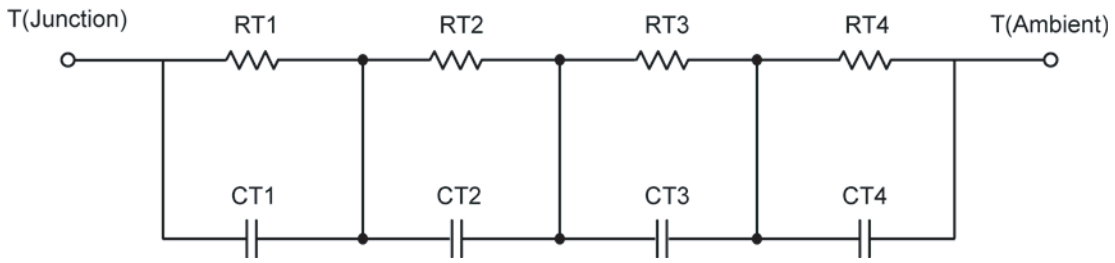
DESCRIPTION

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.

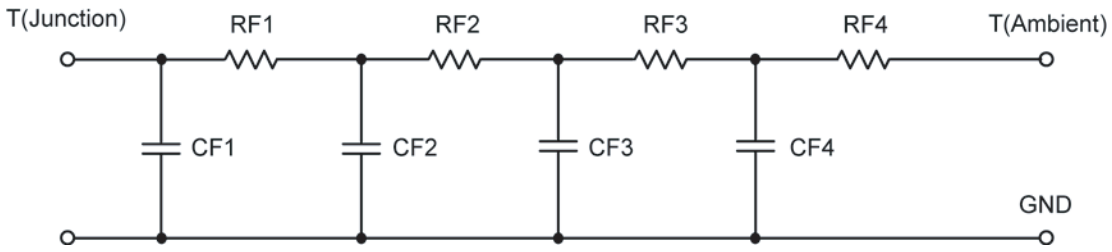
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION		
Thermal Resistance (°C/W)		
Junction to	**Ambient**	**Case**
RT1	65.0615	N/A
RT2	47.9253	N/A
RT3	41.1729	N/A
RT4	9.6980	N/A
Thermal Capacitance (Joules/°C)		
Junction to	**Ambient**	**Case**
CT1	1.1655	N/A
CT2	17.3479 m	N/A
CT3	3.0586 m	N/A
CT4	582.7750 μ	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

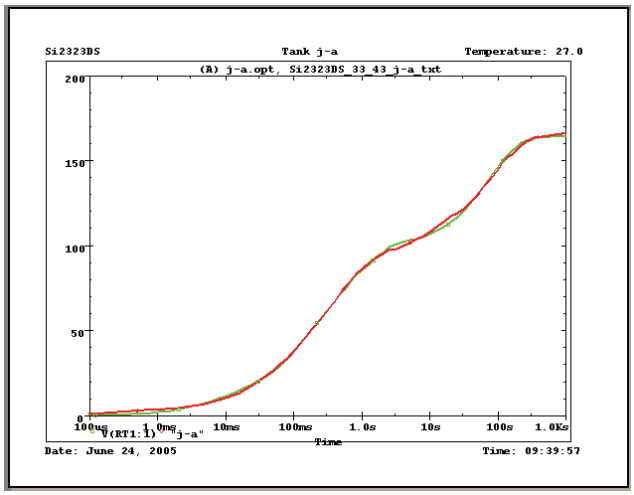


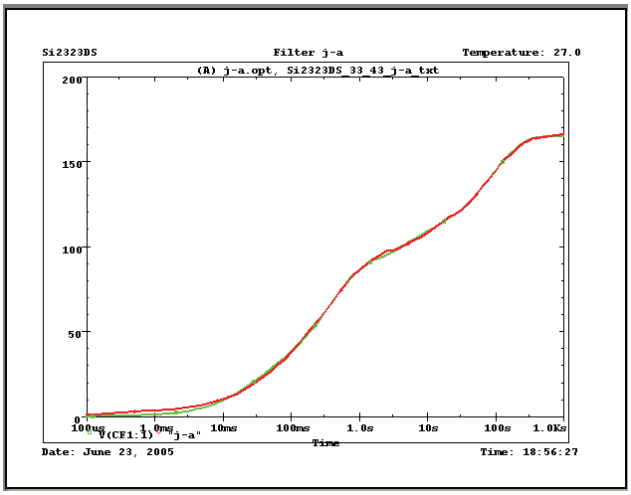
R-C VALUES FOR FILTER CONFIGURATION		
Thermal Resistance (°C/W)		
Junction to	**Ambient**	**Case**
RF1	30.1437	N/A
RF2	57.6679	N/A
RF3	21.8656	N/A
RF4	55.0958	N/A
Thermal Capacitance (Joules/°C)		
Junction to	**Ambient**	**Case**
CF1	1.4173	N/A
CF2	187.5234 m	N/A
CF3	4.6627 m	N/A
CF4	853.4095 μ	N/A

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


Si2323DS
Tank j-a
Temperature: 27.0
(A) j-a.opt, Si2323DS_33_43_j-a_txt
200
150
100
50
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1) "j-a"
Time
Date: June 24, 2005
Time: 09:39:57


Si2323DS
Filter j-a
Temperature: 27.0
(A) j-a.opt, Si2323DS_33_43_j-a_txt
200
150
100
50
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(CF1:1) "j-a"
Time
Date: June 23, 2005
Time: 18:56:27