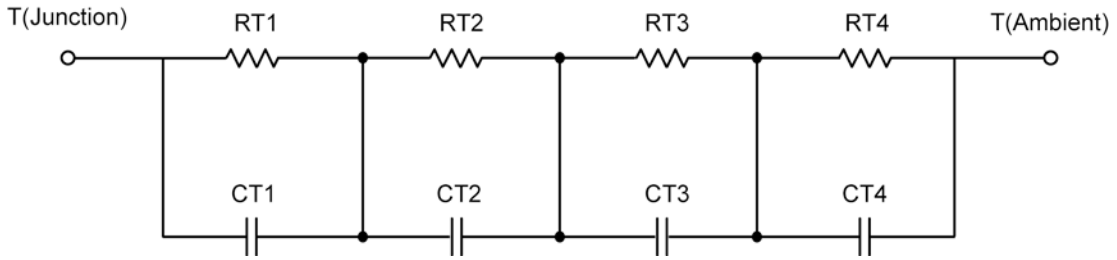
R-C Thermal Model Parameters

DESCRIPTION

The parametric values in the R-C thermal model have been derived using curve-fitting techniques. R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included. When implemented in P-SPICE, these values have matching characteristic curves to the single-pulse transient thermal impedance curves for the MOSFET.

These RC values can be used in the P-SPICE simulation to evaluate the thermal behavior of the MOSFET junction temperature under a defined power profile. These techniques are described in Application Note AN609, "Thermal Simulation of Power MOSFETs on the P-Spice Platform."

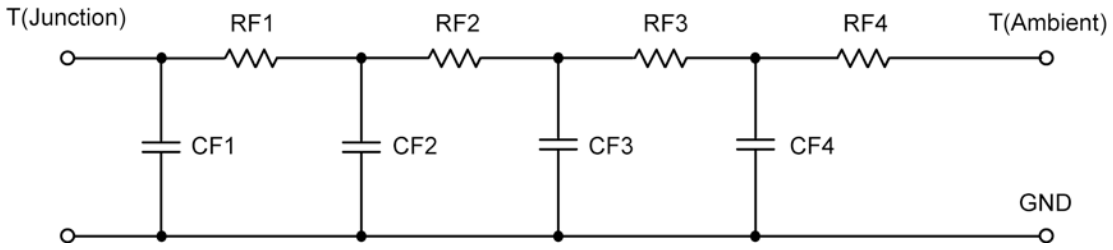
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	27.5064	N/A	10.8785
RT2	7.8773	N/A	3.1294
RT3	18.3282	N/A	8.5121
RT4	56.2881	N/A	7.4800
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	6.9455 m	N/A	3.7383 m
CT2	1.0952 m	N/A	487.9321 u
CT3	59.8102 m	N/A	23.5279 m
CT4	1.3314	N/A	20.5147 m

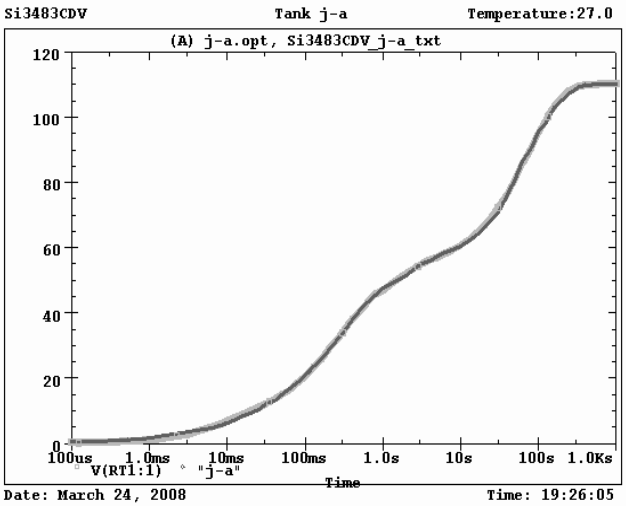
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

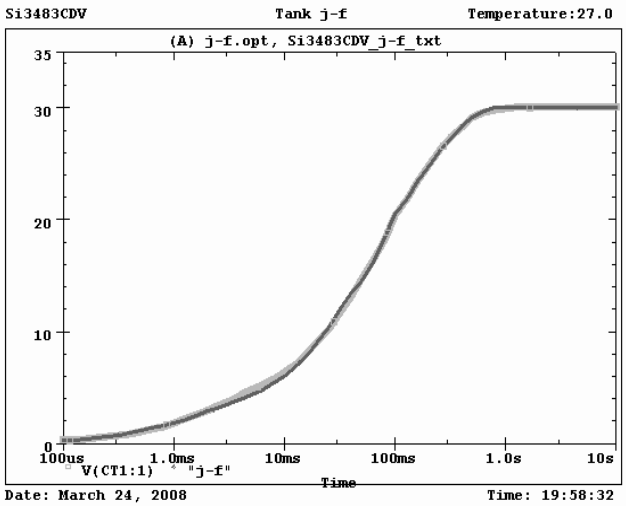
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	5.9333	N/A	3.4778
RF2	28.2506	N/A	10.4003
RF3	20.0737	N/A	10.8019
RF4	55.7424	N/A	5.3200
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	608.3113 u	N/A	366.4125 u
CF2	3.6811 m	N/A	2.2600 m
CF3	29.9578 m	N/A	1.3394 m
CF4	1.3394	N/A	38.5679 m

Note: NA indicates not applicable


Si3483CDV
Tank j-a
Temperature:27.0
(A) j-a.opt, Si3483CDV_j-a_txt
120
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date: March 24, 2008
Time: 19:26:05


Si3483CDV
Tank j-f
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35
30
20
10
0
100us
1.0ms
10ms
100ms
1.0s
10s
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Time
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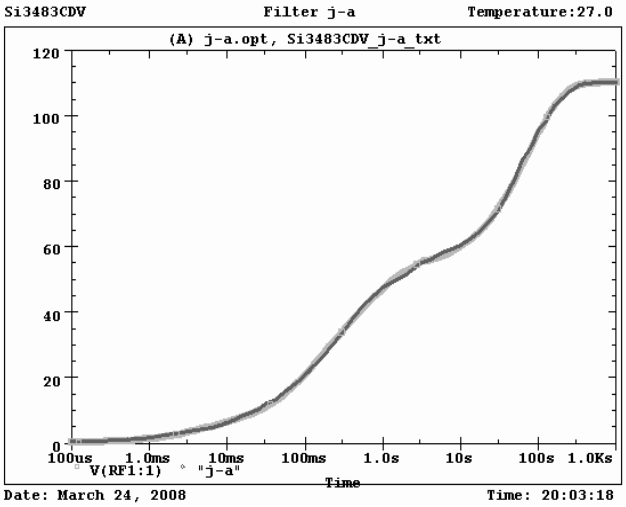
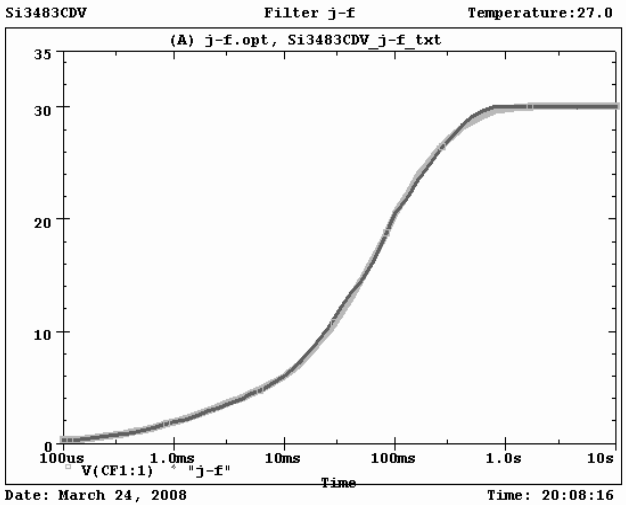
Time: 19:58:32


Si3483CDV
Filter j-a
Temperature:27.0
(A) j-a.opt, Si3483CDV_j-a_txt
120
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date: March 24, 2008
Time: 20:03:18


Si3483CDV
Filter j-f
Temperature:27.0
(A) j-f.opt, Si3483CDV_j-f_txt
35
30
20
10
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CF1:1)
"j-f"
Time
Date: March 24, 2008
Time: 20:08:16