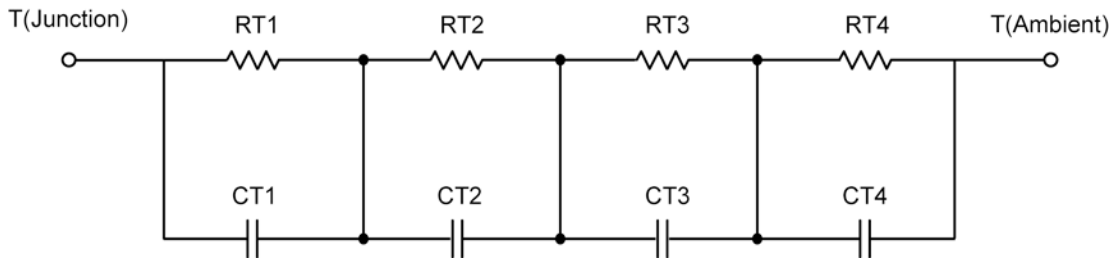
R-C Thermal Model Parameters

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."

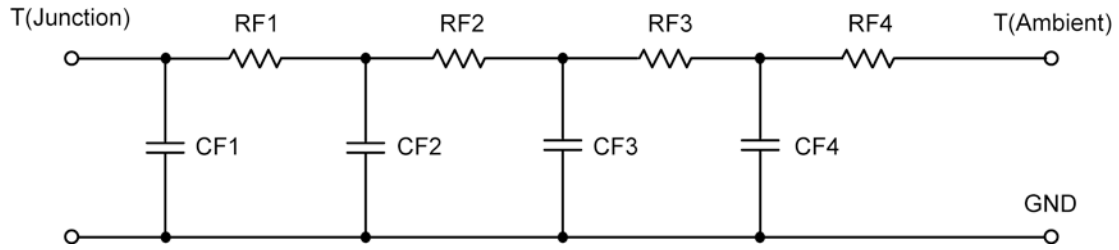
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.6506	N/A	1.1404
RT2	52.0627	N/A	6.0133
RT3	12.0050	N/A	8.7732
RT4	17.2817	N/A	5.0731
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	5.2117 m	N/A	18.7205 m
CT2	1.4294	N/A	72.4104 m
CT3	50.2100 m	N/A	254.7636 m
CT4	123.3758 m	N/A	9.2230 m

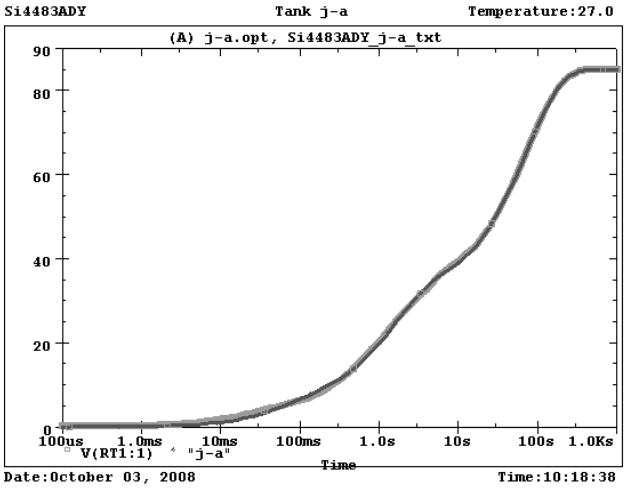
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

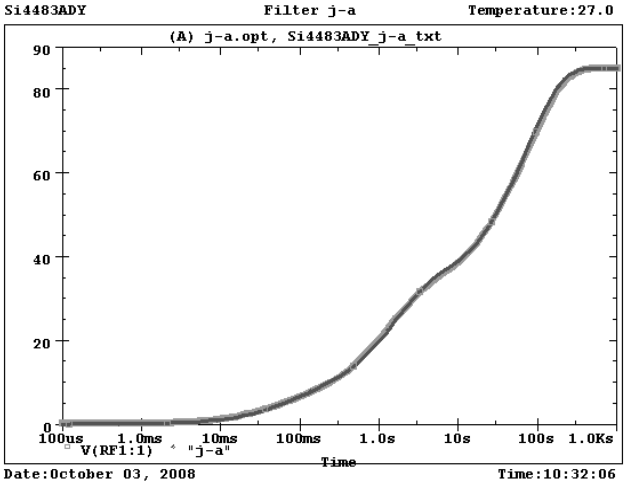
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	7.0833	N/A	2.9636
RF2	25.1418	N/A	5.8927
RF3	27.9181	N/A	7.7935
RF4	24.8568	N/A	4.3502
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	7.2554 m	N/A	4.5411 m
CF2	39.4753 m	N/A	4.8993 m
CF3	1.0080	N/A	82.2551 m
CF4	1.7521	N/A	401.5883 m

Note
NA indicates not applicable


Si4483ADY
Tank j-a
Temperature:27.0
(A) j-a.opt, Si4483ADY_j-a_txt
90
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date:October 03, 2008
Time:10:18:38


Si4483ADY
Filter j-a
Temperature:27.0
(A) j-a.opt, Si4483ADY_j-a_txt
90
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
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Time
Date:October 03, 2008
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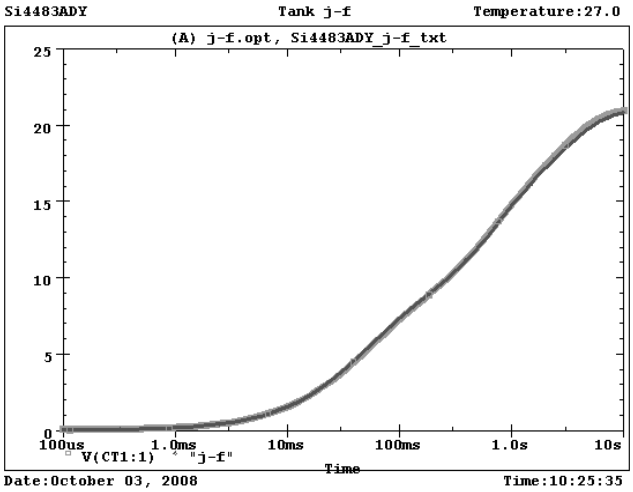
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Tank j-f
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15
10
5
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100ms
1.0s
10s
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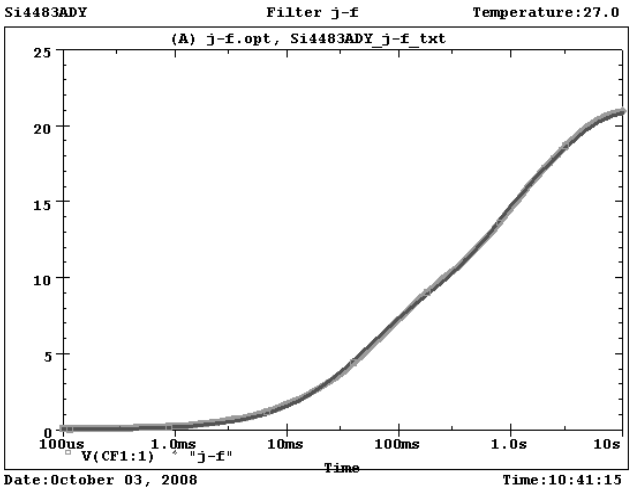
Time
Date:October 03, 2008
Time:10:25:35


Si4483ADY
Filter j-f
Temperature:27.0
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25
20
15
10
5
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CF1:1)
"j-f"
Time
Date:October 03, 2008
Time:10:41:15