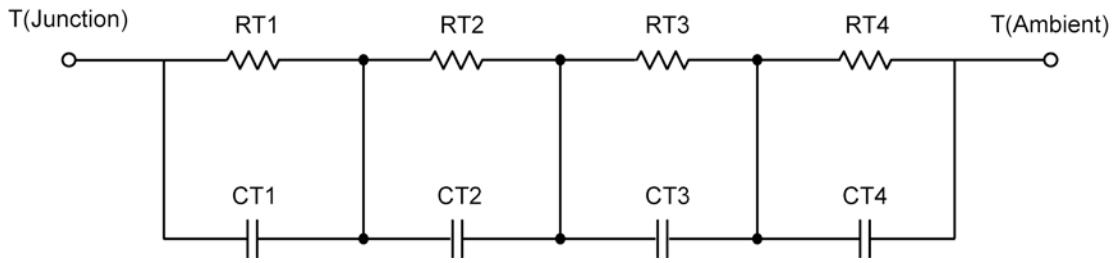
R-C Thermal Model Parameters

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."

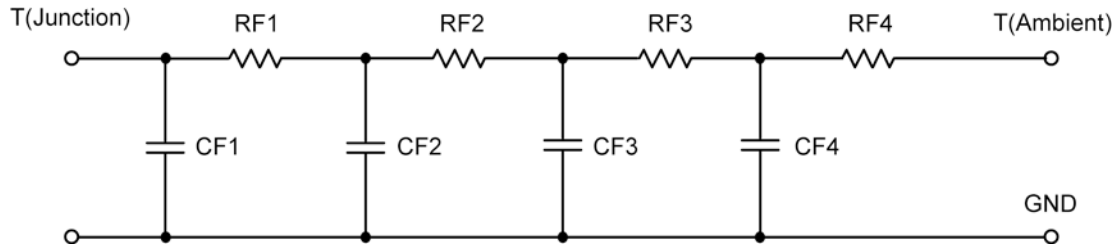
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	10.9594	N/A	15.4459
RT2	58.3228	N/A	2.3502
RT3	32.8979	N/A	7.5331
RT4	63.8199	N/A	24.6708
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	529.2633 u	N/A	13.2342 m
CT2	3.2494 m	N/A	218.6055 u
CT3	50.8575 m	N/A	3.5873 m
CT4	1.3936	N/A	31.1868 m

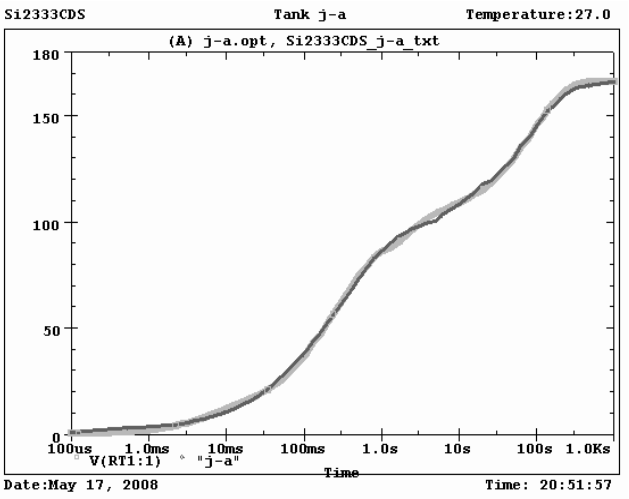
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

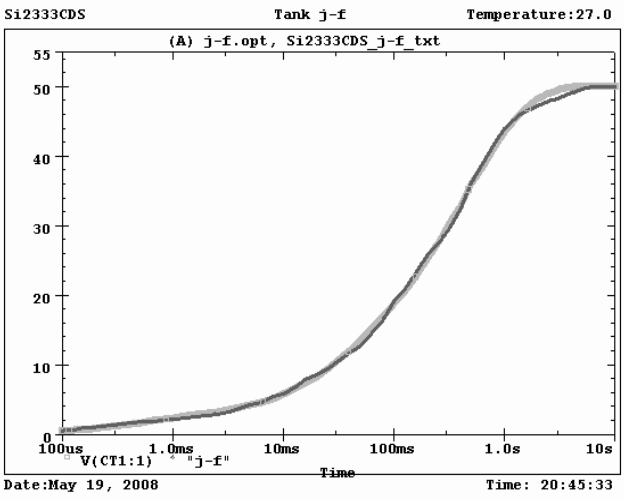
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	7.6877	N/A	2.9021
RF2	47.0853	N/A	11.6804
RF3	46.4192	N/A	26.4370
RF4	64.8078	N/A	8.9805
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	274.9646 u	N/A	222.4866 u
CF2	1.6267 m	N/A	2.3227 m
CF3	13.5715 m	N/A	7.8296 m
CF4	1.2769	N/A	98.6038 m

Note
NA indicates not applicable


Si2333CDS
Tank j-a
Temperature:27.0
(A) j-a.opt, Si2333CDS_j-a_txt
180
150
100
50
0
100us 1.0ms 10ms 100ms 1.0s 10s 100s 1.0Ks
V(RT1:1) "j-a"
Time
Date:May 17, 2008
Time: 20:51:57


Si2333CDS
Tank j-f
Temperature:27.0
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55
50
40
30
20
10
0
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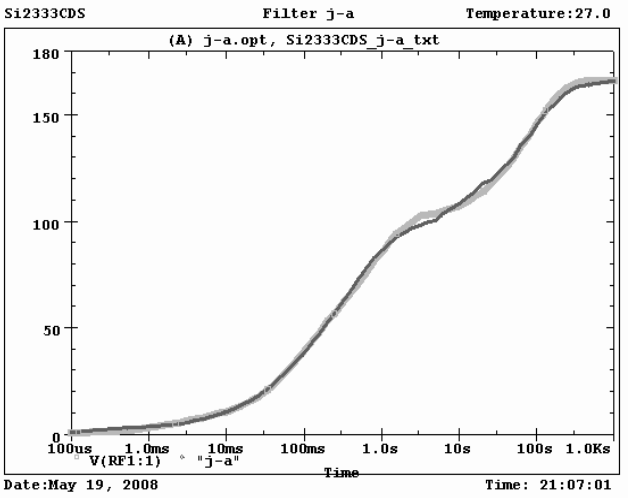
Time
Date:May 19, 2008
Time: 20:45:33


Si2333CDS
Filter j-a
Temperature:27.0
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180
150
100
50
0
100us 1.0ms 10ms 100ms 1.0s 10s 100s 1.0Ks
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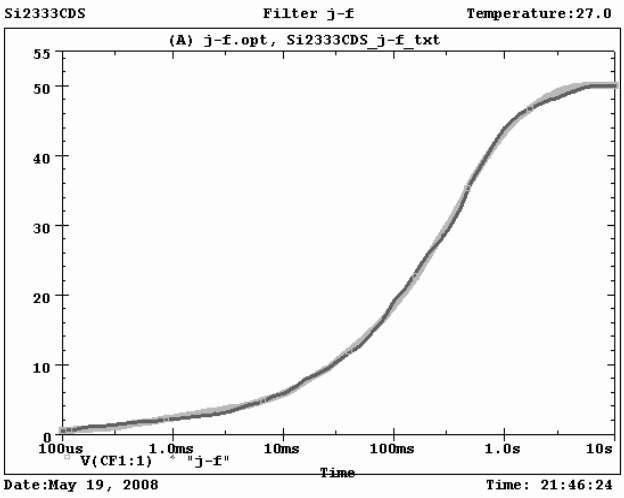
Time
Date:May 19, 2008
Time: 21:07:01


Si2333CDS
Filter j-f
Temperature:27.0
(A) j-f.opt, Si2333CDS_j-f_txt
55
50
40
30
20
10
0
100us 1.0ms 10ms 100ms 1.0s 10s
V(CF1:1) "j-f"
Time
Date:May 19, 2008
Time: 21:46:24