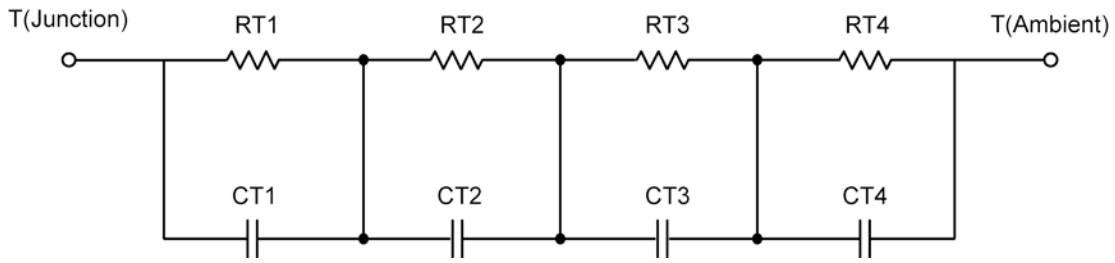
R-C Thermal Model Parameters

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."

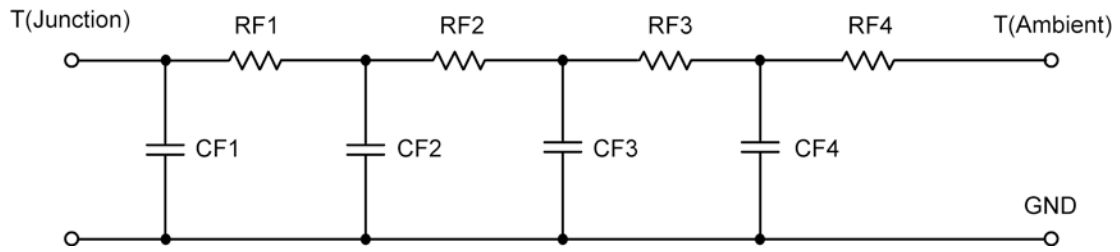
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	10.9948	742.9937 m	N/A
RT2	4.5439	2.0682	N/A
RT3	2.6966	185.8461 m	N/A
RT4	51.7647	2.9602 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	133.7481 m	873.2923 u	N/A
CT2	32.6783 m	4.0096 m	N/A
CT3	1.8346 m	132.0877 m	N/A
CT4	1.2563	273.8045 u	N/A

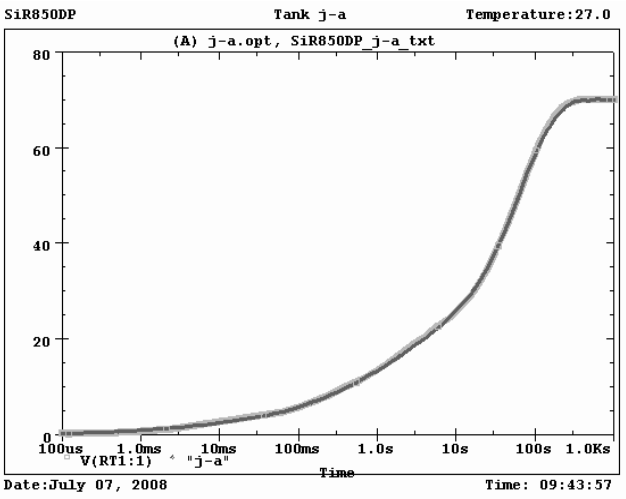
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

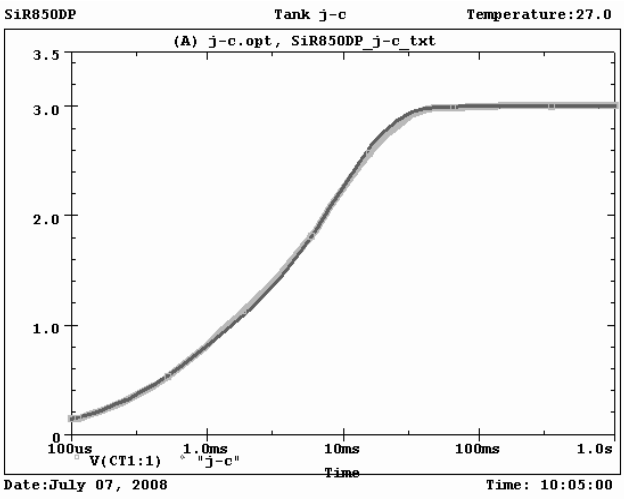
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	3.3975	1.0437	N/A
RF2	11.3094	1.1094	N/A
RF3	15.9477	641.2221 m	N/A
RF4	39.3454	202.8779 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.9234 m	753.9727 u	N/A
CF2	39.2111 m	3.5615 m	N/A
CF3	495.8147 m	65.5742 u	N/A
CF4	1.1525	7.7286 m	N/A

Note
NA indicates not applicable


SiR850DP
Tank j-a
Temperature:27.0
(A) j-a.opt, SiR850DP_j-a_txt
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date:July 07, 2008
Time: 09:43:57


SiR850DP
Tank j-c
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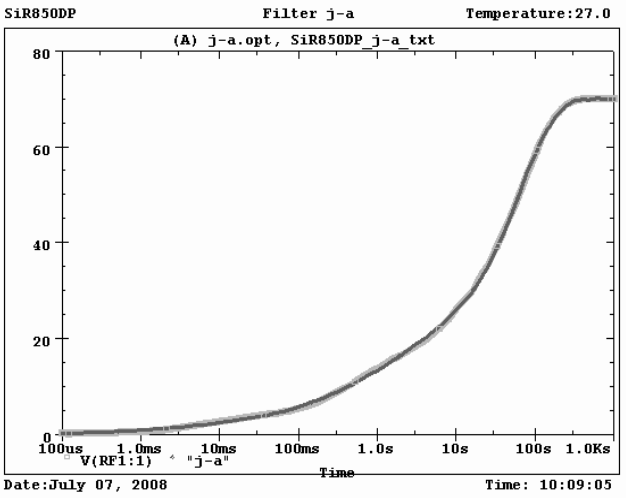
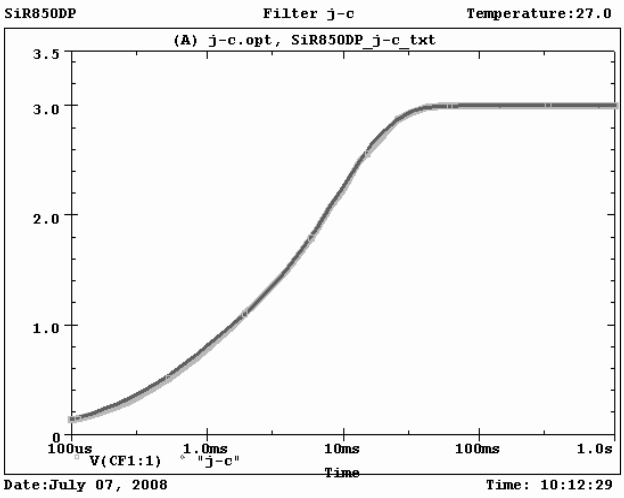
3.5
3.0
2.0
1.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CT1:1)
"j-c"
Time
Date:July 07, 2008
Time: 10:05:00


SiR850DP
Filter j-a
Temperature:27.0
(A) j-a.opt, SiR850DP_j-a_txt
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date:July 07, 2008
Time: 10:09:05


SiR850DP
Filter j-c
Temperature:27.0
(A) j-c.opt, SiR850DP_j-c_txt
3.5
3.0
2.0
1.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CF1:1)
"j-c"
Time
Date:July 07, 2008
Time: 10:12:29