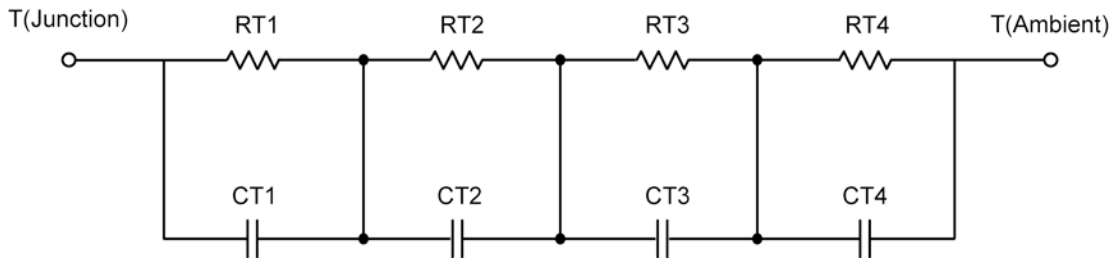
R-C Thermal Model Parameters

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."

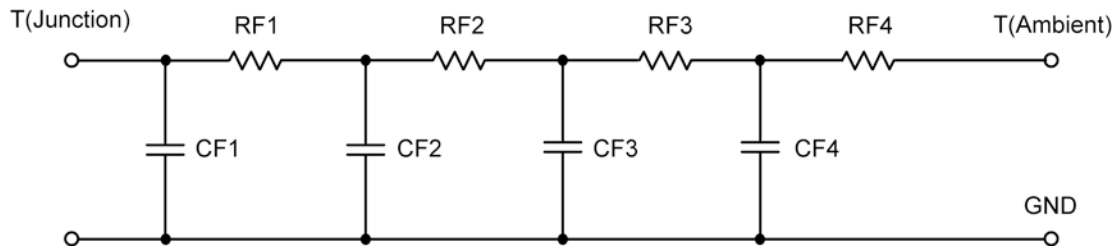
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	2.4715	595.7468 m	N/A
RT2	8.2017	127.4294 m	N/A
RT3	10.5594	797.4238 m	N/A
RT4	43.7674	1.0794	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	6.8754 m	2.6147 m	N/A
CT2	56.0679 m	2.2455 m	N/A
CT3	406.8723 m	20.1487 m	N/A
CT4	1.7977	14.4825 m	N/A

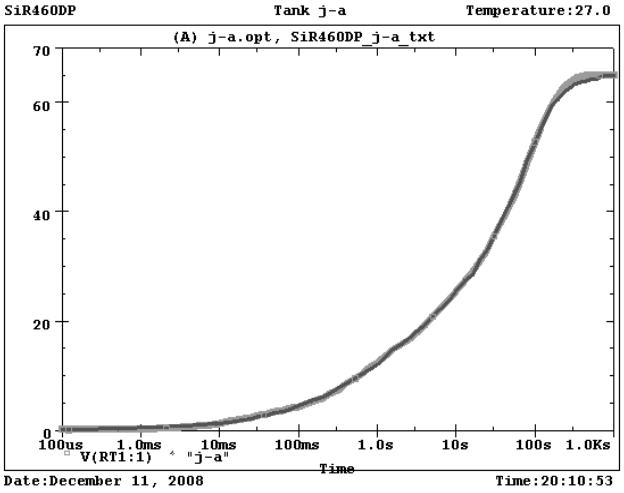
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

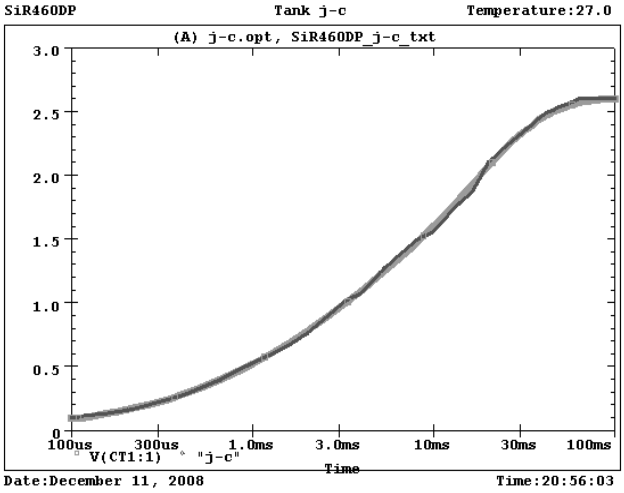
R-C THERMAL MODEL FOR FILTER CONFIGURATION

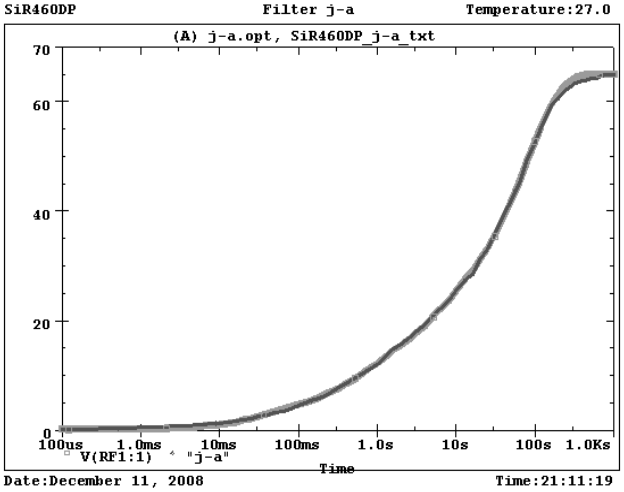


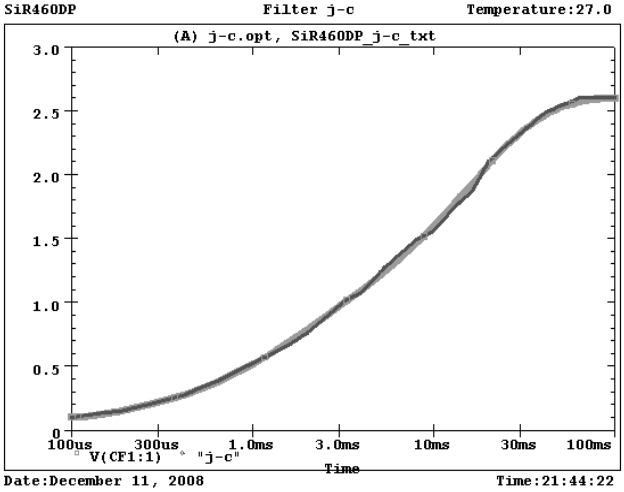
R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	4.4754	153.5372 m	N/A
RF2	9.7819	873.3392 m	N/A
RF3	14.5471	719.0713 m	N/A
RF4	36.1956	854.0523 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	8.8655 m	759.8191 u	N/A
CF2	54.0973 m	912.8417 u	N/A
CF3	392.2039 m	7.8739 m	N/A
CF4	1.7459	358.9838 u	N/A

Note
NA indicates not applicable


SiR460DP
Tank j-a
Temperature:27.0
(A) j-a.opt, SiR460DP_j-a_txt
70
60
40
20
0
100us 1.0ms 10ms 100ms 1.0s 10s 100s 1.0Ks
V(RT1:1) "j-a"
Time
Date:December 11, 2008
Time:20:10:53


SiR460DP
Tank j-c
Temperature:27.0
(A) j-c.opt, SiR460DP_j-c_txt
3.0
2.5
2.0
1.5
1.0
0.5
0
100us 300us 1.0ms 3.0ms 10ms 30ms 100ms
V(CT1:1) "j-c"
Time
Date:December 11, 2008
Time:20:56:03


SiR460DP
Filter j-a
Temperature:27.0
(A) j-a.opt, SiR460DP_j-a_txt
70
60
40
20
0
100us 1.0ms 10ms 100ms 1.0s 10s 100s 1.0Ks
V(RF1:1) "j-a"
Time
Date:December 11, 2008
Time:21:11:19


SiR460DP
Filter j-c
Temperature:27.0
(A) j-c.opt, SiR460DP_j-c_txt
3.0
2.5
2.0
1.5
1.0
0.5
0
100us 300us 1.0ms 3.0ms 10ms 30ms 100ms
V(CF1:1) "j-c"
Time
Date:December 11, 2008
Time:21:44:22