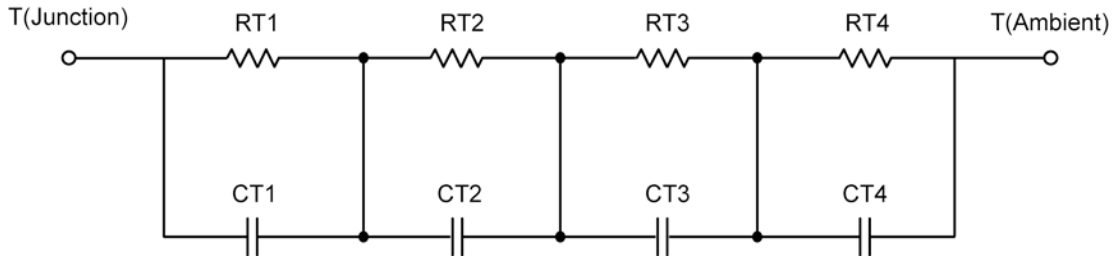
R-C Thermal Model Parameters

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."

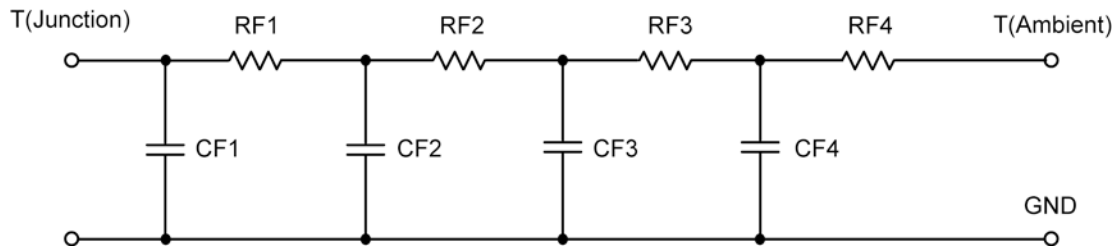
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	1.9921	546.0005 m	N/A
RT2	12.7242	284.8987 m	N/A
RT3	10.4306	492.2008 m	N/A
RT4	44.8531	2.1769	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.4947 m	600.9468 u	N/A
CT2	506.3593 m	30.2059 m	N/A
CT3	38.2285 m	9.4434 m	N/A
CT4	1.6532	9.4063 m	N/A

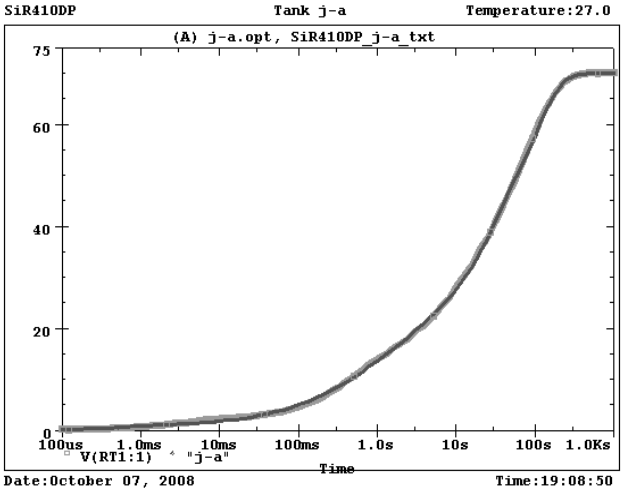
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

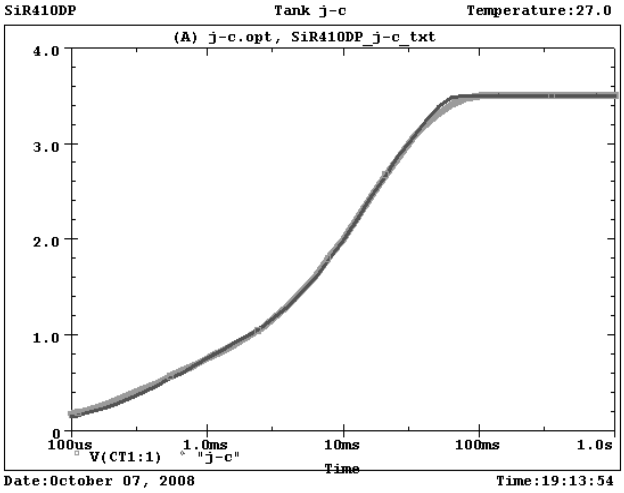
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	2.2098	956.0920 m	N/A
RF2	13.0792	1.3571	N/A
RF3	21.1865	649.5091 m	N/A
RF4	33.5245	537.2989 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.7629 m	737.3986 u	N/A
CF2	35.3857 m	5.4126 m	N/A
CF3	458.6534 m	2.7800 m	N/A
CF4	1.6882	1.1187 m	N/A

Note
NA indicates not applicable


SiR410DP
Tank j-a
Temperature:27.0
(A) j-a.opt, SiR410DP_j-a_txt
75
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date:October 07, 2008
Time:19:08:50


SiR410DP
Tank j-c
Temperature:27.0
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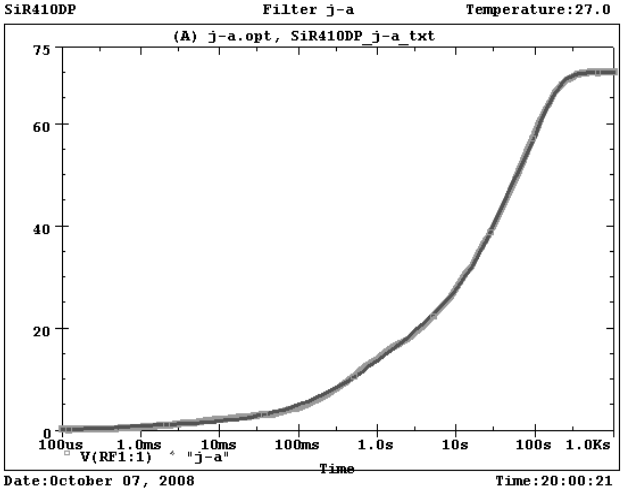
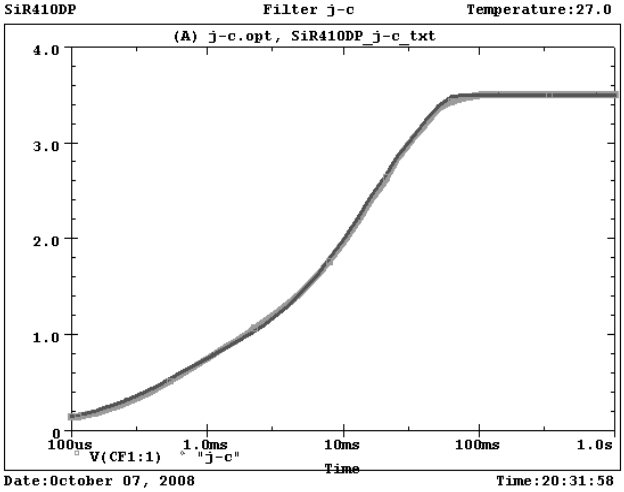
3.0
2.0
1.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CT1:1)
"j-c"
Time
Date:October 07, 2008
Time:19:13:54


SiR410DP
Filter j-a
Temperature:27.0
(A) j-a.opt, SiR410DP_j-a_txt
75
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date:October 07, 2008
Time:20:00:21


SiR410DP
Filter j-c
Temperature:27.0
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4.0
3.0
2.0
1.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CF1:1)
"j-c"
Time
Date:October 07, 2008
Time:20:31:58