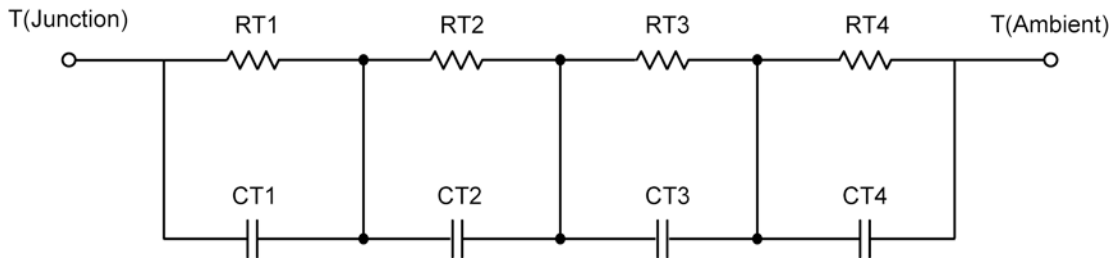
R-C Thermal Model Parameters

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."

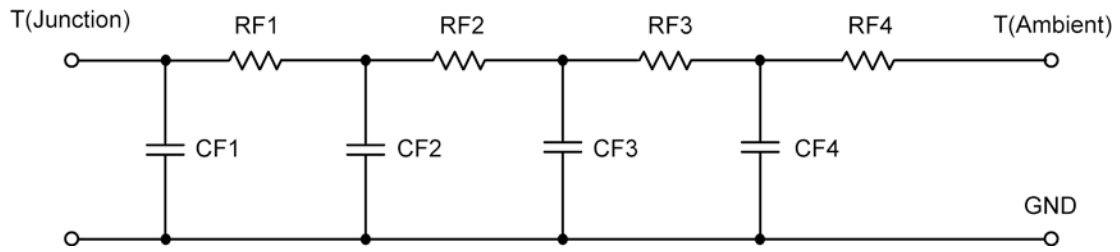
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	9.9197	3.8580	N/A
RT2	28.2524	2.6850	N/A
RT3	25.3407	423.5000 m	N/A
RT4	36.4872	5.5335	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	245.3874 u	109.4576 u	N/A
CT2	4.3506 m	3.2193 m	N/A
CT3	75.0958 m	93.5559 m	N/A
CT4	1.9602	712.8844 u	N/A

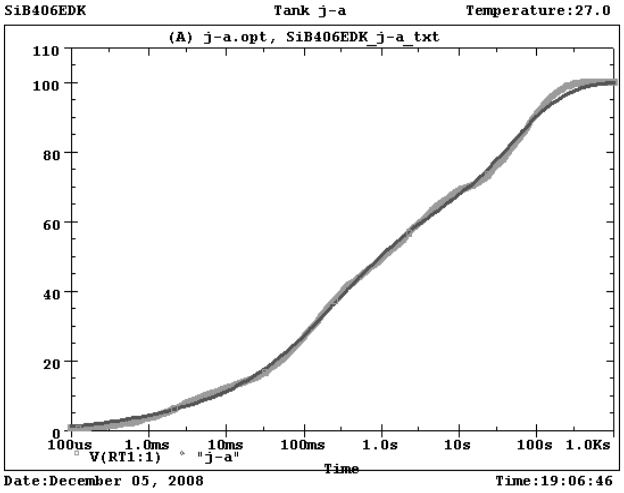
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

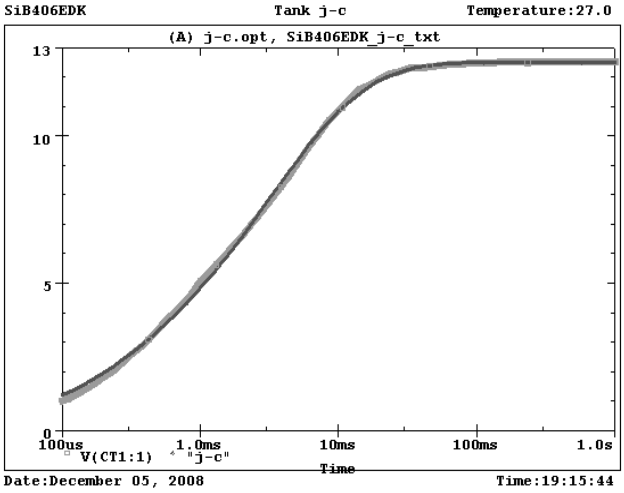
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	12.0391	5.0985	N/A
RF2	29.6174	5.5860	N/A
RF3	24.4342	775.6000 m	N/A
RF4	33.9093	1.0399	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	267.7291 u	91.7772 u	N/A
CF2	4.2343 m	475.7306 u	N/A
CF3	78.5664 m	6.7327 m	N/A
CF4	2.0846	1.4136 m	N/A

Note
NA indicates not applicable


SiB406EDK
Tank j-a
Temperature:27.0
(A) j-a.opt, SiB406EDK_j-a_txt
110
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date:December 05, 2008
Time:19:06:46


SiB406EDK
Tank j-c
Temperature:27.0
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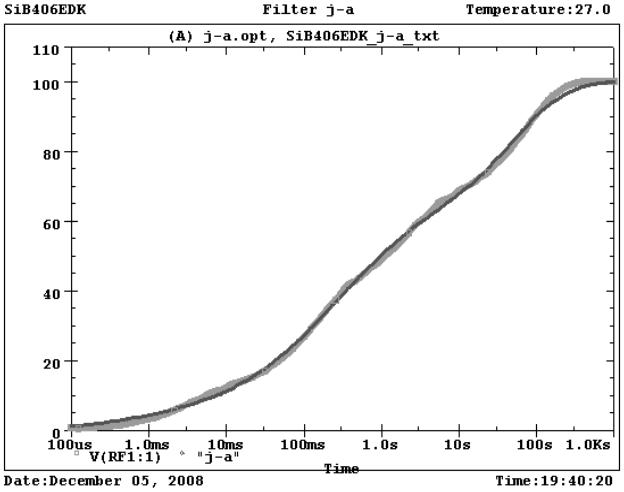
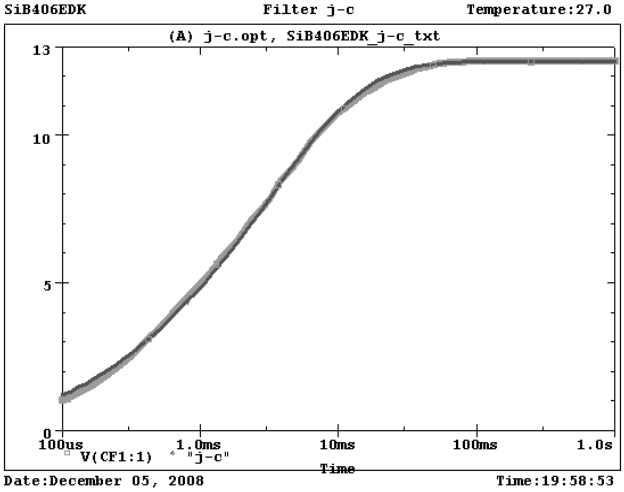
13
10
5
0
100us
1.0ms
10ms
100ms
1.0s
V(CT1:1)
"j-c"
Time
Date:December 05, 2008
Time:19:15:44


SiB406EDK
Filter j-a
Temperature:27.0
(A) j-a.opt, SiB406EDK_j-a_txt
110
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date:December 05, 2008
Time:19:40:20


SiB406EDK
Filter j-c
Temperature:27.0
(A) j-c.opt, SiB406EDK_j-c_txt
13
10
5
0
100us
1.0ms
10ms
100ms
1.0s
V(CF1:1)
"j-c"
Time
Date:December 05, 2008
Time:19:58:53