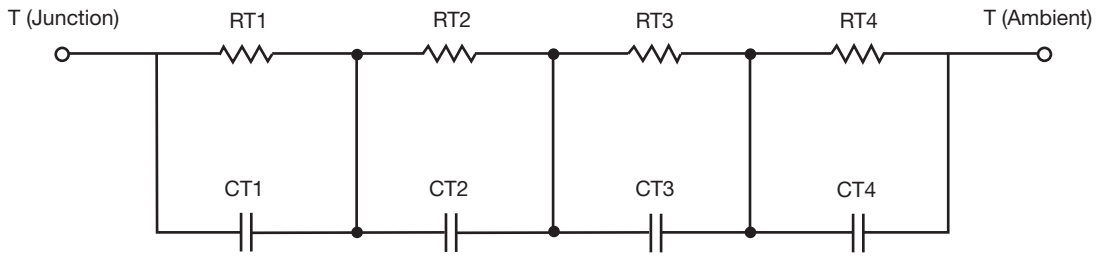
R-C Thermal Model Parameters

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

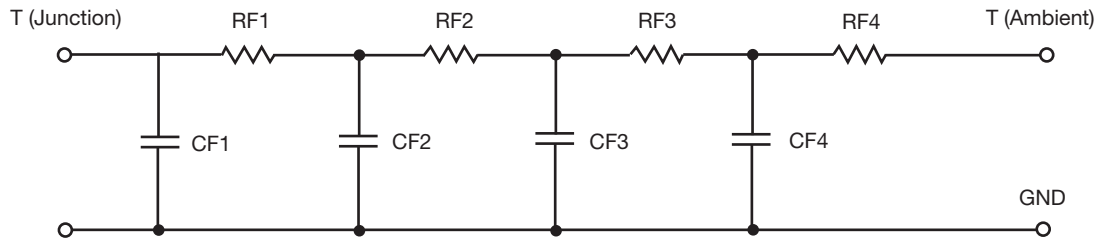


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	22.0995	888.4002m	N/A
RT2	35.6220	449.9934m	N/A
RT3	15.4918	762.4267m	N/A
RT4	7.5493	302.2620m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	2.0497	7.7661m	N/A
CT2	2.3292	877.8439u	N/A
CT3	55.3723m	24.5394m	N/A
CT4	7.2362m	58.9039m	N/A

Note
N/A indicates not applicable

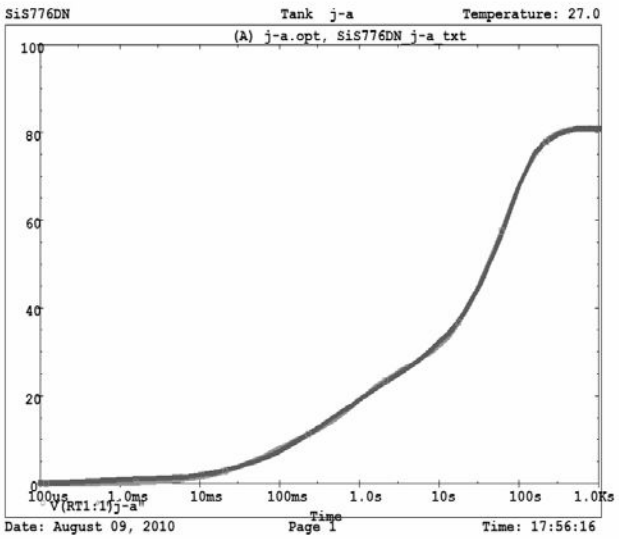
This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.

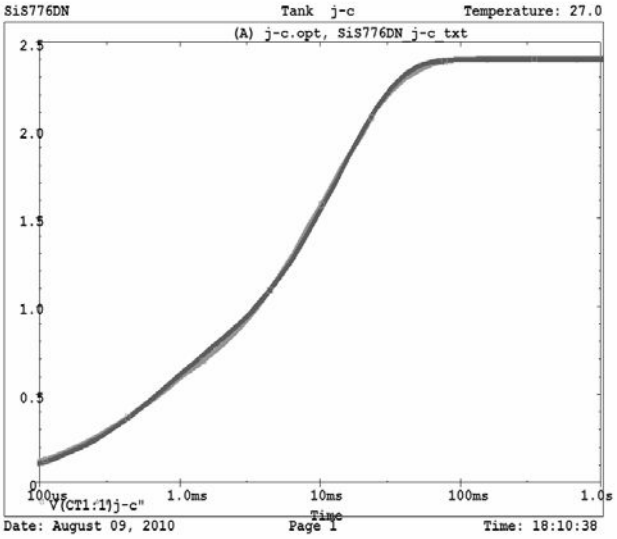
R-C THERMAL MODEL FOR FILTER CONFIGURATION

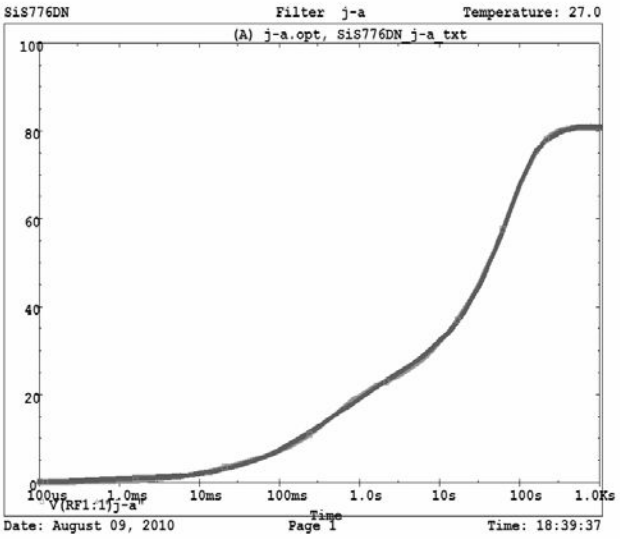


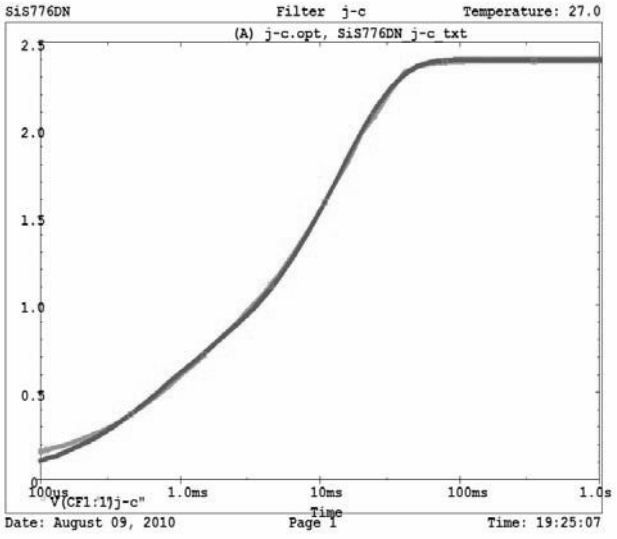
R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	4.6478	103.0666m	N/A
RF2	16.3035	692.8482m	N/A
RF3	18.0273	834.2852m	N/A
RF4	41.7890	759.2856m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	3.4901m	137.6731u	N/A
CF2	21.9916m	1.0857m	N/A
CF3	564.4159m	5.9333m	N/A
CF4	1.0137	5.2724m	N/A

Note
N/A indicates not applicable


SiS776DN
Tank j-a
Temperature: 27.0
(A) j-a.opt, SiS776DN_j-a_txt
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)j-a"
Time
Date: August 09, 2010
Page 1
Time: 17:56:16


SiS776DN
Tank j-c
Temperature: 27.0
(A) j-c.opt, SiS776DN_j-c_txt
2.5
2.0
1.5
1.0
0.5
0
100us
1.0ms
10ms
100ms
1.0s
V(CT1:1)j-c"
Time
Date: August 09, 2010
Page 1
Time: 18:10:38


SiS776DN
Filter j-a
Temperature: 27.0
(A) j-a.opt, SiS776DN_j-a_txt
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)j-a"
Time
Date: August 09, 2010
Page 1
Time: 18:39:37


SiS776DN
Filter j-c
Temperature: 27.0
(A) j-c.opt, SiS776DN_j-c_txt
2.5
2.0
1.5
1.0
0.5
0
100us
1.0ms
10ms
100ms
1.0s
V(CF1:1)j-c"
Time
Date: August 09, 2010
Page 1
Time: 19:25:07