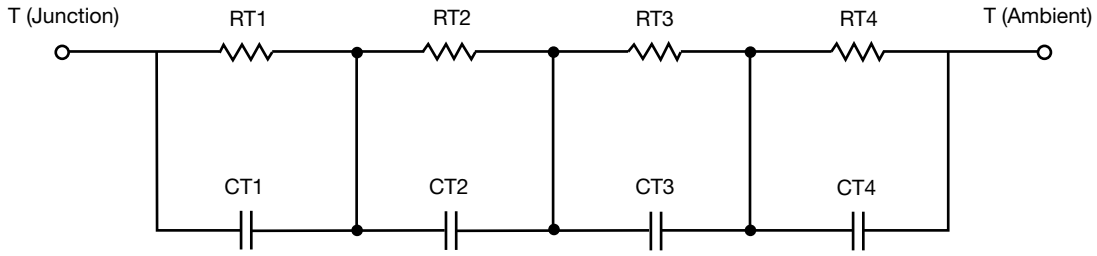
R-C Thermal Model Parameters

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

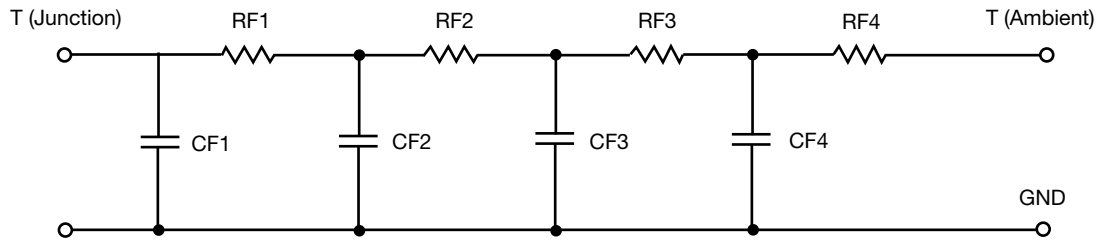


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	14.4282	895.9263m	N/A
RT2	3.2285	782.0925m	N/A
RT3	11.7765	2.4203	N/A
RT4	51.2945	414.3330m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	16.5118m	27.2954m	N/A
CT2	1.5809m	542.0839u	N/A
CT3	180.2403m	4.5157m	N/A
CT4	1.2151	4.8344m	N/A

Note
N/A indicates not applicable

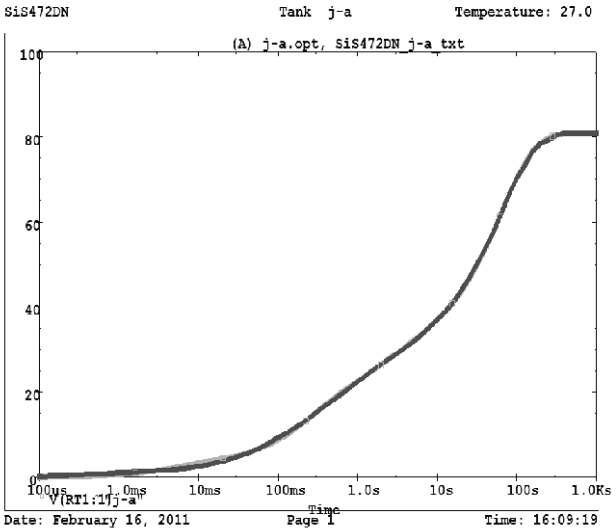
This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.

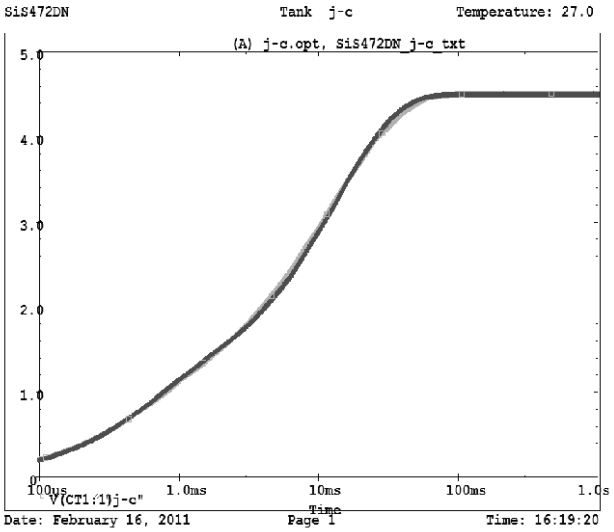
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	3.0740	597.1698m	N/A
RF2	16.8472	1.3924	N/A
RF3	14.3500	48.7753m	N/A
RF4	46.4998	2.4563	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	908.9144u	313.3781u	N/A
CF2	12.6067m	782.5039u	N/A
CF3	174.9348m	4.5151m	N/A
CF4	1.1745	9.4748u	N/A

Note
N/A indicates not applicable


SiS472DN
Tank j-a
Temperature: 27.0
(A) j-a.opt, SiS472DN_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: February 16, 2011
Page 1
Time: 16:09:19


SiS472DN
Tank j-c
Temperature: 27.0
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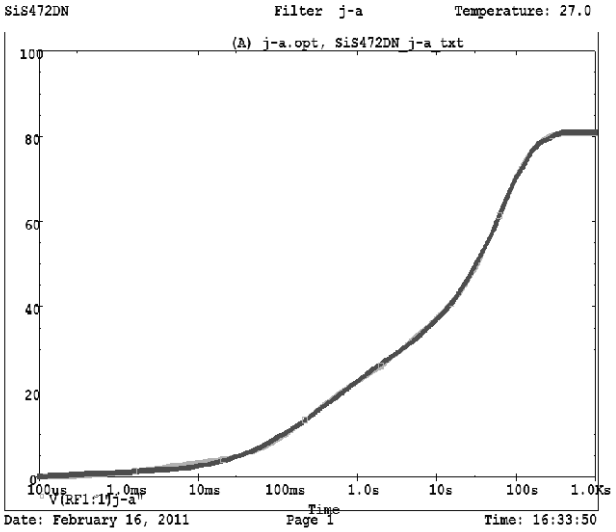
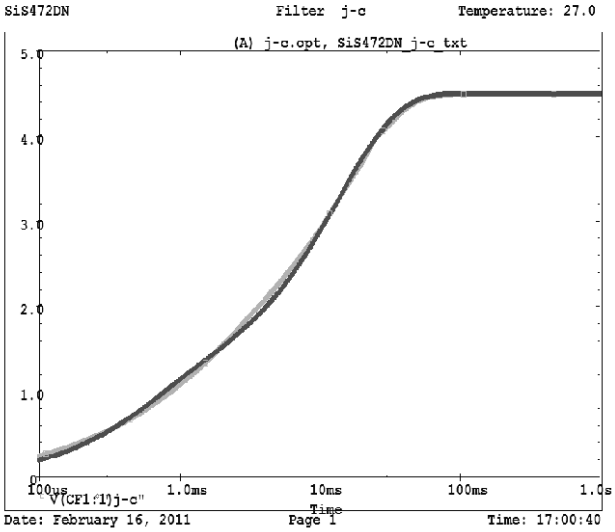
4.0
3.0
2.0
1.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CT1:1)j-c"
Time
Date: February 16, 2011
Page 1
Time: 16:19:20


SiS472DN
Filter j-a
Temperature: 27.0
(A) j-a.opt, SiS472DN_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: February 16, 2011
Page 1
Time: 16:33:50


SiS472DN
Filter j-c
Temperature: 27.0
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5.0
4.0
3.0
2.0
1.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CF1:1)j-c"
Time
Date: February 16, 2011
Page 1
Time: 17:00:40