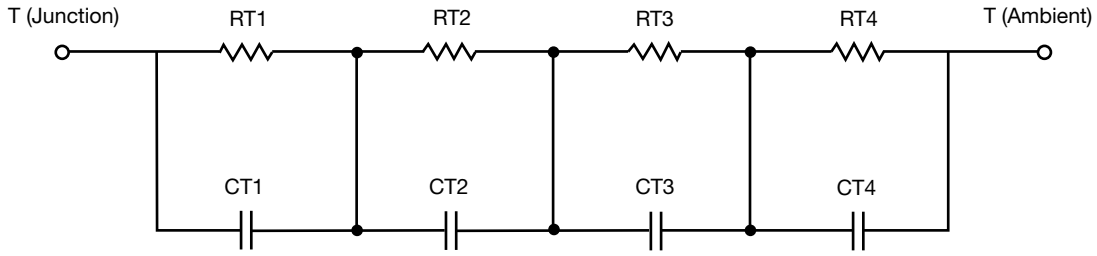
R-C Thermal Model Parameters

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

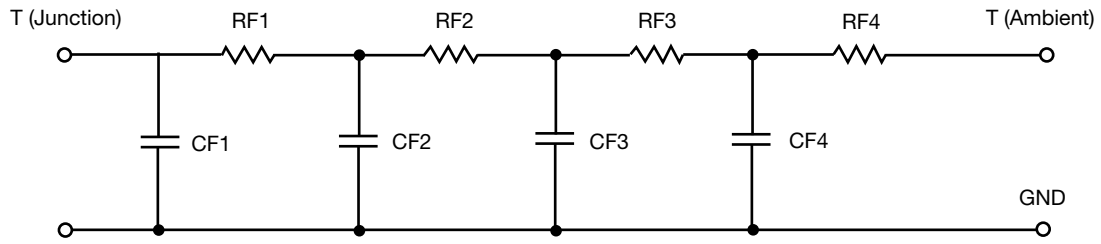


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	21.0014	828.3965m	N/A
RT2	36.7359	790.9777m	N/A
RT3	15.5846	408.0354m	N/A
RT4	7.4683	381.1333m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	2.1259	21.8127m	N/A
CT2	2.2430	5.7526m	N/A
CT3	54.5595m	50.4154m	N/A
CT4	7.2175m	901.8530u	N/A

Note
N/A indicates not applicable

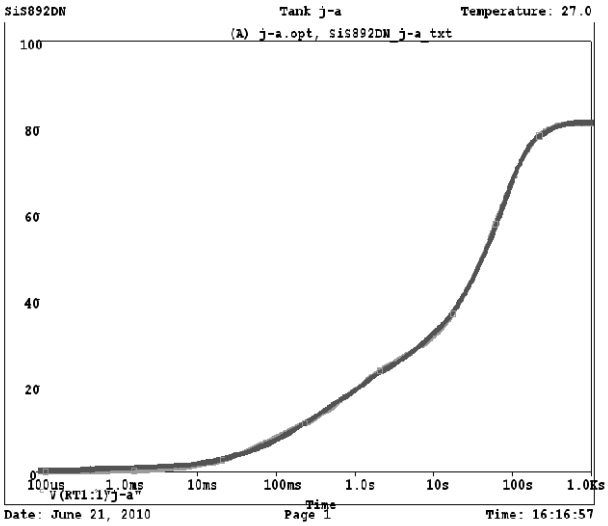
This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.

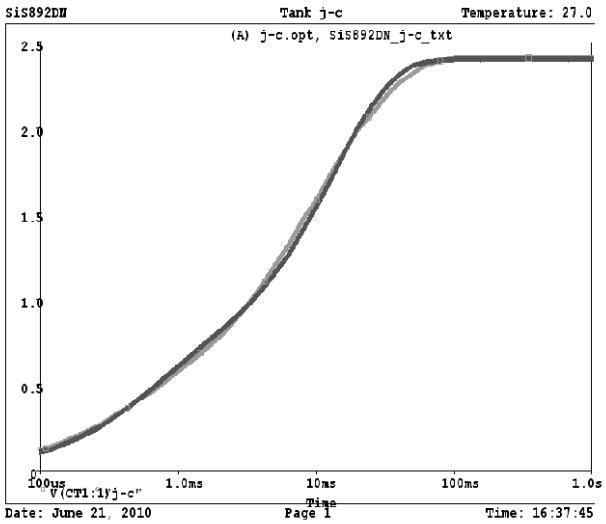
R-C THERMAL MODEL FOR FILTER CONFIGURATION

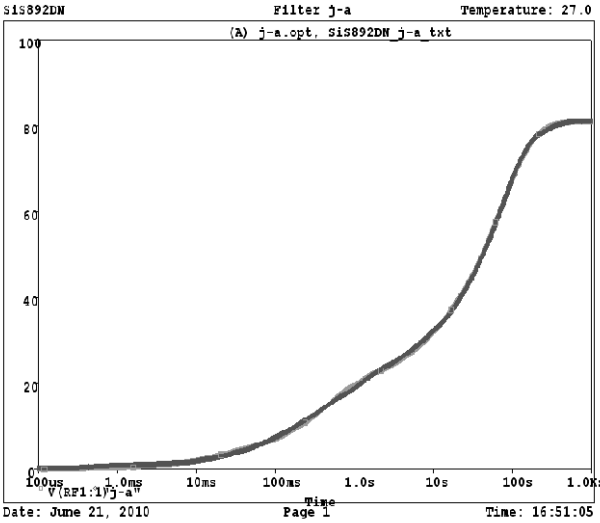


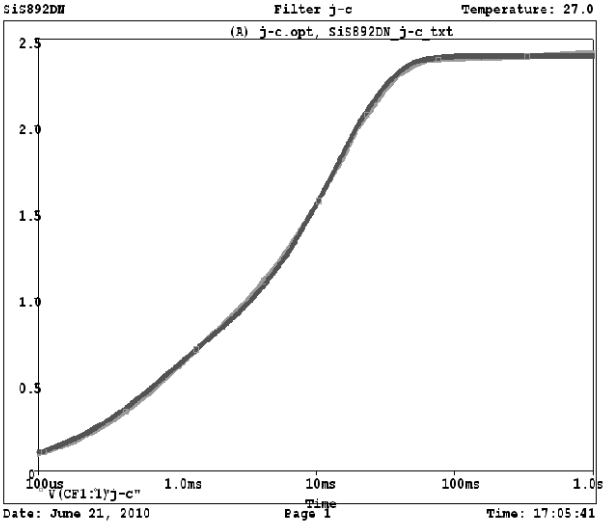
R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	4.6478	741.9230m	N/A
RF2	16.3035	400.9721m	N/A
RF3	18.0273	1.2399	N/A
RF4	41.7890	47.8745m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	3.4901m	932.6961u	N/A
CF2	21.9919m	4.3881m	N/A
CF3	564.4171m	4.5623m	N/A
CF4	1.0137	14.1564	N/A

Note
N/A indicates not applicable


SiS892DN
Tank j-a
Temperature: 27.0
(A) j-a.opt, SiS892DN_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: June 21, 2010
Page 1
Time: 16:16:57


SiS892DN
Tank j-c
Temperature: 27.0
(A) j-c.opt, SiS892DN_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: June 21, 2010
Page 1
Time: 16:37:45


SiS892DN
Filter j-a
Temperature: 27.0
(A) j-a.opt, SiS892DN_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: June 21, 2010
Page 1
Time: 16:51:05


SiS892DN
Filter j-c
Temperature: 27.0
(A) j-c.opt, SiS892DN_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: June 21, 2010
Page 1
Time: 17:05:41