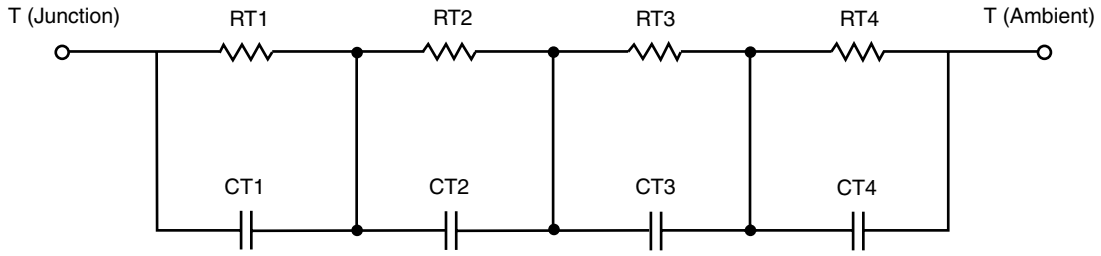
R-C Thermal Model Parameters

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

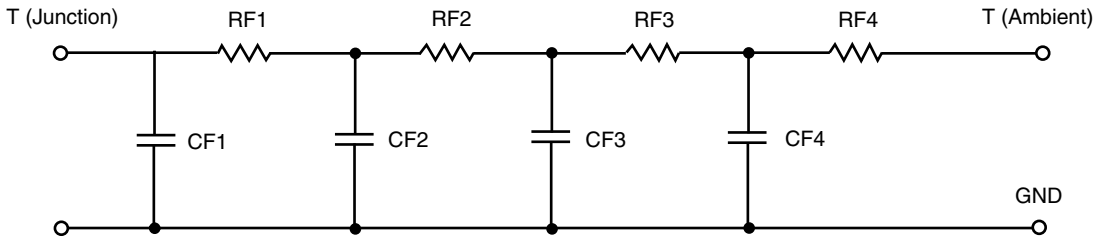


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	5.4383	1.6114	N/A
RT2	16.7646	4.5916	N/A
RT3	14.7839	626.9000 m	N/A
RT4	41.0132	1.2701	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	820.1712 u	3.6305 m	N/A
CT2	20.7055 m	5.7682 m	N/A
CT3	405.0958 m	291.8882 m	N/A
CT4	2.3624	198.5513 u	N/A

Note
N/A indicates not applicable

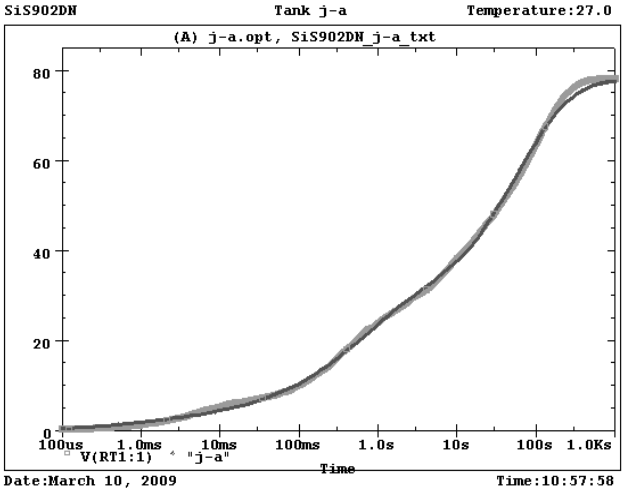
This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.

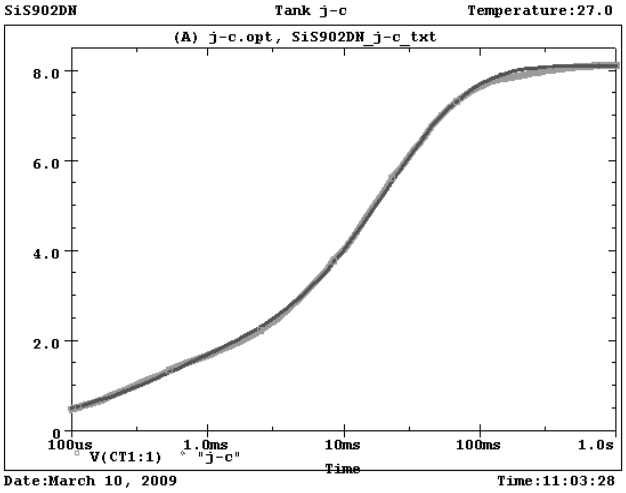
R-C THERMAL MODEL FOR FILTER CONFIGURATION

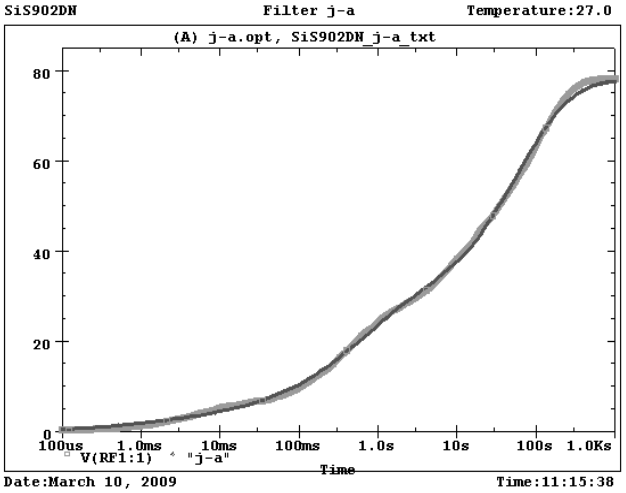


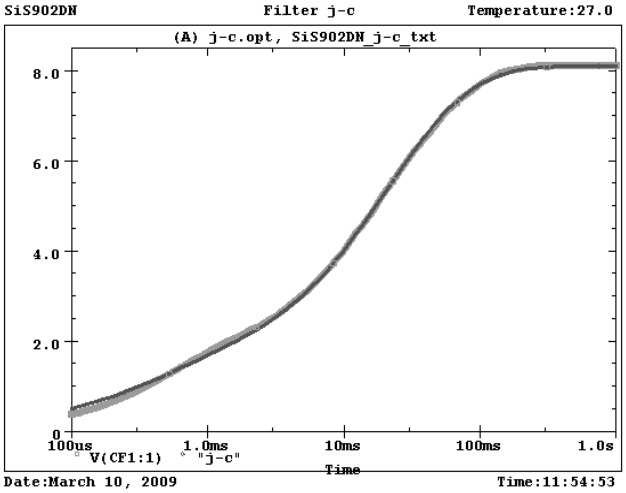
R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	5.5732	1.9202	N/A
RF2	19.9129	4.3805	N/A
RF3	20.3585	1.0763	N/A
RF4	32.1554	723.0000 m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	810.7048 u	253.8688 u	N/A
CF2	19.4996 m	2.9136 m	N/A
CF3	463.2087 m	17.7399 m	N/A
CF4	2.6984	22.8908 m	N/A

Note
N/A indicates not applicable


SiS902DN
Tank j-a
Temperature:27.0
(A) j-a.opt, SiS902DN_j-a_txt
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date:March 10, 2009
Time:10:57:58


SiS902DN
Tank j-c
Temperature:27.0
(A) j-c.opt, SiS902DN_j-c_txt
8.0
6.0
4.0
2.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CT1:1)
"j-c"
Time
Date:March 10, 2009
Time:11:03:28


SiS902DN
Filter j-a
Temperature:27.0
(A) j-a.opt, SiS902DN_j-a_txt
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date:March 10, 2009
Time:11:15:38


SiS902DN
Filter j-c
Temperature:27.0
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8.0
6.0
4.0
2.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CF1:1)
"j-c"
Time
Date:March 10, 2009
Time:11:54:53