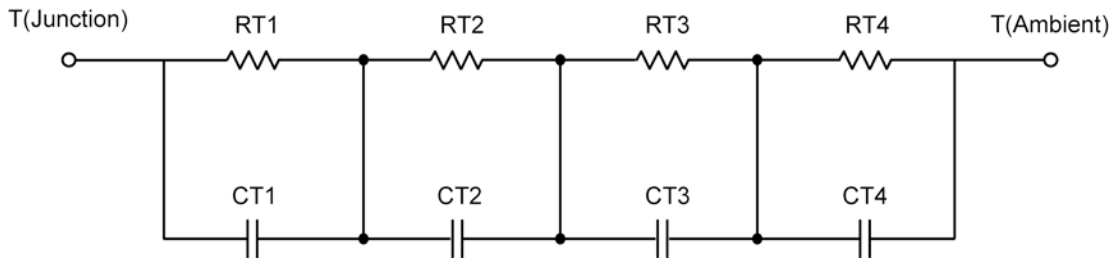
R-C Thermal Model Parameters

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."

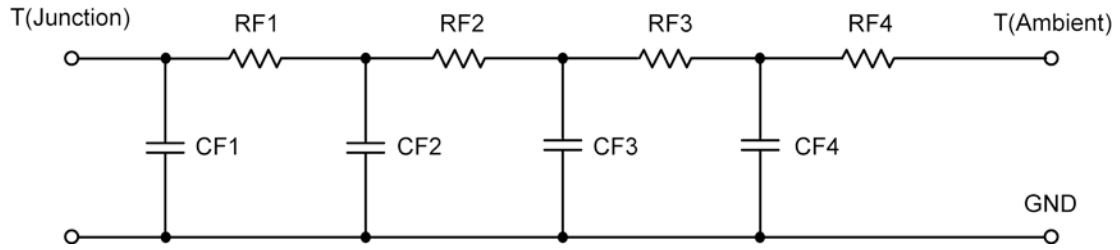
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	4.2525	362.4000 u	N/A
RT2	7.7612	504.3467 m	N/A
RT3	12.2156	972.1139 m	N/A
RT4	56.7707	923.1770 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	6.7215 m	1.9260 m	N/A
CT2	30.3603 m	787.5516 u	N/A
CT3	114.6204 m	18.2079 m	N/A
CT4	1.2151	9.3126 m	N/A

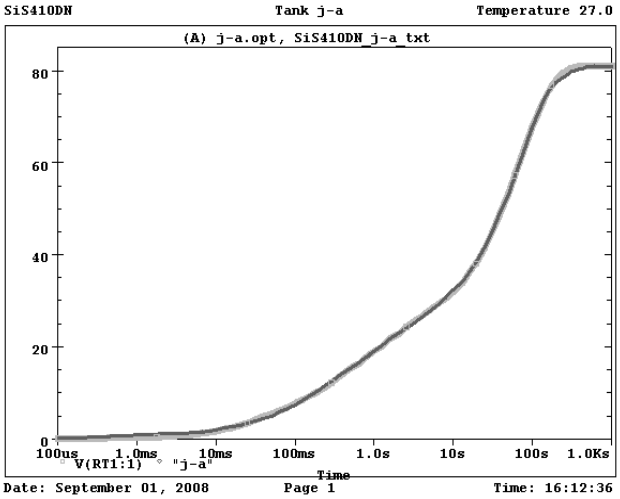
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	7.6647	2.8700 m	N/A
RF2	9.5907	672.0000 m	N/A
RF3	10.8274	1.0331	N/A
RF4	52.8172	692.0300 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	5.9406 m	125.4667 u	N/A
CF2	24.1531 m	695.7232 u	N/A
CF3	154.1887 m	6.0783 m	N/A
CF4	1.1220	527.9622 u	N/A

Note
NA indicates not applicable


SiS410DN
Tank j-a
Temperature 27.0
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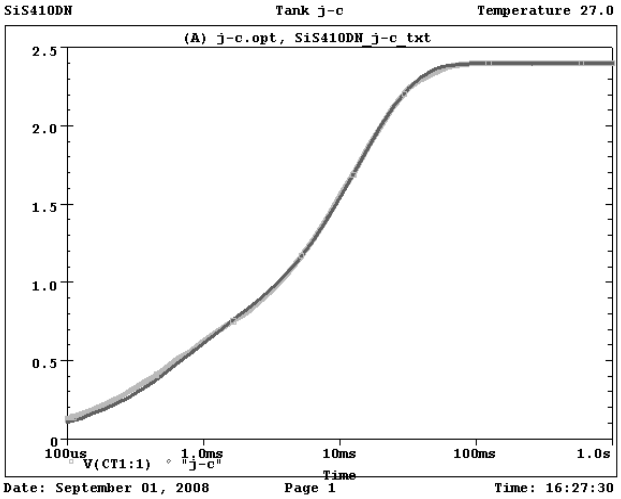
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date: September 01, 2008
Page 1
Time: 16:12:36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Tank j-c
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1.5
1.0
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100us
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100ms
1.0s
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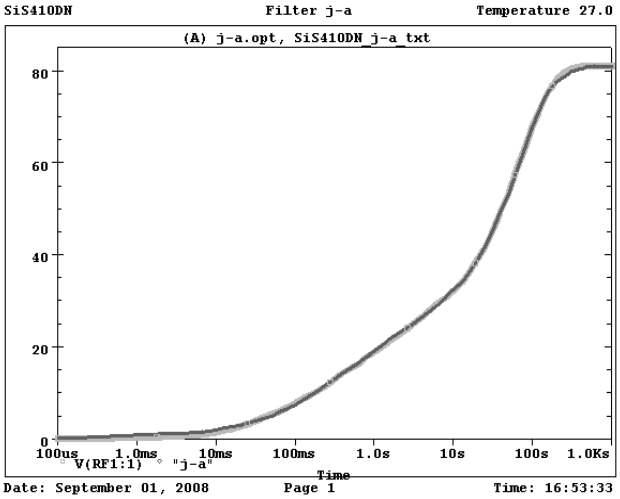
Time
Date: September 01, 2008
Page 1
Time: 16:27:30


SiS410DN
Filter j-a
Temperature 27.0
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80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
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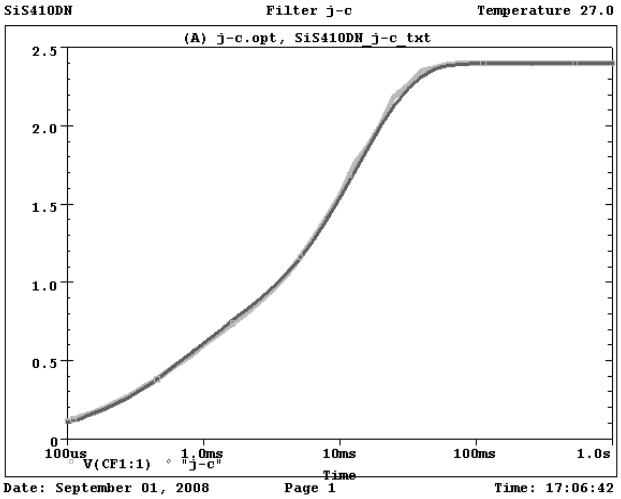
"j-a"
Time
Date: September 01, 2008
Page 1
Time: 16:53:33


SiS410DN
Filter j-c
Temperature 27.0
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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: September 01, 2008
Page 1
Time: 17:06:42