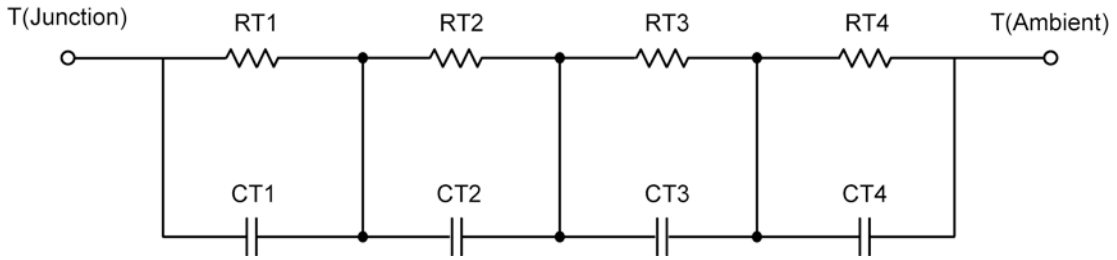
R-C Thermal Model Parameters

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."

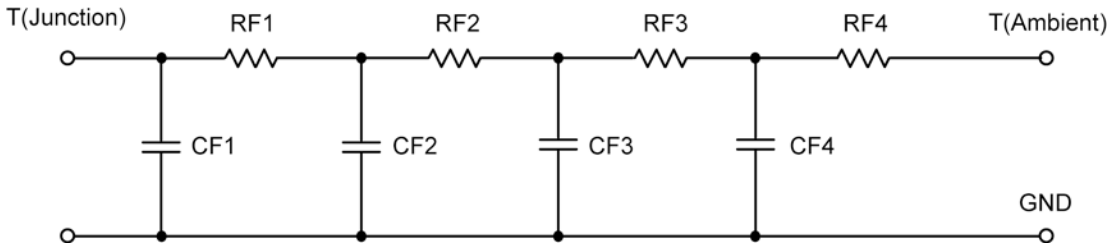
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	5.1228	N/A	13.7259
RT2	37.9238	N/A	4.3376
RT3	11.4611	N/A	13.6792
RT4	55.4923	N/A	8.2573
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	459.9820 u	N/A	5.7383 m
CT2	28.1671 m	N/A	412.7465 u
CT3	8.6595 m	N/A	54.4304 m
CT4	1.3101	N/A	212.0053 m

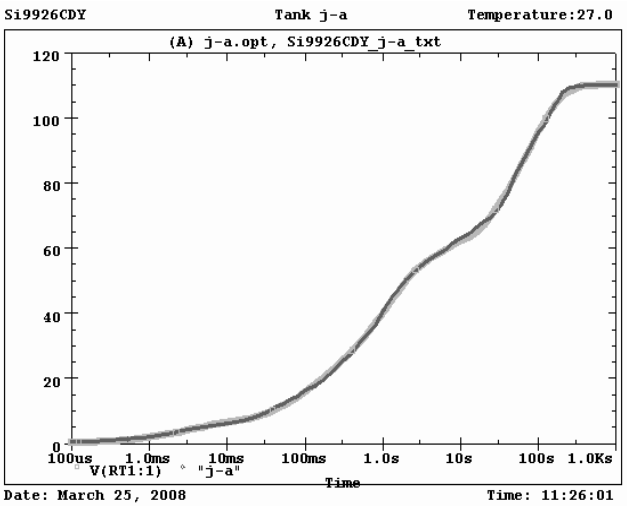
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

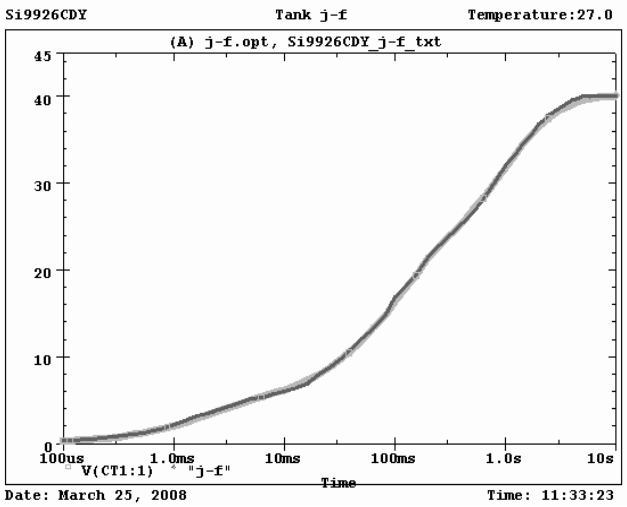
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	6.2326	N/A	5.1991
RF2	15.1963	N/A	16.8236
RF3	35.1213	N/A	9.1677
RF4	53.4498	N/A	8.8096
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	455.0901 u	N/A	428.6861 u
CF2	6.0099 m	N/A	4.8503 m
CF3	22.2164 m	N/A	44.4493 m
CF4	1.3486	N/A	36.6274 m

Note: NA indicates not applicable


Si9926CDY
Tank j-a
Temperature:27.0
(A) j-a.opt, Si9926CDY_j-a_txt
120
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date: March 25, 2008
Time: 11:26:01


Si9926CDY
Tank j-f
Temperature:27.0
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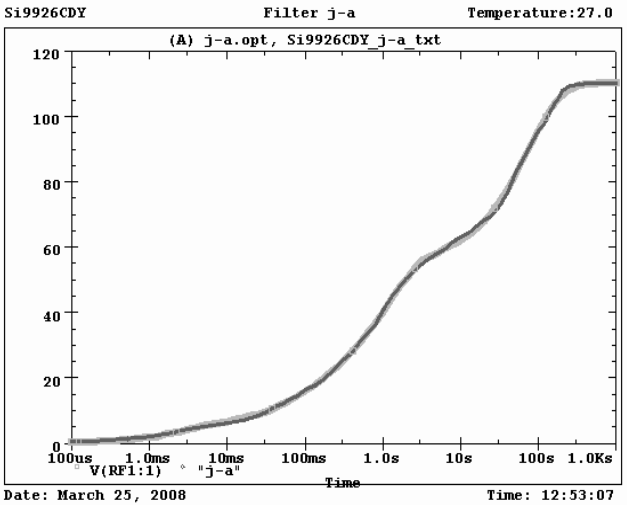
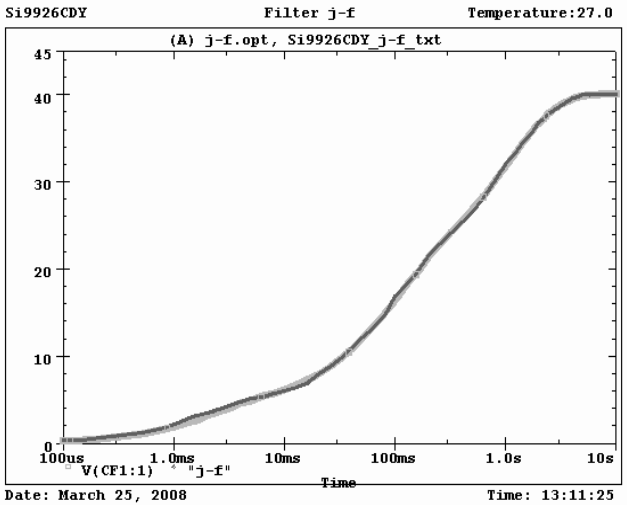
45
40
30
20
10
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CT1:1)
"j-f"
Time
Date: March 25, 2008
Time: 11:33:23


Si9926CDY
Filter j-a
Temperature:27.0
(A) j-a.opt, Si9926CDY_j-a_txt
120
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date: March 25, 2008
Time: 12:53:07


Si9926CDY
Filter j-f
Temperature:27.0
(A) j-f.opt, Si9926CDY_j-f_txt
45
40
30
20
10
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CF1:1)
"j-f"
Time
Date: March 25, 2008
Time: 13:11:25