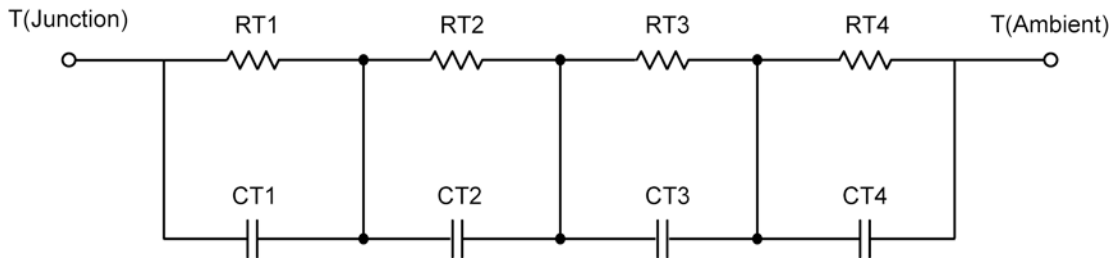
R-C Thermal Model Parameters

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."

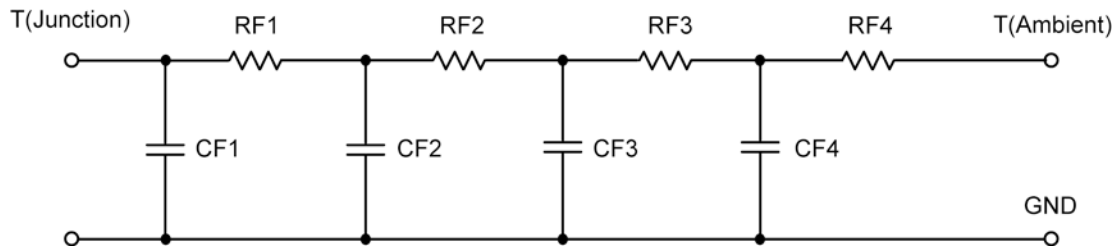
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	17.4576	69.2866 m	N/A
RT2	25.6216	445.6088 m	N/A
RT3	8.8790	109.1196 m	N/A
RT4	2.0418	575.9850 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.5215	11.7400 m	N/A
CT2	4.9648	210.1211 m	N/A
CT3	113.2358 m	959.6505 u	N/A
CT4	14.5687 m	24.7249 m	N/A

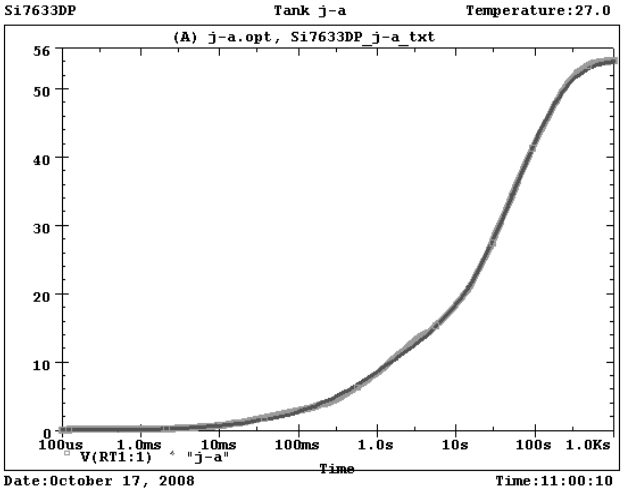
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

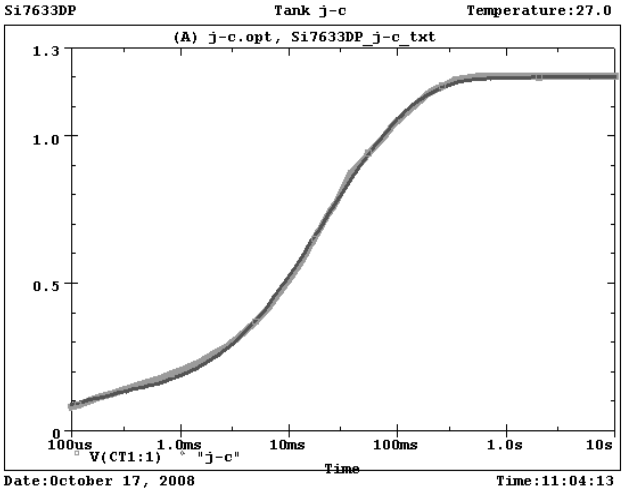
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	4.0018	156.6073 m	N/A
RF2	7.8355	223.2650 m	N/A
RF3	25.1329	417.4349 m	N/A
RF4	17.0298	402.6928 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	23.9890 m	890.2000 u	N/A
CF2	97.5121 m	16.6643 m	N/A
CF3	922.4918 m	2.1855 m	N/A
CF4	6.2118	157.0029 m	N/A

Note
NA indicates not applicable


Si7633DP
Tank j-a
Temperature:27.0
(A) j-a.opt, Si7633DP_j-a_txt
56
50
40
30
20
10
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date:October 17, 2008
Time:11:00:10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Tank j-c
Temperature:27.0
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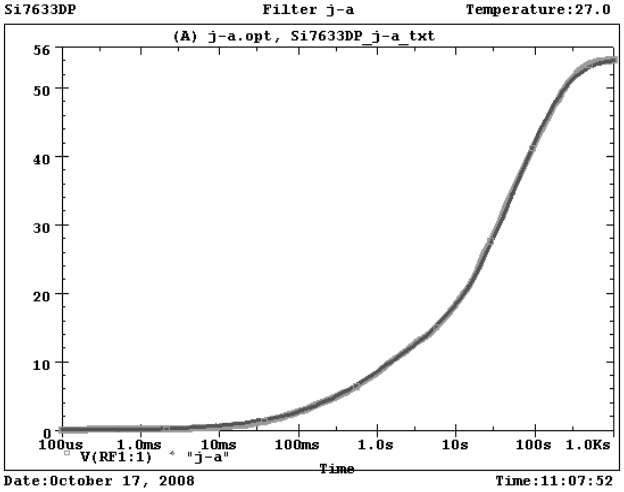
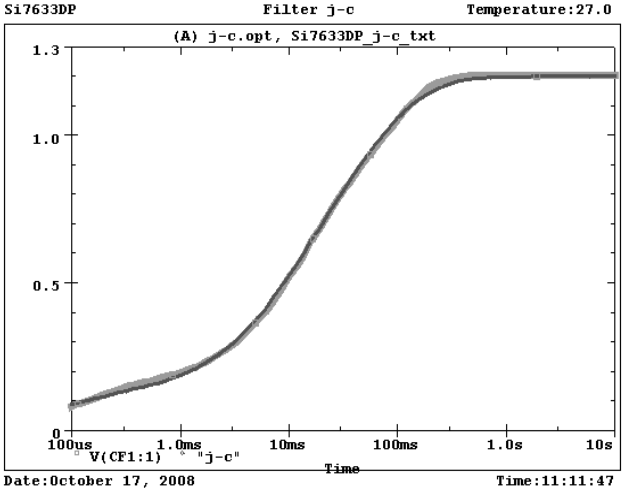
1.0
0.5
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CT1:1)
"j-c"
Time
Date:October 17, 2008
Time:11:04:13


Si7633DP
Filter j-a
Temperature:27.0
(A) j-a.opt, Si7633DP_j-a_txt
56
50
40
30
20
10
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date:October 17, 2008
Time:11:07:52


Si7633DP
Filter j-c
Temperature:27.0
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1.3
1.0
0.5
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CF1:1)
"j-c"
Time
Date:October 17, 2008
Time:11:11:47