R-C Thermal Model Parameters

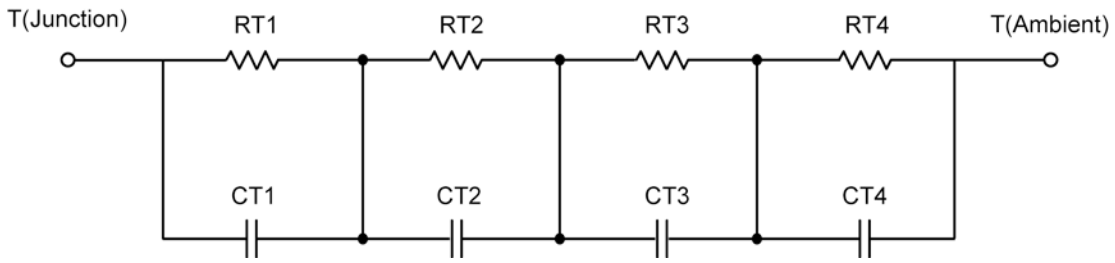
DESCRIPTION

The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "A Simple Method of Generating Thermal Models for a Power MOSFET"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse Transient Thermal Impedance curves for the MOSFET.

R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included.

Note:
For a detailed explanation of implementing these values in P-SPICE, refer to Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform.

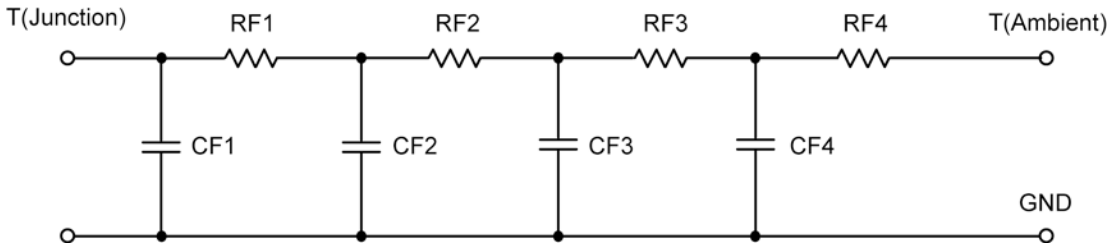
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	9.6744	210.0481 m	N/A
RT2	39.3627	342.2716 m	N/A
RT3	13.0119	279.3315 m	N/A
RT4	2.9510	468.3488 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	113.4016 m	2.7780 m	N/A
CT2	2.0969	16.5220 m	N/A
CT3	1.7672	31.3904 m	N/A
CT4	23.8769 m	21.5577 m	N/A

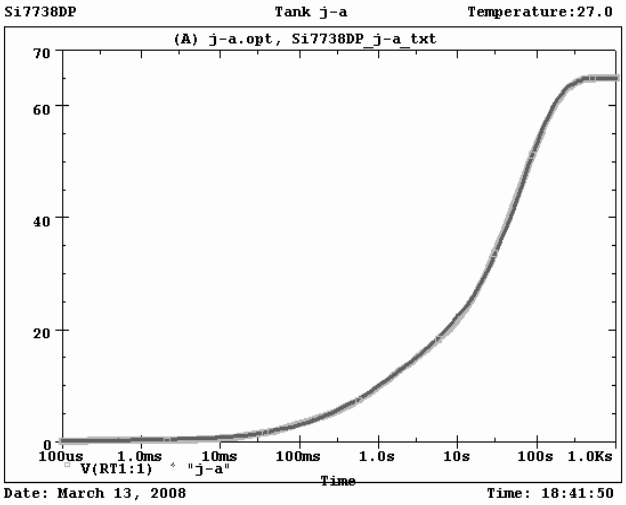
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

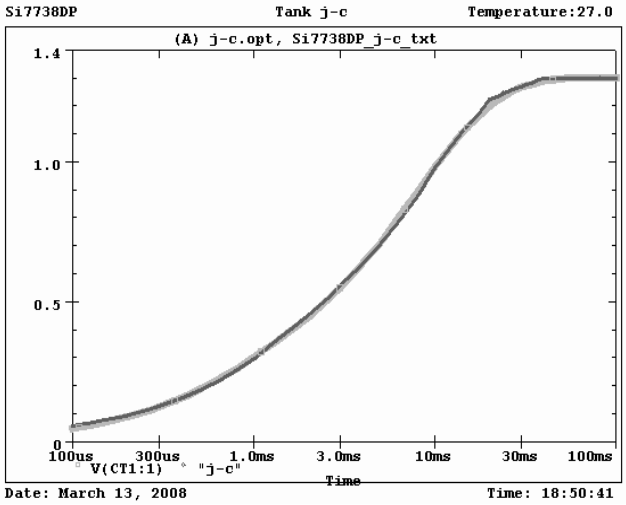
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	2.3468	338.0366 m	N/A
RF2	9.6654	419.7103 m	N/A
RF3	11.7567	427.4895 m	N/A
RF4	41.2311	114.7636 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	9.5175 m	1.9018 m	N/A
CF2	63.4848 m	5.1987 m	N/A
CF3	346.9739 m	2.1362 m	N/A
CF4	1.2254	31.8481 m	N/A

Note: NA indicates not applicable


Si7738DP
Tank j-a
Temperature:27.0
(A) j-a.opt, Si7738DP_j-a_txt
70
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date: March 13, 2008
Time: 18:41:50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Tank j-c
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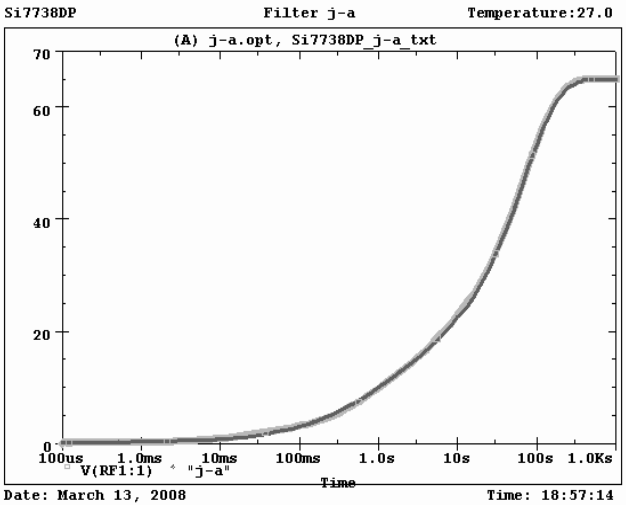
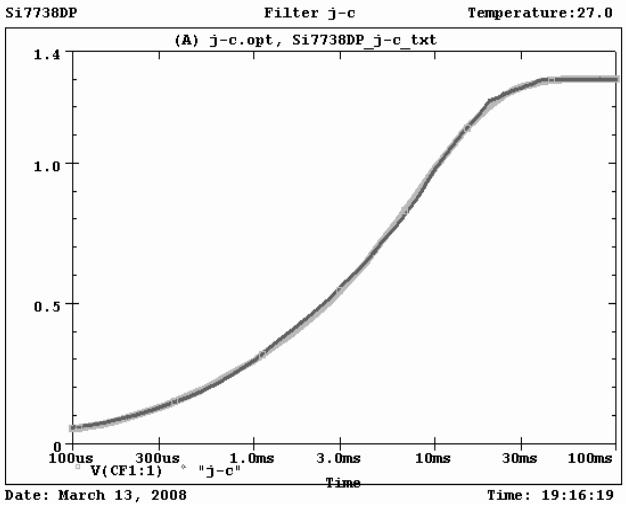
1.0
0.5
0
100us
300us
1.0ms
3.0ms
10ms
30ms
100ms
V(CT1:1)
"j-c"
Time
Date: March 13, 2008
Time: 18:50:41


Si7738DP
Filter j-a
Temperature:27.0
(A) j-a.opt, Si7738DP_j-a_txt
70
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date: March 13, 2008
Time: 18:57:14


Si7738DP
Filter j-c
Temperature:27.0
(A) j-c.opt, Si7738DP_j-c_txt
1.4
1.0
0.5
0
100us
300us
1.0ms
3.0ms
10ms
30ms
100ms
V(CF1:1)
"j-c"
Time
Date: March 13, 2008
Time: 19:16:19