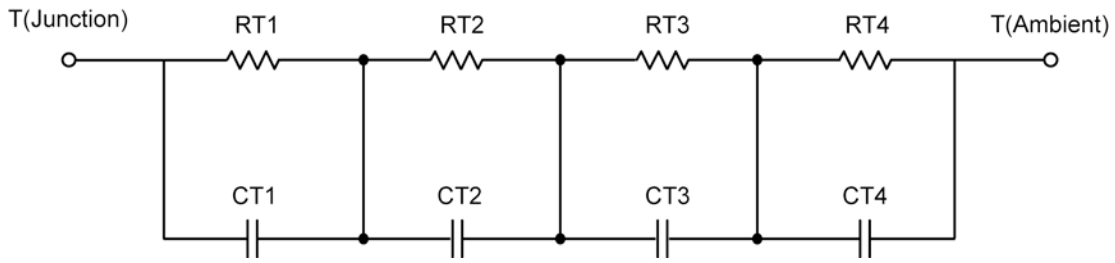
R-C Thermal Model Parameters

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."

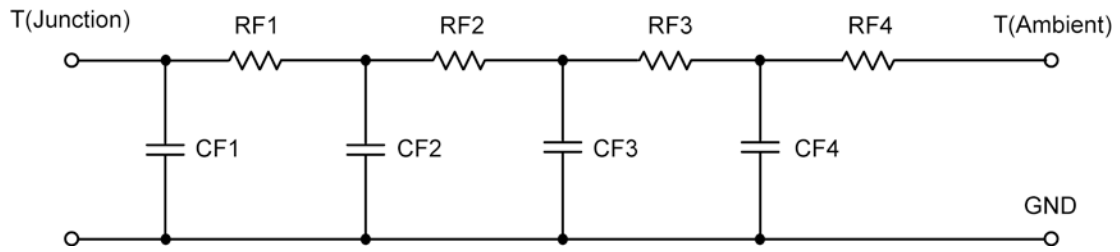
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	9.8654	N/A	1.7918
RT2	18.7482	N/A	5.2655
RT3	14.8777	N/A	8.2308
RT4	51.5087	N/A	6.7119
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	838.5909 u	N/A	749.4884 u
CT2	69.4324 m	N/A	5.4126 m
CT3	8.2041 m	N/A	1.7496 m
CT4	1.3912	N/A	29.0900 m

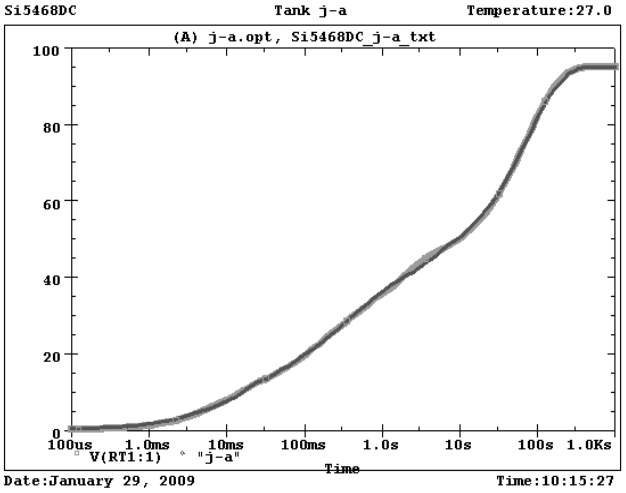
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

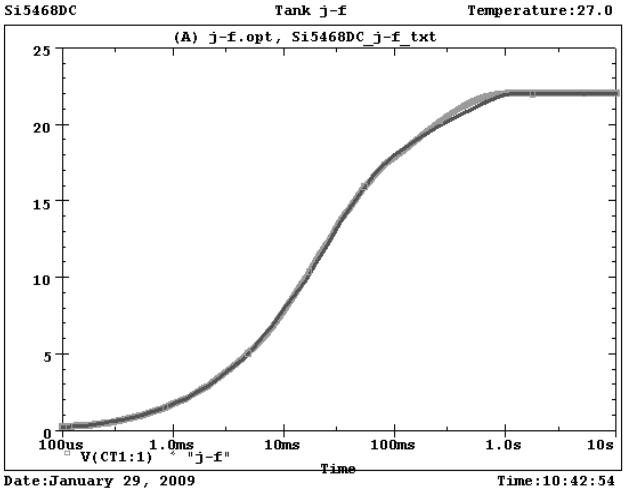
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	14.7646	N/A	7.7362
RF2	22.4488	N/A	9.6999
RF3	16.9248	N/A	1.9018
RF4	40.8618	N/A	2.6621
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	874.2373 u	N/A	554.6754 u
CF2	13.9572 m	N/A	2.1726 m
CF3	405.2672 m	N/A	46.5841 m
CF4	1.3986	N/A	9.3844 m

Note
NA indicates not applicable


Si5468DC
Tank j-a
Temperature:27.0
(A) j-a.opt, Si5468DC_j-a_txt
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date:January 29, 2009
Time:10:15:27


Si5468DC
Tank j-f
Temperature:27.0
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25
20
15
10
5
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CT1:1)
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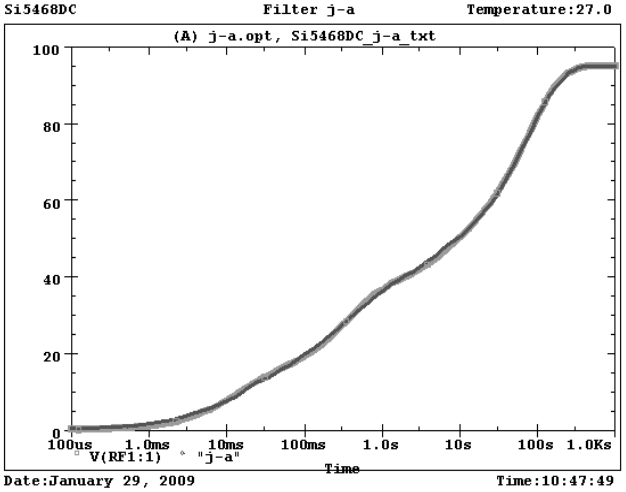
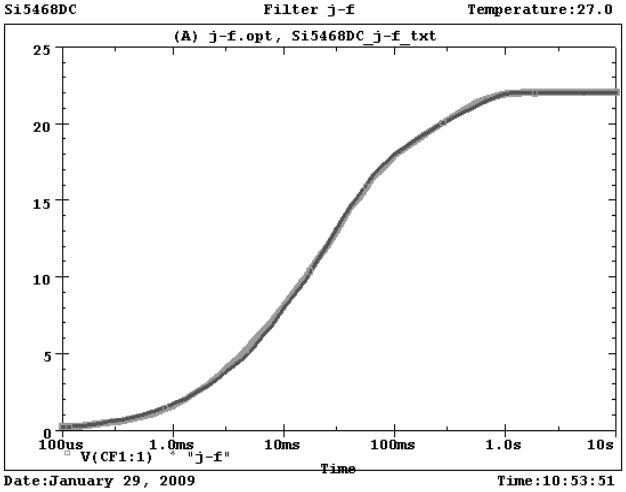
Time
Date:January 29, 2009
Time:10:42:54


Si5468DC
Filter j-a
Temperature:27.0
(A) j-a.opt, Si5468DC_j-a_txt
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date:January 29, 2009
Time:10:47:49


Si5468DC
Filter j-f
Temperature:27.0
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25
20
15
10
5
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CF1:1)
"j-f"
Time
Date:January 29, 2009
Time:10:53:51