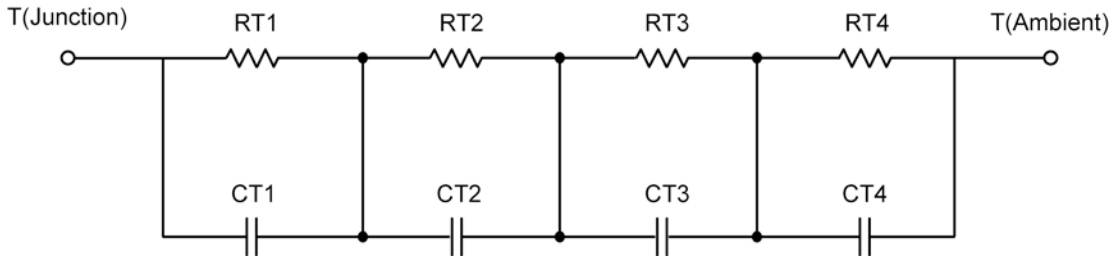
R-C Thermal Model Parameters

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."

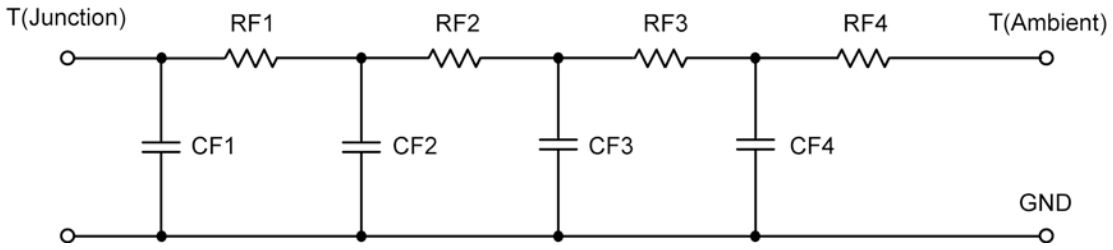
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.4518	N/A	2.5449
RT2	2.8153	N/A	2.7347
RT3	19.7307	N/A	3.7406
RT4	54.0022	N/A	6.9798
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	10.4569 m	N/A	31.7638 m
CT2	109.5078 m	N/A	22.5244 m
CT3	75.9940 m	N/A	178.1872 m
CT4	1.4180	N/A	247.7640 m

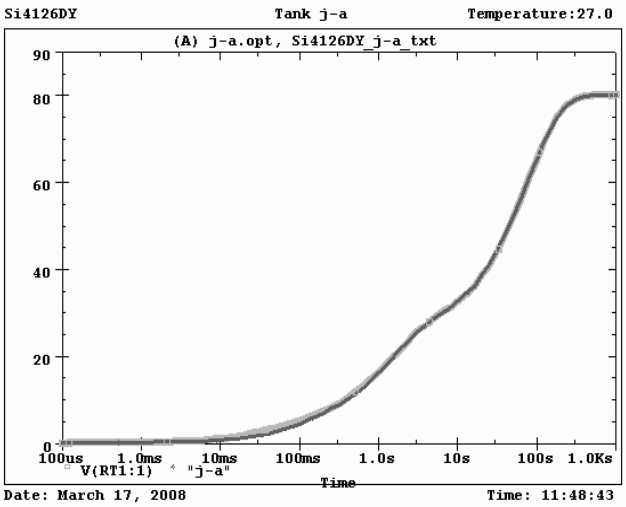
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

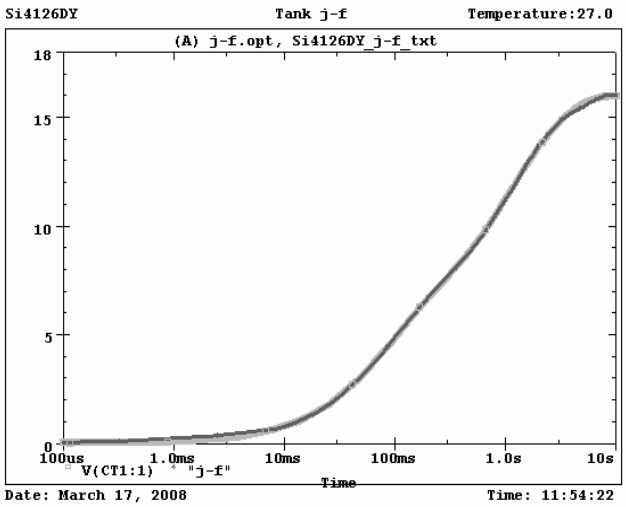
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	8.8872	N/A	1.8545
RF2	11.2936	N/A	4.9707
RF3	9.5870	N/A	3.1329
RF4	50.2322	N/A	6.0419
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	20.8519 m	N/A	9.2263 m
CF2	28.4259 m	N/A	5.9185 m
CF3	138.3911 m	N/A	81.4820 m
CF4	1.3353	N/A	111.9932 m

Note: NA indicates not applicable


Si4126DY
Tank j-a
Temperature:27.0
(A) j-a.opt, Si4126DY_j-a_txt
90
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date: March 17, 2008
Time: 11:48:43


Si4126DY
Tank j-f
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15
10
5
0
100us
1.0ms
10ms
100ms
1.0s
10s
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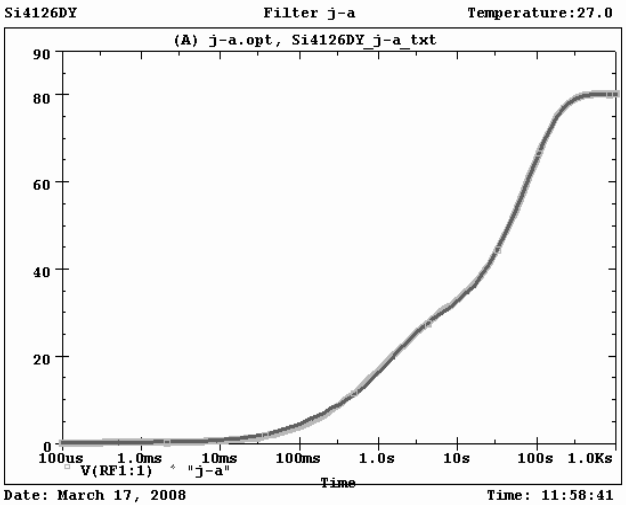
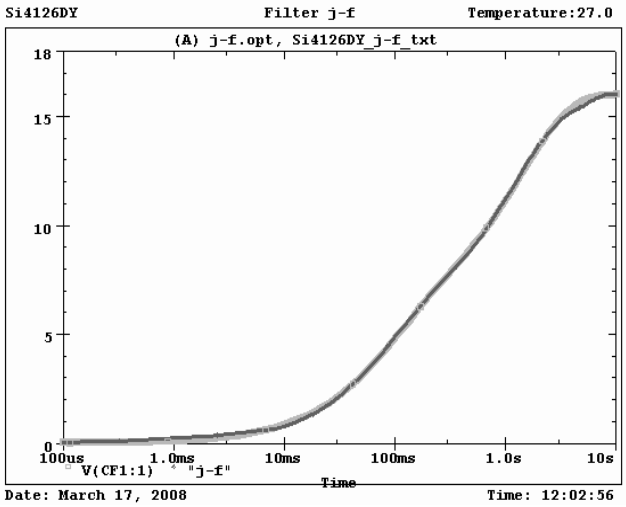
Time
Date: March 17, 2008
Time: 11:54:22


Si4126DY
Filter j-a
Temperature:27.0
(A) j-a.opt, Si4126DY_j-a_txt
90
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date: March 17, 2008
Time: 11:58:41


Si4126DY
Filter j-f
Temperature:27.0
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18
15
10
5
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CF1:1)
"j-f"
Time
Date: March 17, 2008
Time: 12:02:56