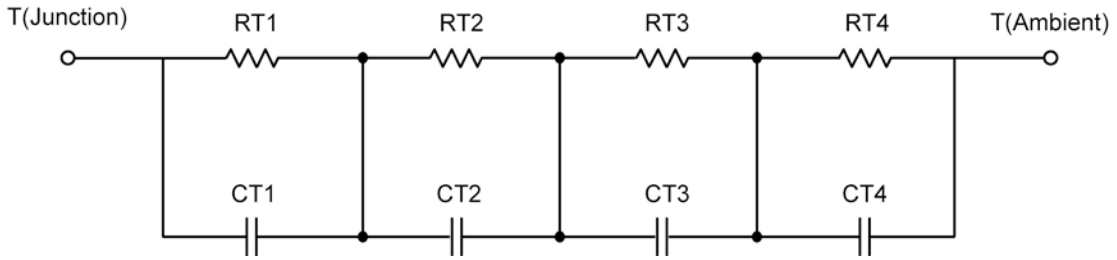
R-C Thermal Model Parameters

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."

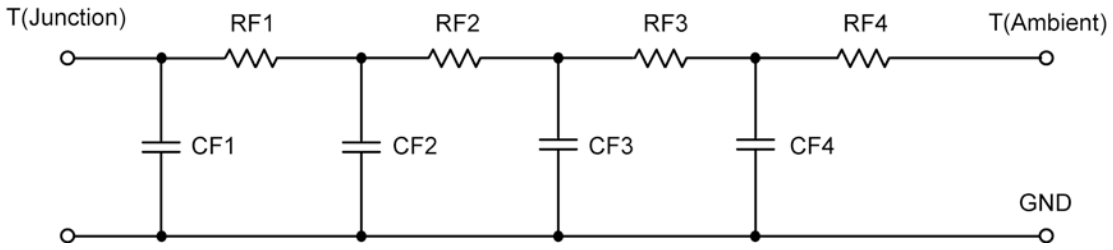
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	7.3135	N/A	10.1602
RT2	57.1716	N/A	2.8117
RT3	26.2741	N/A	5.6797
RT4	19.2408	N/A	19.3484
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	767.6861 u	N/A	9.2428 m
CT2	1.2350	N/A	363.5591 u
CT3	55.1823 m	N/A	6.4238 m
CT4	19.1388 m	N/A	50.2763 m

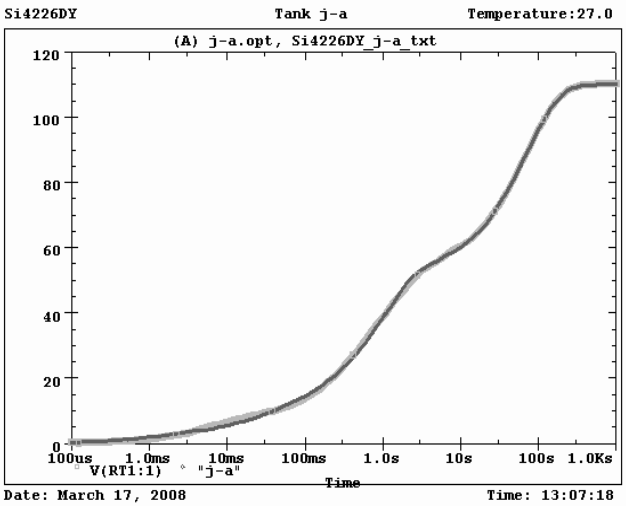
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	9.5033	N/A	4.1717
RF2	26.6743	N/A	16.3948
RF3	18.9325	N/A	6.4343
RF4	54.8899	N/A	10.9992
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.1049 m	N/A	490.0977 u
CF2	13.8132 m	N/A	3.6106 m
CF3	39.7641 m	N/A	34.1808 m
CF4	1.2226	N/A	43.9091 m

Note: NA indicates not applicable


Si4226DY
Tank j-a
Temperature:27.0
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100
80
60
40
20
0
100us 1.0ms 10ms 100ms 1.0s 10s 100s 1.0Ks
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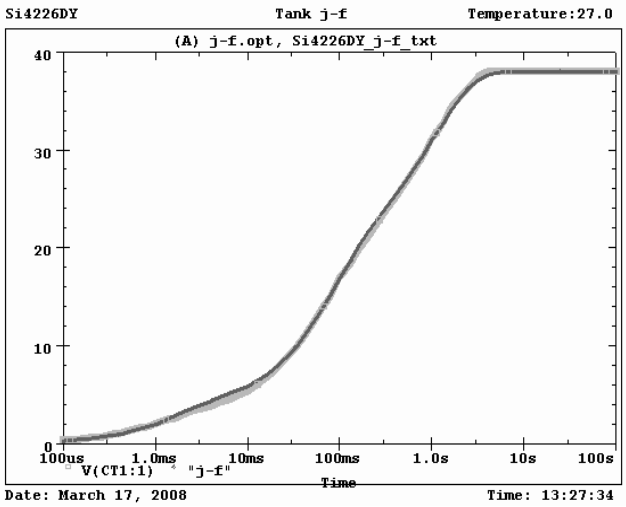
Time
Date: March 17, 2008
Time: 13:07:18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Tank j-f
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30
20
10
0
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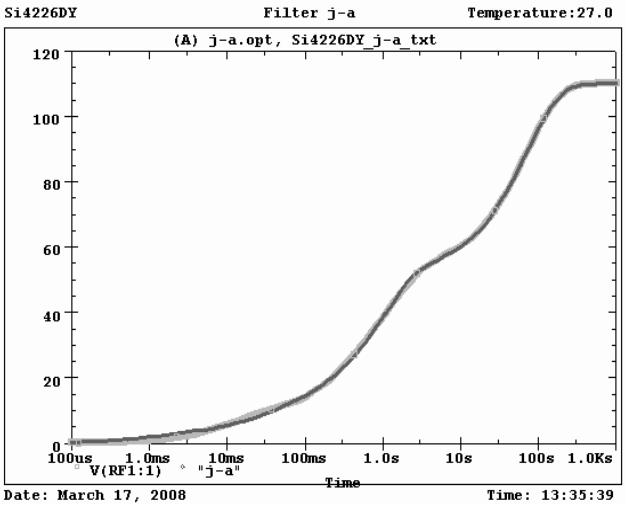
Time: 13:27:34


Si4226DY
Filter j-a
Temperature:27.0
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100
80
60
40
20
0
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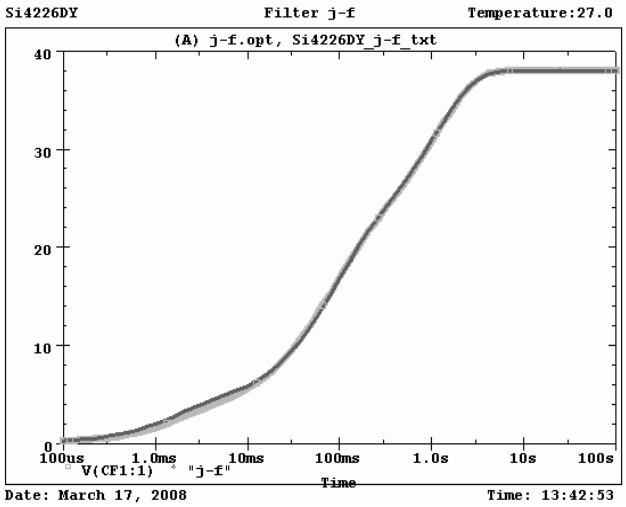
Time: 13:35:39


Si4226DY
Filter j-f
Temperature:27.0
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30
20
10
0
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Time
Date: March 17, 2008
Time: 13:42:53