

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	7.9553	N/A	15.3728
RT2	25.0518	N/A	2.9137
RT3	27.7238	N/A	11.9413
RT4	59.2691	N/A	9.7722
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.2167 m	N/A	3.3256 m
CT2	8.8983 m	N/A	317.0677 u
CT3	82.5729 m	N/A	21.7062 m
CT4	1.2667	N/A	172.9797 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**

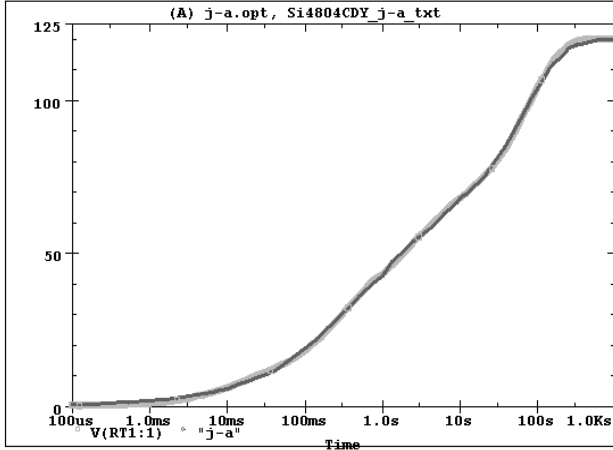
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RF1	12.0021	N/A	3.9343
RF2	27.8569	N/A	16.4726
RF3	25.3038	N/A	9.5288
RF4	54.8372	N/A	10.0643
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	1.2066 m	N/A	334.4266 u
CF2	8.1802 m	N/A	2.5717 m
CF3	90.6128 m	N/A	8.8026 m
CF4	1.2662	N/A	118.4947 m

Note

NA indicates not applicable

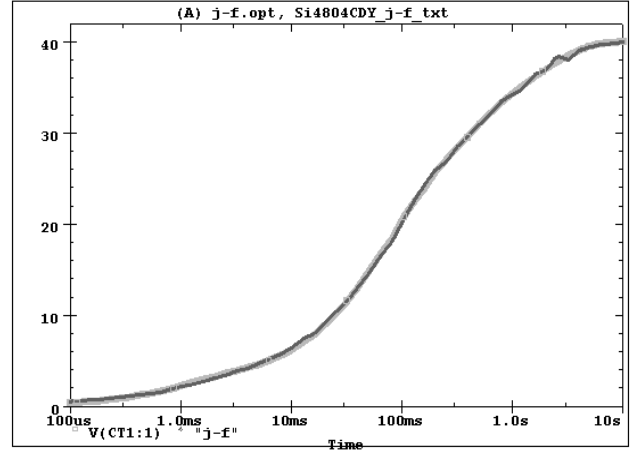


Si4804CDY Tank j-a Temperature:27.0



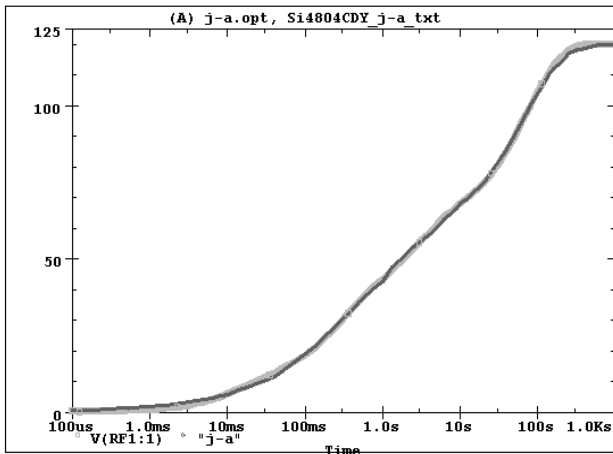
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Si4804CDY Tank j-f Temperature:27.0



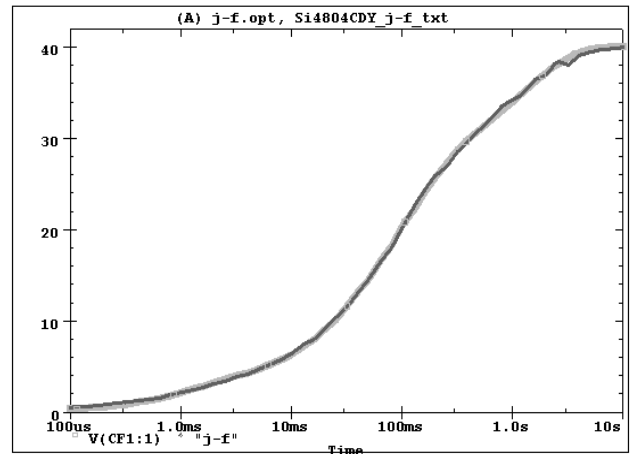
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Si4804CDY Filter j-a Temperature:27.0



Date:August 23, 2008 Time: 11:14:04

Si4804CDY Filter j-f Temperature:27.0



Date:August 27, 2008 Time:11:46:15