

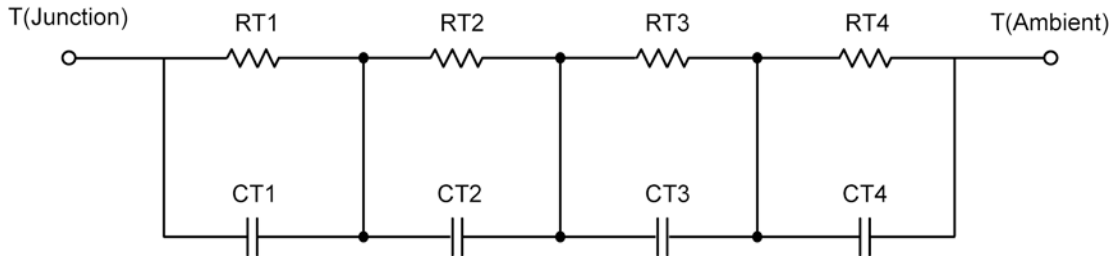
R-C Thermal Model Parameters

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	14.7442	N/A	3.5653
RT2	5.2993	N/A	10.7587
RT3	52.5829	N/A	1.8164
RT4	22.3736	N/A	3.8596
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	3.3488 m	N/A	813.8292 u
CT2	704.4539 u	N/A	2.6061 m
CT3	1.2728	N/A	317.1266 m
CT4	37.2856 m	N/A	21.6815 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**

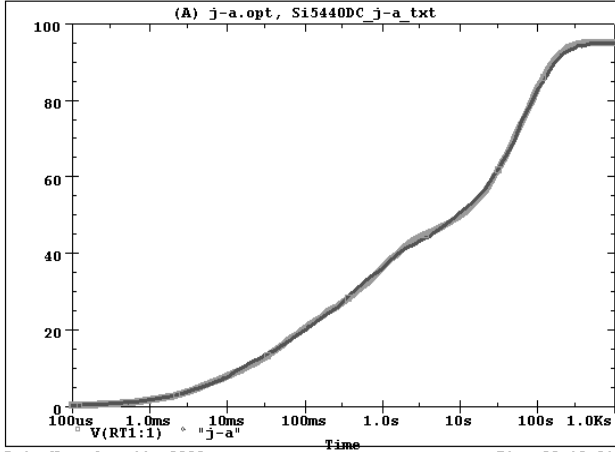
Thermal Resistance ($^{\circ}\text{C}/\text{W}$)			
Junction to	Ambient	Case	Foot
RF1	7.2947	N/A	8.2425
RF2	16.0733	N/A	7.9316
RF3	20.7097	N/A	2.4415
RF4	50.9223	N/A	1.3844
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	516.8093 μ	N/A	710.3537 μ
CF2	2.8870 m	N/A	3.0841 m
CF3	39.4702 m	N/A	9.4373 m
CF4	1.2909	N/A	487.6336 m

Note

NA indicates not applicable

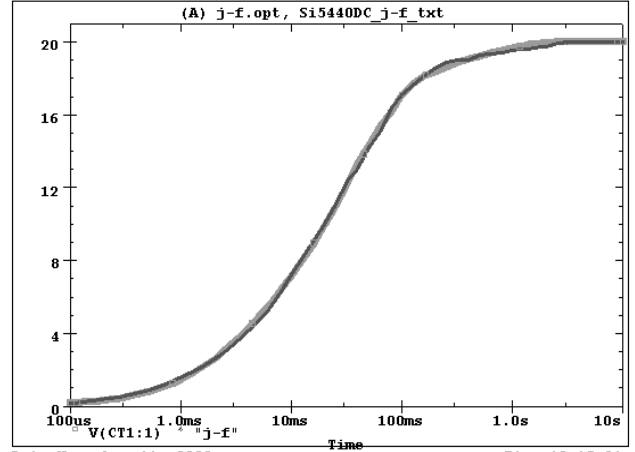


Si5440DC Tank j-a Temperature:27.0



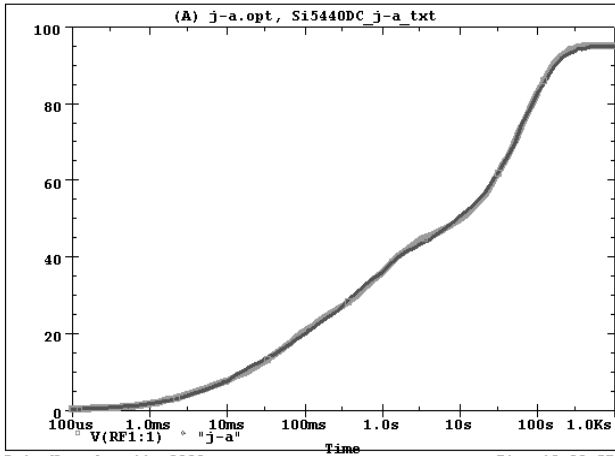
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Si5440DC Tank j-f Temperature:27.0



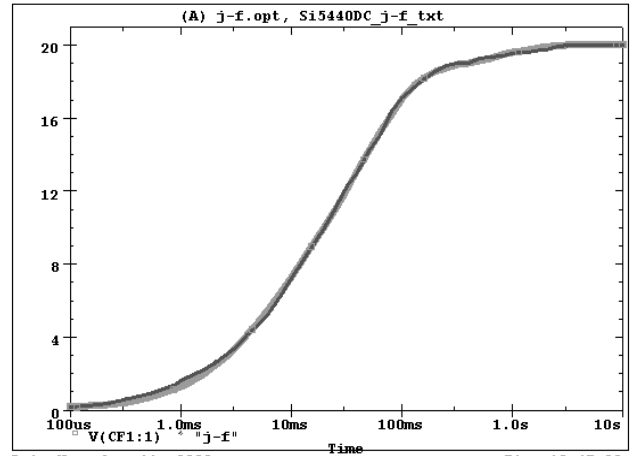
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Si5440DC Filter j-a Temperature:27.0



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Si5440DC Filter j-f Temperature:27.0



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