

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	54.5009	N/A	48.0708
RT2	16.2503	N/A	12.9024
RT3	71.6229	N/A	8.5959
RT4	77.6259	N/A	30.4309
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.3049	N/A	592.9211 u
CT2	50.5531 u	N/A	49.6255 u
CT3	9.0484 m	N/A	265.2869 m
CT4	611.4548 u	N/A	2.9450 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**

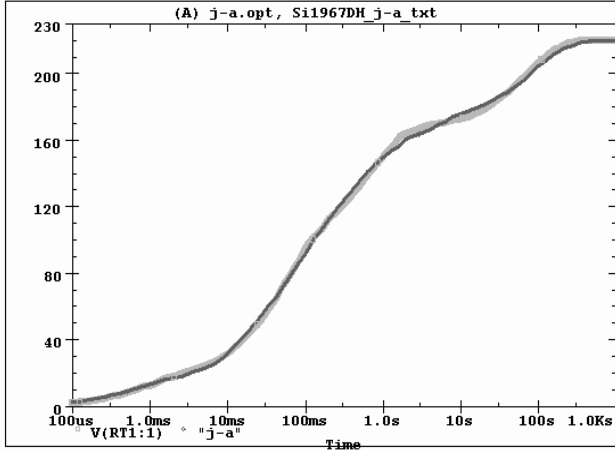
Thermal Resistance ($^{\circ}\text{C}/\text{W}$)			
Junction to	Ambient	Case	Foot
RF1	19.4915	N/A	15.1008
RF2	84.5646	N/A	70.7894
RF3	62.3053	N/A	628.4000 m
RF4	53.6386	N/A	13.4814
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case	Foot
CF1	47.7345 u	N/A	41.1006 u
CF2	539.8944 u	N/A	492.1050 u
CF3	9.3076 m	N/A	23.3360 m
CF4	1.3481	N/A	40.6074 m

Note

NA indicates not applicable

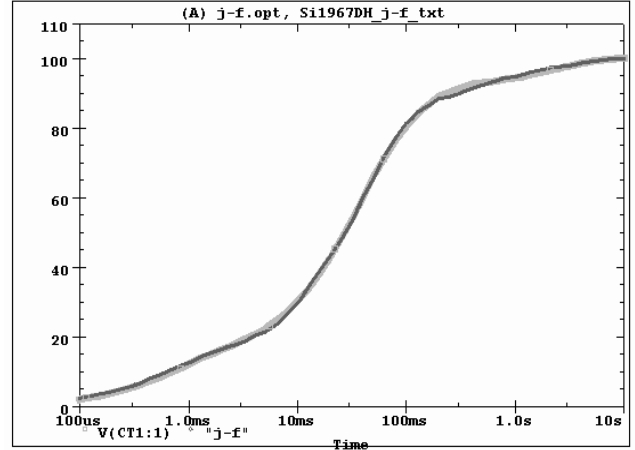


Si1967DH Tank j-a Temperature:27.0



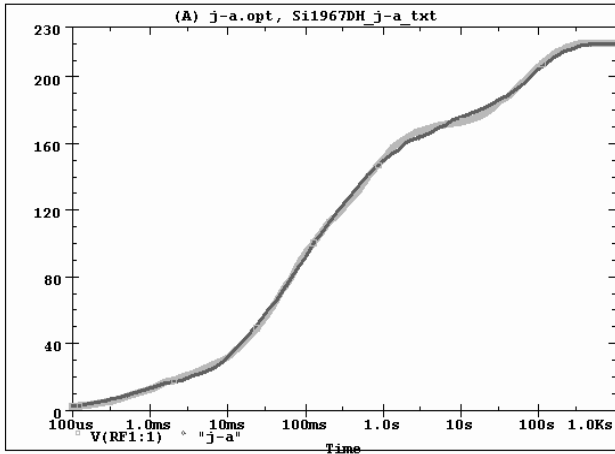
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Si1967DH Tank j-f Temperature:27.0



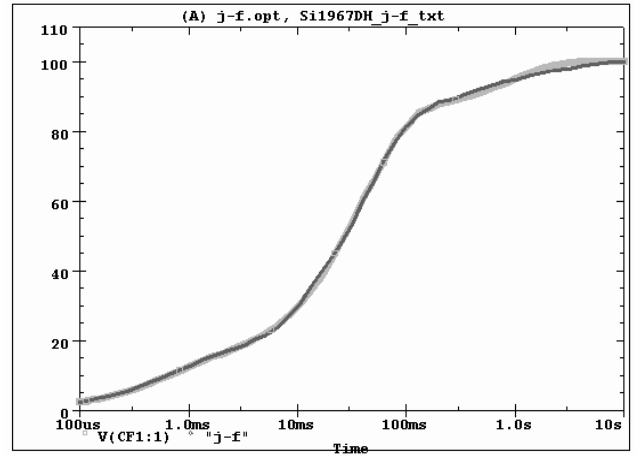
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Si1967DH Filter j-a Temperature:27.0



Date:June 19, 2008 Time: 20:18:56

Si1967DH Filter j-f Temperature:27.0



Date:June 19, 2008 Time: 20:59:24