

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

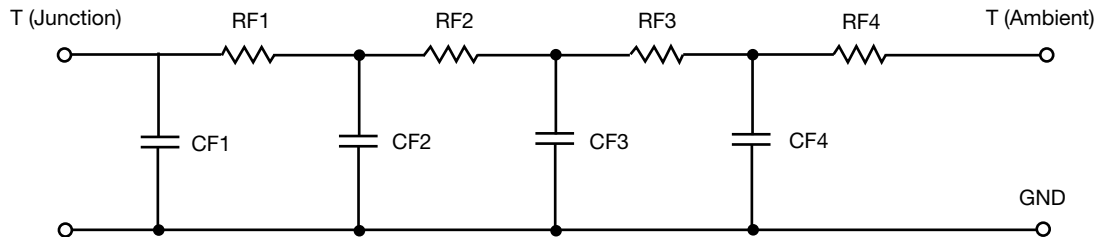


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	Ambient	Case	Foot
RT1	11.6073	2.0544	N/A
RT2	5.5097	1.3706	N/A
RT3	17.8868	317.4000 m	N/A
RT4	44.9962	2.7576	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	218.0785 m	1.1988 m	N/A
CT2	440.3552 u	194.0091 u	N/A
CT3	6.6195 m	34.1528 m	N/A
CT4	1.7908	1.0497 m	N/A

Note

N/A indicates not applicable

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

R-C THERMAL MODEL FOR FILTER CONFIGURATION

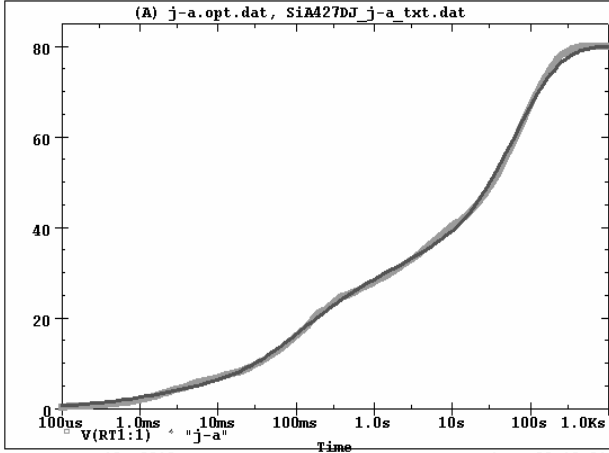
R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	Ambient	Case	Foot
RF1	5.1725	2.3964	N/A
RF2	17.9817	3.9053	N/A
RF3	12.9513	175.7416 m	N/A
RF4	43.8945	22.5584 m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	309.7858 u	148.1451 u	N/A
CF2	5.0133 m	482.6986 u	N/A
CF3	130.8574 m	115.5172 m	N/A
CF4	1.6377	1.0345	N/A

Note

N/A indicates not applicable

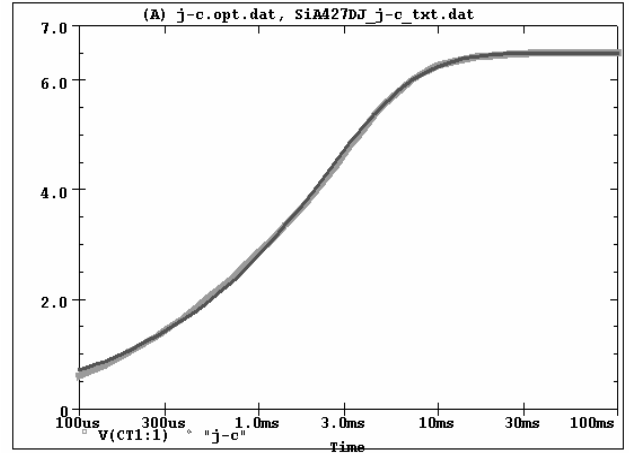


SiA427DJ Tank j-a Temperature: 27.0



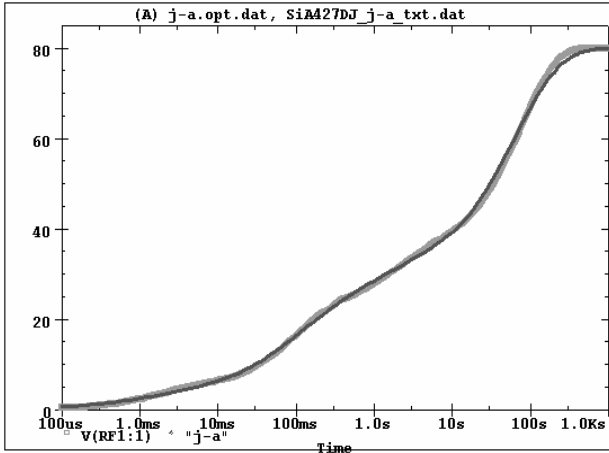
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SiA427DJ Tank j-c Temperature: 27.0



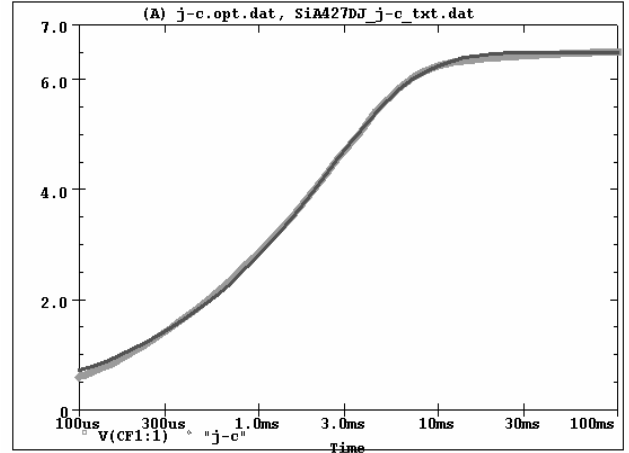
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SiA427DJ Filter j-a Temperature: 27.0



Date: June 12, 2010 Time: 09:45:26

SiA427DJ Filter j-c Temperature: 27.0



Date: June 12, 2010 Time: 10:29:30