

## R-C Thermal Model Parameters

### DESCRIPTION

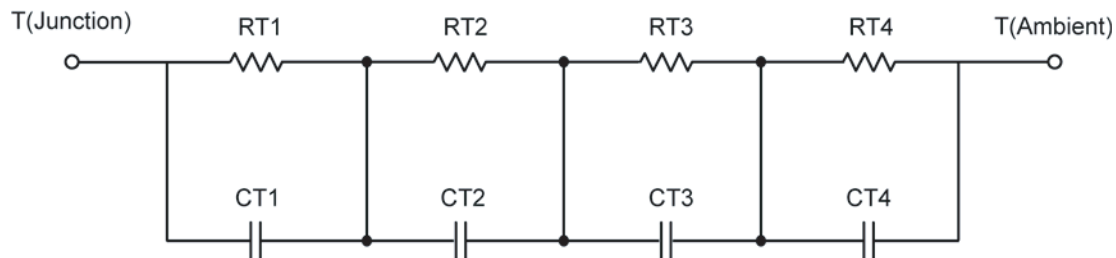
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "[A Simple Method of Generating Thermal Models for a Power MOSFET](#)"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse Transient Thermal Impedance curves for the MOSFET.

R-C values for the electrical circuit in the Foster/Tank configuration are included. The corresponding values for the Cauer/Filter configuration are available upon request.

*Note:*

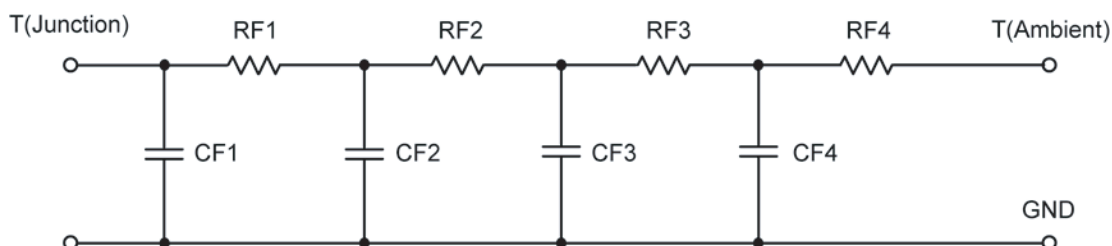
*For a detailed explanation of implementing these values in P-SPICE, refer to [Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform](#).*

### R-C THERMAL MODEL FOR TANK CONFIGURATION



<b>R-C VALUES FOR TANK CONFIGURATION</b>			
Thermal Resistance (°C/W)			
Junction to	Ambient	Case	Foot
RT1	3.7869	23.4650 m	N/A
RT2	7.8648	635.6399 m	N/A
RT3	7.4921	1.5584	N/A
RT4	50.5690	766.4544 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	3.7411 m	1.3632 m	N/A
CT2	394.2996 m	967.1048 u	N/A
CT3	55.7379 m	6.7787 m	N/A
CT4	1.3203	6.3392 m	N/A

*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**

<b>R-C VALUES FOR FILTER CONFIGURATION</b>			
Thermal Resistance ( $^{\circ}\text{C}/\text{W}$ )			
Junction to	Ambient	Case	Foot
RF1	3.2518	68.6442 $\mu$	N/A
RF2	11.4514	1.0326	N/A
RF3	13.5809	1.1145	N/A
RF4	41.7249	857.0875 m	N/A
Thermal Capacitance (Joules/ $^{\circ}\text{C}$ )			
Junction to	Ambient	Case	Foot
CF1	1.8961 m	366.9012 $\mu$	N/A
CF2	36.7553 m	290.1119 $\mu$	N/A
CF3	483.1418 m	3.7823 m	N/A
CF4	1.0578	728.0509 $\mu$	N/A

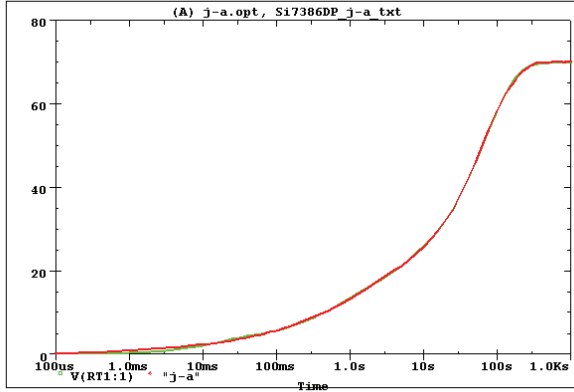
Note: NA indicates not applicable

Reference:

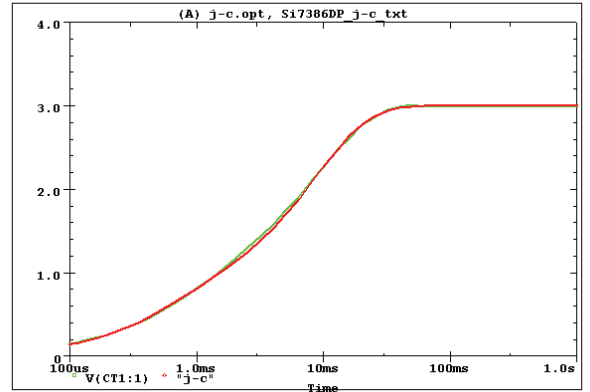
[1] "A Simple Method of Generating Thermal Models for a Power MOSFET" by Wharton McDaniel and Kandarp Pandya, IEEE / SEMITHERM 2002



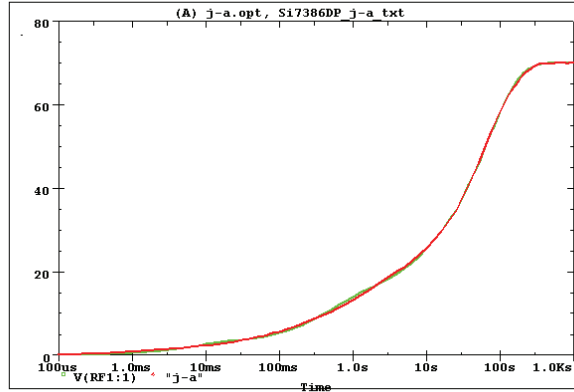
Si7386DP Tank j-a Temperature: 27.0



Si7386DP Tank j-c Temperature: 27.0



Si7386DP Filter j-a Temperature: 27.0



Si7386DP Filter j-c Temperature: 27.0

