

## 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	11.7277	126.8473m	N/A
RT2	24.8646	78.6636m	N/A
RT3	628.8086m	168.0590m	N/A
RT4	2.6399	25.9882m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	8.2542	74.5025m	N/A
CT2	3.6566	27.7575m	N/A
CT3	40.3749m	5.8541m	N/A
CT4	558.5953m	216.0239u	N/A

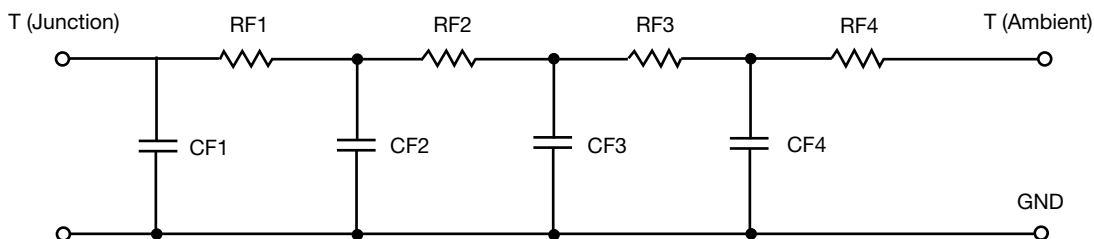
#### Note

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**



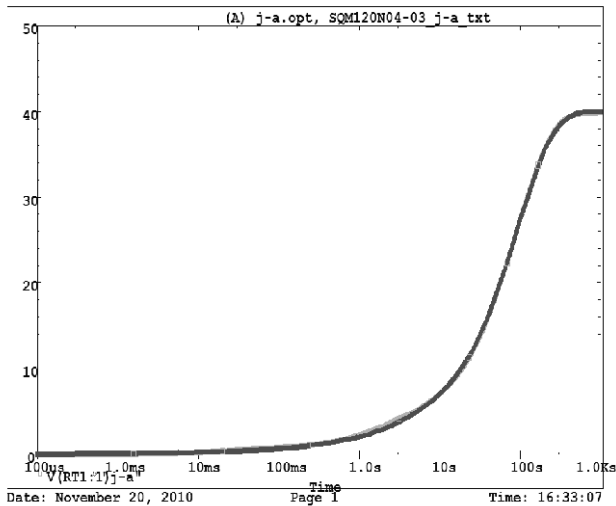
<b>R-C VALUES FOR FILTER CONFIGURATION</b>			
<b>THERMAL RESISTANCE (°C/W)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
RF1	1.9086	205.3343m	N/A
RF2	7.1183	76.1673m	N/A
RF3	22.9377	67.1204m	N/A
RF4	8.0507	50.6236m	N/A
<b>THERMAL CAPACITANCE (Joules/°C)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
CF1	231.9881m	3.1888m	N/A
CF2	885.9552m	6.1949m	N/A
CF3	1.7868	49.6679m	N/A
CF4	1.4745	4.9836m	N/A

**Note**

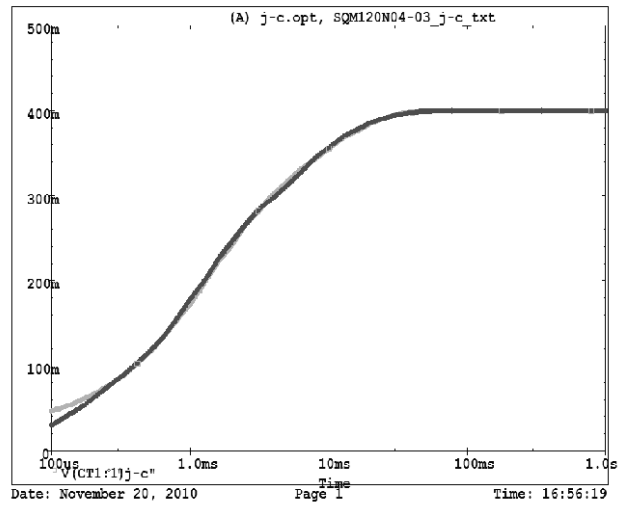
N/A indicates not applicable



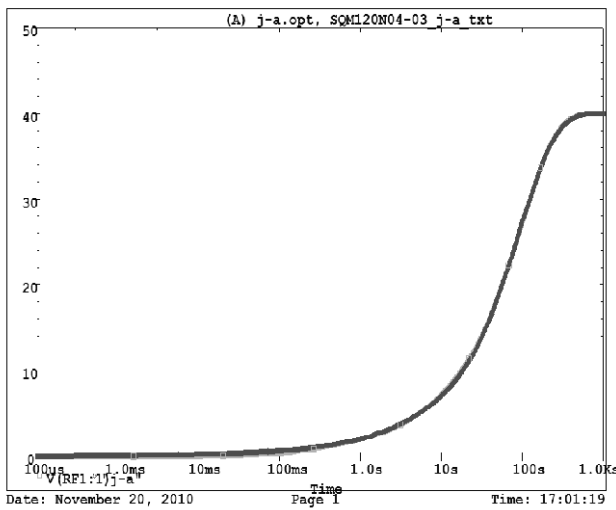
SQM120N04-03 Tank j-a Temperature: 27.0



SQM120N04-03 Tank j-c Temperature: 27.0



SQM120N04-03 Filter j-a Temperature: 27.0



SQM120N04-03 Filter j-c Temperature: 27.0

