

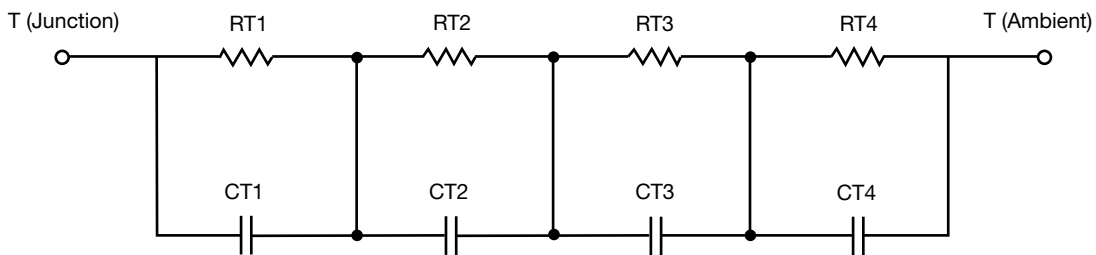
## R-C Thermal Model Parameters

### 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	2.3070	10.2262m	N/A
RT2	374.3529m	240.5932m	N/A
RT3	689.3029m	430.0155m	N/A
RT4	36.4069	316.2655m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	1.2928	41.6906m	N/A
CT2	112.0617m	210.6973m	N/A
CT3	71.2929m	18.6416m	N/A
CT4	2.5309	1.8437m	N/A

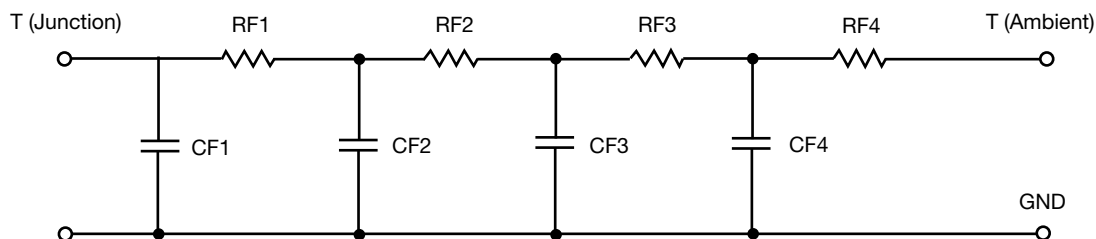
#### Note

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**

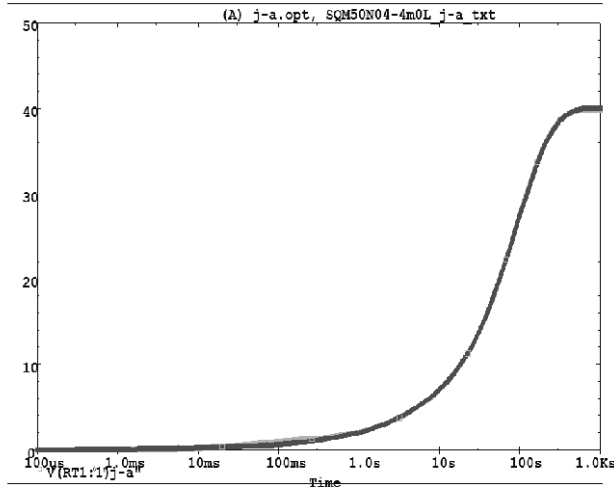


<b>R-C VALUES FOR FILTER CONFIGURATION</b>			
<b>THERMAL RESISTANCE (°C/W)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
RF1	884.7234m	496.3198m	N/A
RF2	6.5762	305.7491m	N/A
RF3	23.1425	148.7553m	N/A
RF4	9.4830	49.7877m	N/A
<b>THERMAL CAPACITANCE (Joules/°C)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
CF1	24.3391m	2.0583m	N/A
CF2	882.6174m	37.4807m	N/A
CF3	1.7594	444.5611u	N/A
CF4	2.6137	4.0228	N/A

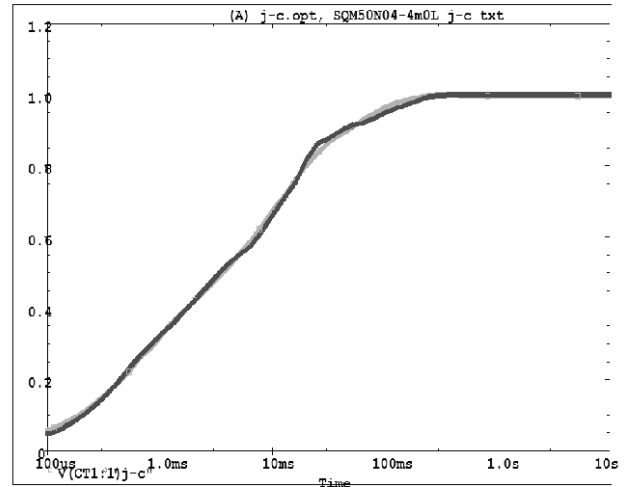
**Note**  
N/A indicates not applicable



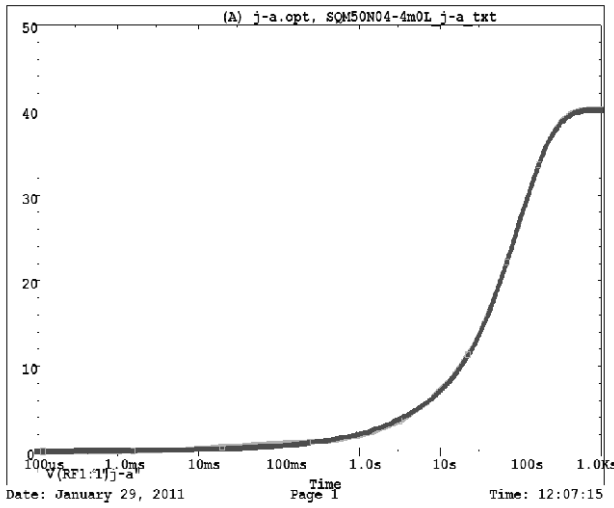
SQM50N04-4mOL Tank j-a Temperature: 27.0



SQM50N04-4mOL Tank j-c Temperature: 27.0



SQM50N04-4mOL Filter j-a Temperature: 27.0



SQM50N04-4mOL Filter j-c Temperature: 27.0

