

## 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	12.4582	365.3398m	N/A
RT2	741.5066m	254.8775m	N/A
RT3	1.2244	280.6329m	N/A
RT4	35.0209	196.2500m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	326.2371m	155.5045m	N/A
CT2	11.1913m	232.5176m	N/A
CT3	7.1363m	85.8732m	N/A
CT4	2.3699	3.7013m	N/A

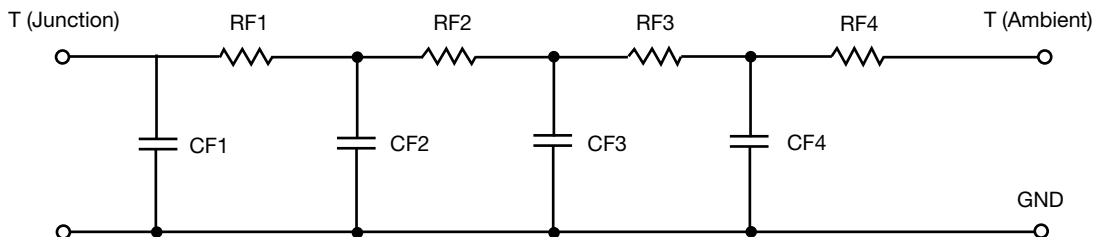
#### Note

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**

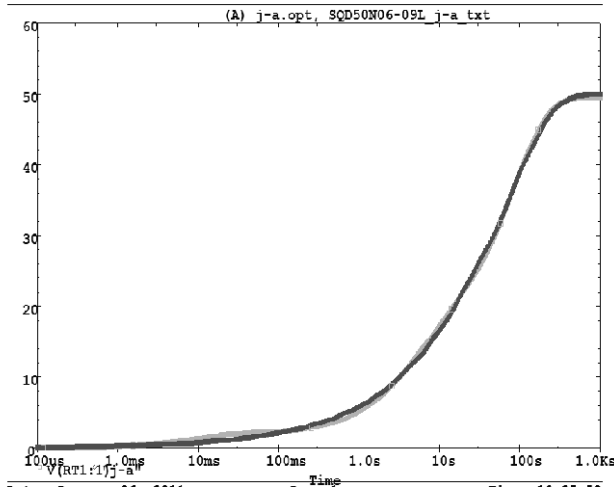


<b>R-C VALUES FOR FILTER CONFIGURATION</b>			
<b>THERMAL RESISTANCE (°C/W)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
RF1	2.4899	165.2185m	N/A
RF2	8.9029	429.7989m	N/A
RF3	17.6937	31.7087m	N/A
RF4	20.7597	470.1282m	N/A
<b>THERMAL CAPACITANCE (Joules/°C)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
CF1	17.2157m	2.4628m	N/A
CF2	205.1949m	25.4491m	N/A
CF3	790.5519m	27.0581m	N/A
CF4	3.6140	40.5046m	N/A

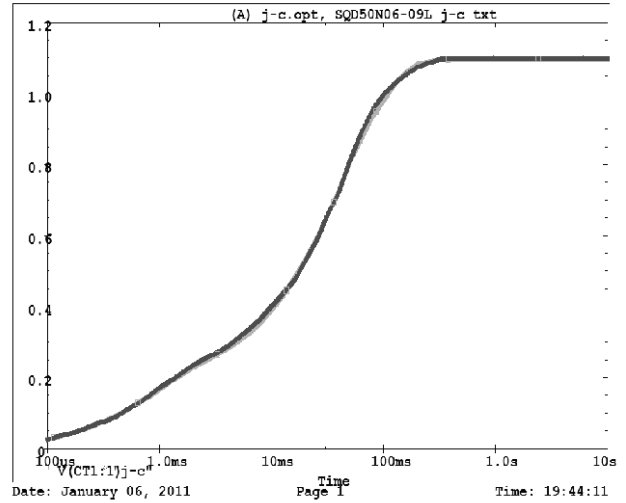
**Note**  
N/A indicates not applicable



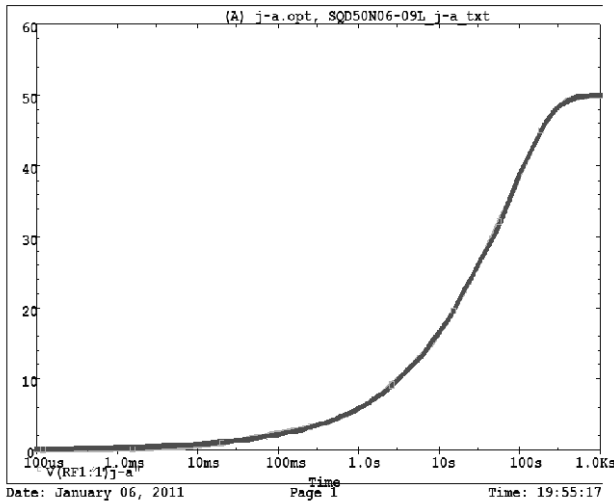
SQD50N06-09L Tank j-a Temperature: 27.0



SQD50N06-09L Tank j-c Temperature: 27.0



SQD50N06-09L Filter j-a Temperature: 27.0



SQD50N06-09L Filter j-c Temperature: 27.0

