

## 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	5.8010	526.4698m	N/A
RT2	4.6219	504.4852m	N/A
RT3	2.3692	283.8365m	N/A
RT4	37.1229	785.5821m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	786.5236m	38.6237m	N/A
CT2	111.7643m	362.9049m	N/A
CT3	11.1669m	27.6951m	N/A
CT4	1.8995	1.3976m	N/A

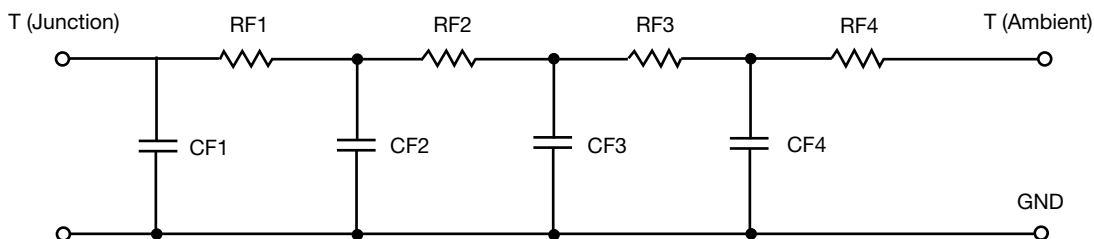
#### Note

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**

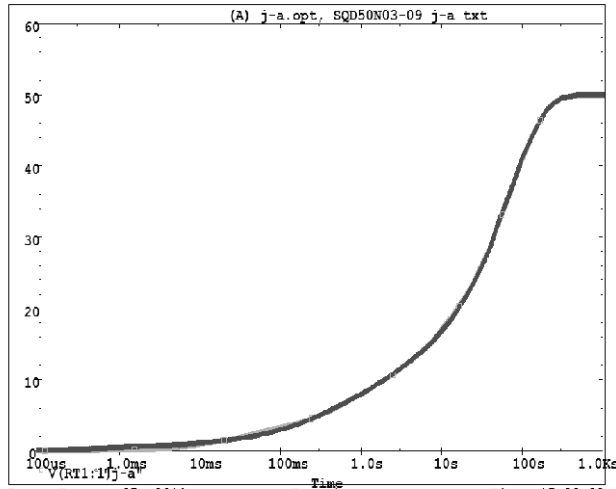


<b>R-C VALUES FOR FILTER CONFIGURATION</b>			
<b>THERMAL RESISTANCE (°C/W)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
RF1	3.1690	902.4815m	N/A
RF2	8.0372	488.4073m	N/A
RF3	21.8948	279.8716m	N/A
RF4	16.8552	426.9963m	N/A
<b>THERMAL CAPACITANCE (Joules/°C)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
CF1	11.4872m	1.2682m	N/A
CF2	113.8280m	17.5468m	N/A
CF3	1.1863	1.7450m	N/A
CF4	2.1127	440.4288m	N/A

**Note**  
N/A indicates not applicable

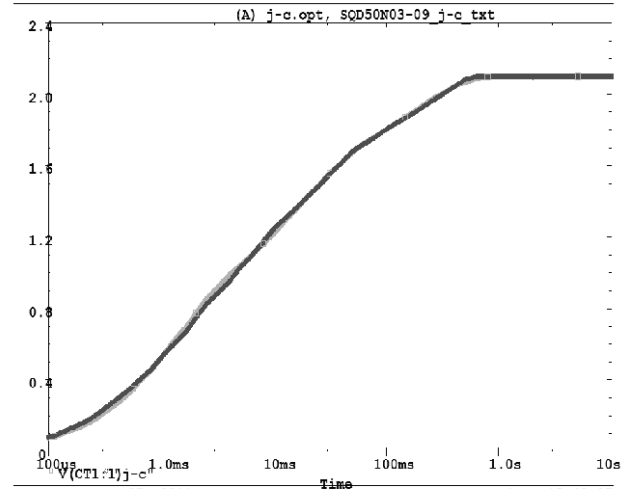


SQD50N03-09 Tank j-a Temperature: 27.0



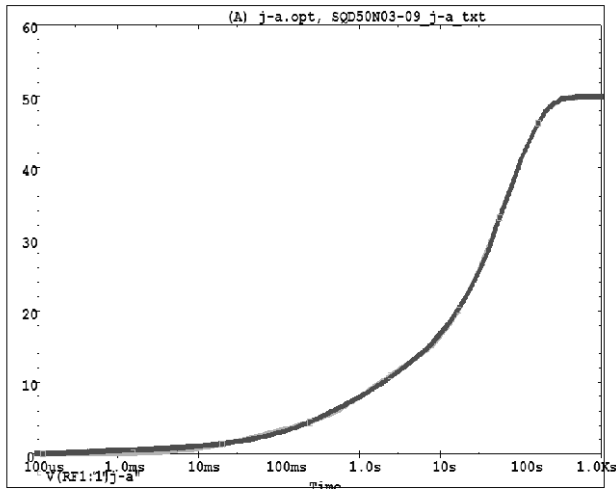
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SQD50N03-09 Tank j-c Temperature: 27.0



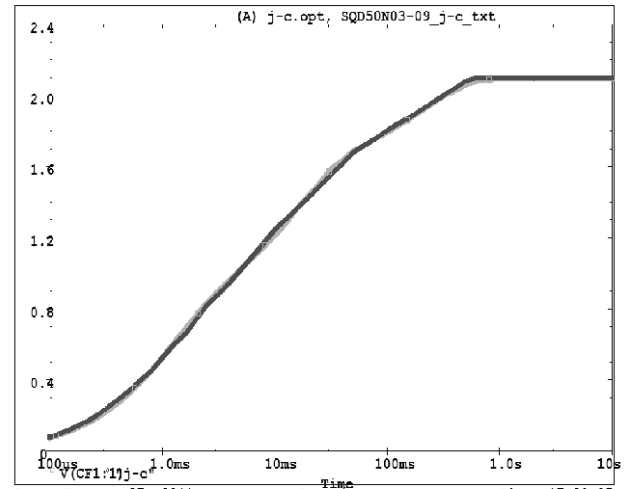
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SQD50N03-09 Filter j-a Temperature: 27.0



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SQD50N03-09 Filter j-c Temperature: 27.0



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