



# 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 PSpice, 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 PSpice 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 PSpice Platform".

## R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION						
THERMAL RESISTANCE (°C/W)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
RT1	12.7874	12.9848	1.7488	1.1645	n/a	n/a
RT2	4.5517	4.3648	1.8303	440.1000m	n/a	n/a
RT3	11.2924	11.2653	909.5000m	14.8000m	n/a	n/a
RT4	56.3685	56.3851	1.0114	1.4806	n/a	n/a
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CT1	215.8692m	254.1038m	8.2520m	7.8409m	n/a	n/a
CT2	795.5540u	4.8530m	984.4138u	1.6260m	n/a	n/a
CT3	15.6485m	22.8638m	1.5217m	818.7180u	n/a	n/a
CT4	1.3244	1.3428	260.4653m	9.7658m	n/a	n/a

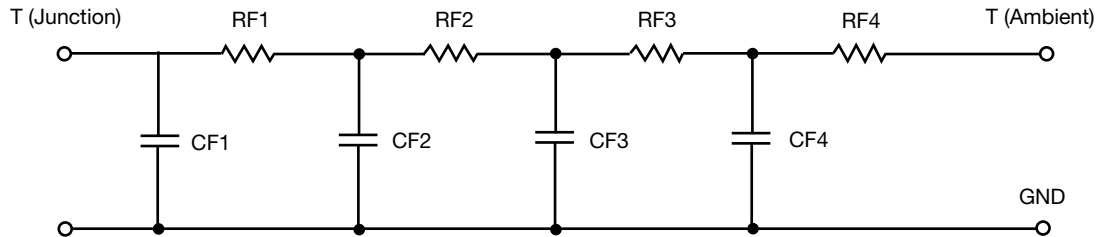
### Note

- 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



R-C VALUES FOR FILTER CONFIGURATION						
THERMAL RESISTANCE (°C/W)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
RF1	4.9444	3.4317	18.6790m	657.8993m	n/a	n/a
RF2	12.6551	13.0397	3.0093	1.5478	n/a	n/a
RF3	16.5546	16.8801	1.4925	801.1575m	n/a	n/a
RF4	50.8459	51.6485	979.5210m	93.1432m	n/a	n/a
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CF1	639.8994u	1.3858m	26.7862u	947.1282u	n/a	n/a
CF2	13.7707m	13.9476m	524.9918u	3.3660m	n/a	n/a
CF3	198.7821m	177.7747m	7.5846m	1.8959m	n/a	n/a
CF4	1.2663	1.2706	217.8401m	146.1236m	n/a	n/a

Note

- n/a indicates not applicable

