

## 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



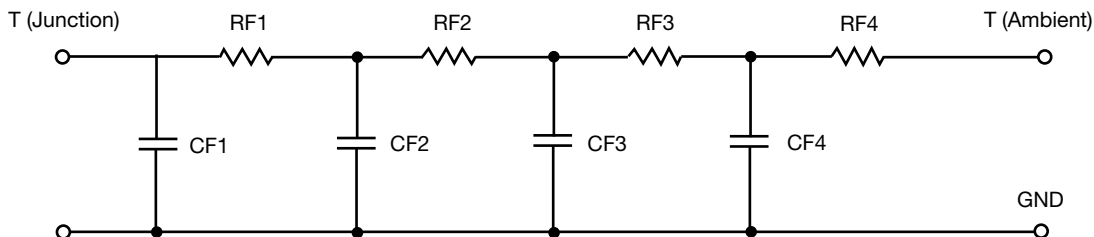
R-C VALUES FOR TANK CONFIGURATION						
THERMAL RESISTANCE (°C/W)						
Junction to	Ambient		Case		Foot	
	NCh/Channel 1	PCh/Channel 2	NCh/Channel 1	PCh/Channel 2	NCh/Channel 1	PCh/Channel 2
RT1	6.0865	6.0865	437.3996m	437.3996m	N/A	N/A
RT2	12.2576	12.2576	805.5281m	805.5281m	N/A	N/A
RT3	11.2026	11.2026	340.1548m	340.1548m	N/A	N/A
RT4	55.2648	55.2648	1.5173	1.5173	N/A	N/A
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	NCh/Channel 1	PCh/Channel 2	NCh/Channel 1	PCh/Channel 2	NCh/Channel 1	PCh/Channel 2
CT1	4.3102m	4.3102m	1.4096m	1.4096m	N/A	N/A
CT2	36.2741m	36.2741m	16.7771m	16.7771m	N/A	N/A
CT3	444.9617m	444.9616m	79.5241m	79.5241m	N/A	N/A
CT4	1.3928	1.3928	6.0203m	6.0203m	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**



<b>R-C VALUES FOR FILTER CONFIGURATION</b>						
<b>THERMAL RESISTANCE (°C/W)</b>						
Junction to	Ambient		Case		Foot	
	NCh/Channel 1	PCh/Channel 2	NCh/Channel 1	PCh/Channel 2	NCh/Channel 1	PCh/Channel 2
RF1	4.4786	4.4786	782.1371m	782.1371m	N/A	N/A
RF2	13.8582	13.8582	1.2310	1.2310	N/A	N/A
RF3	17.2427	17.2427	1.0733	1.0733	N/A	N/A
RF4	49.1932	49.1932	7.7691m	7.7691m	N/A	N/A
<b>THERMAL CAPACITANCE (Joules/°C)</b>						
Junction to	Ambient		Case		Foot	
	NCh/Channel 1	PCh/Channel 2	NCh/Channel 1	PCh/Channel 2	NCh/Channel 1	PCh/Channel 2
CF1	2.1813m	2.1813m	1.1367m	1.1367m	N/A	N/A
CF2	16.9871m	16.9871m	3.0796m	3.0796m	N/A	N/A
CF3	254.0278m	254.0278m	4.0198m	4.0198m	N/A	N/A
CF4	1.2604	1.2604	139.8387m	139.8387m	N/A	N/A

**Note**

N/A indicates not applicable

