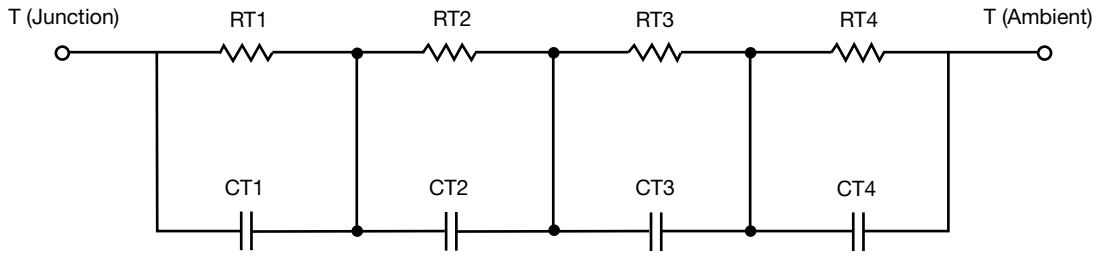
R-C Thermal Model Parameters

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



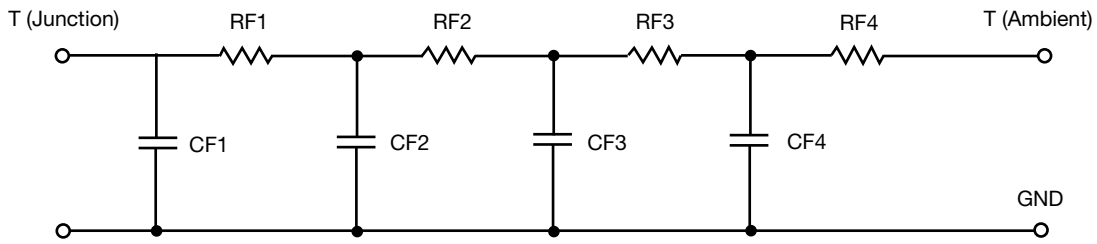
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	37.2532	82.9225m	n/a
RT2	8.1807	358.6916m	n/a
RT3	18.3987	974.1298m	n/a
RT4	4.1674	784.2561m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	3.2021	1.7274m	n/a
CT2	112.6354m	5.9918m	n/a
CT3	698.9498m	49.1727m	n/a
CT4	14.1808m	42.3899m	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**
RF1	4.9556	459.5466m	n/a
RF2	10.3651	528.4913m	n/a
RF3	22.8913	324.2211m	n/a
RF4	29.788	887.7410m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	11.6220m	2.5851m	n/a
CF2	82.8123m	13.2683m	n/a
CF3	508.5209m	4.2174m	n/a
CF4	3.2012	18.0217m	n/a

Note

- n/a indicates not applicable