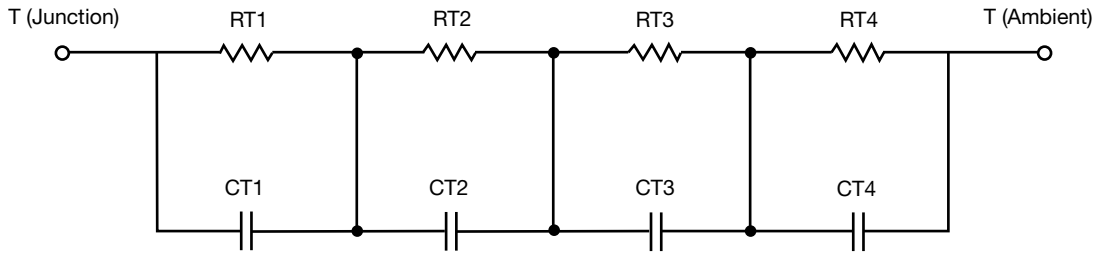
R-C Thermal Model Parameters

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



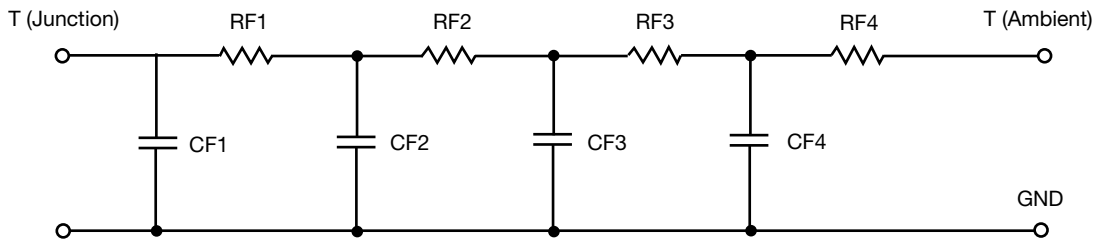
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	11.3120	414.7747m	n/a
RT2	51.4059	1.4422	n/a
RT3	11.2336	916.9437m	n/a
RT4	6.5846	1.0298	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	31.4327m	31.1422m	n/a
CT2	1.3302	8.8733m	n/a
CT3	170.5709m	21.8929m	n/a
CT4	4.7612m	648.7810u	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	6.3364	1.1491	n/a
RF2	16.9714	1.8949	n/a
RF3	14.0295	760.2877m	n/a
RF4	43.4528	3.8825m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	3.0066m	537.7156u	n/a
CF2	18.5029m	3.7596m	n/a
CF3	345.5950m	13.1995m	n/a
CF4	1.2711	14.1790m	n/a

Note

- n/a indicates not applicable