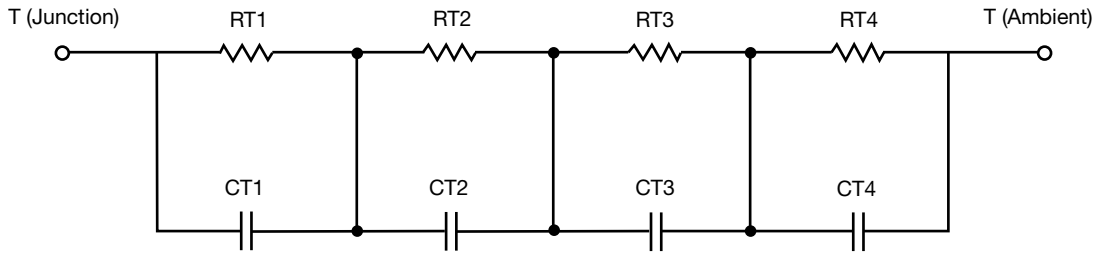
R-C Thermal Model Parameters

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



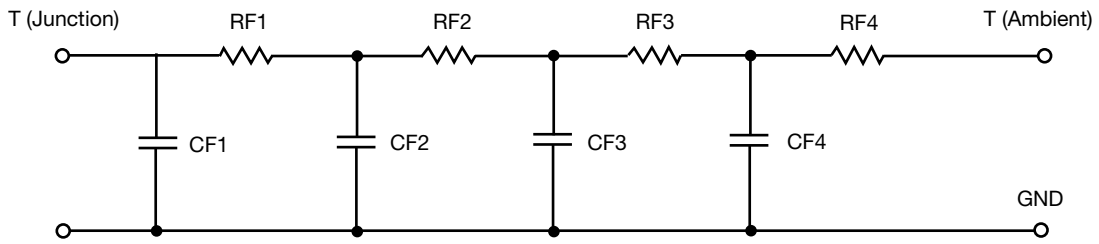
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.4708	29.5696m	n/a
RT2	10.2297	1.0942	n/a
RT3	11.1776	775.1629m	n/a
RT4	45.1291	301.0680m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	6.5033m	1.2132	n/a
CT2	53.7414m	90.7799m	n/a
CT3	557.6429m	48.4314m	n/a
CT4	1.5269	2.8806m	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	4.5594	279.3579m	n/a
RF2	12.3467	408.6697m	n/a
RF3	15.1258	1.4929	n/a
RF4	37.9681	19.0720m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	4.8113m	3.0578m	n/a
CF2	48.3195m	12.9742m	n/a
CF3	424.8135m	30.0710m	n/a
CF4	1.1546	82.9105	n/a

Note

- n/a indicates not applicable