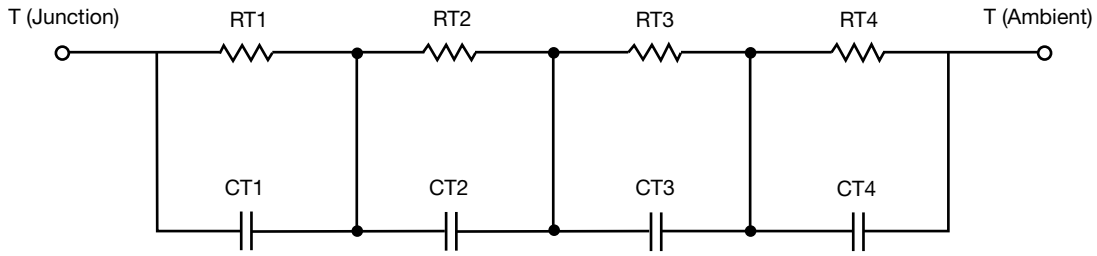
R-C Thermal Model Parameters

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



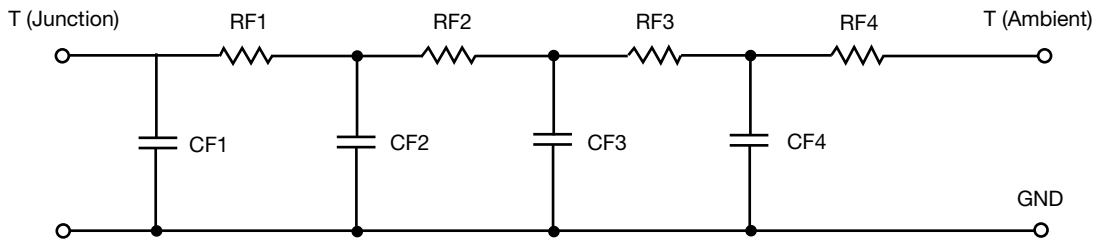
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	5.4624	445.3100m	n/a
RT2	13.2522	169.7588m	n/a
RT3	10.6488	295.5312m	n/a
RT4	40.6366	1.0894	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	4.3787m	6.3007m	n/a
CT2	79.4370m	713.5327u	n/a
CT3	1.6843	1.8584m	n/a
CT4	1.7697	8.9799m	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	5.8547	561.9409m	n/a
RF2	16.0387	544.8774m	n/a
RF3	20.0483	375.3001m	n/a
RF4	28.0583	517.8816m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	4.6324m	548.8608u	n/a
CF2	62.7355m	2.8733m	n/a
CF3	811.9930m	209.4855u	n/a
CF4	1.1897	15.7397m	n/a

Note

- n/a indicates not applicable