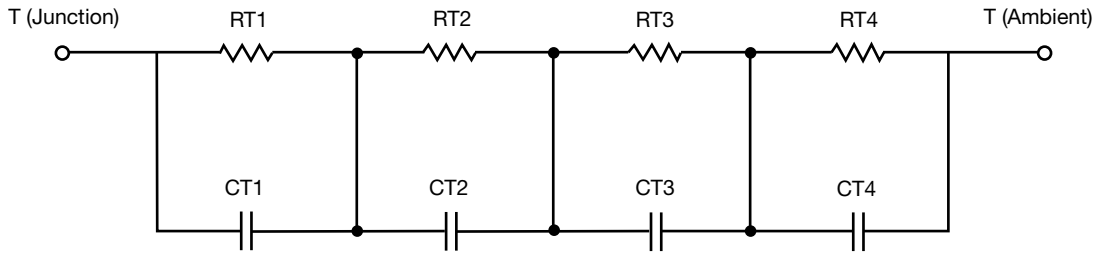
R-C Thermal Model Parameters

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



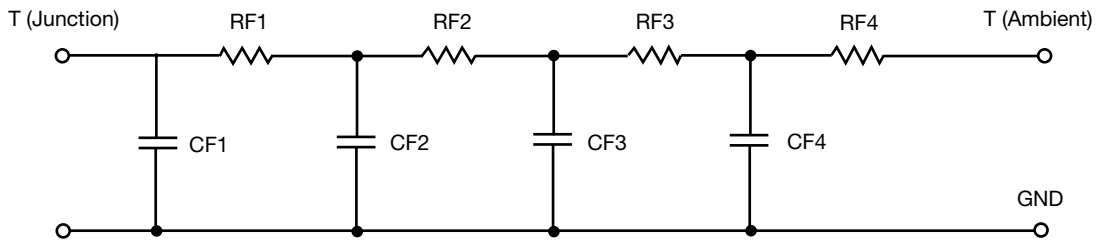
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	11.6073	2.0544	n/a
RT2	5.5097	1.3706	n/a
RT3	17.8868	317.4000m	n/a
RT4	44.9962	2.7576	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	218.0729m	1.1988m	n/a
CT2	440.3522u	194.0091u	n/a
CT3	6.6195m	34.1528m	n/a
CT4	1.7908	1.0497m	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	5.1725	3.1659	n/a
RF2	17.9817	3.3031	n/a
RF3	12.9513	104.6245m	n/a
RF4	43.8945	197.5690u	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	309.7836u	174.3659u	n/a
CF2	5.0133m	732.9491u	n/a
CF3	130.8575m	4.9679	n/a
CF4	1.6377	722.3625m	n/a

Note

- n/a indicates not applicable