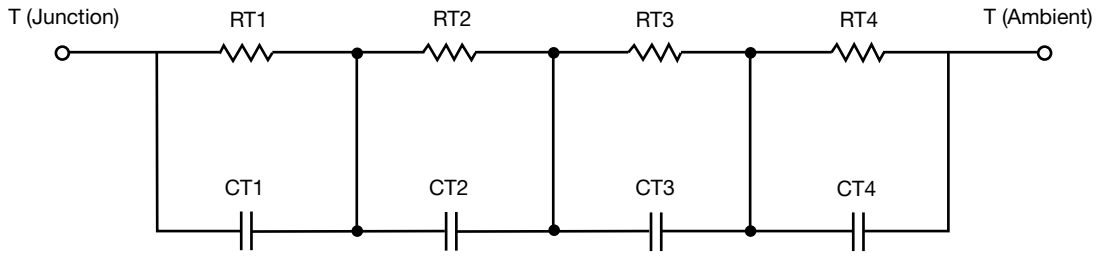
R-C Thermal Model Parameters

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



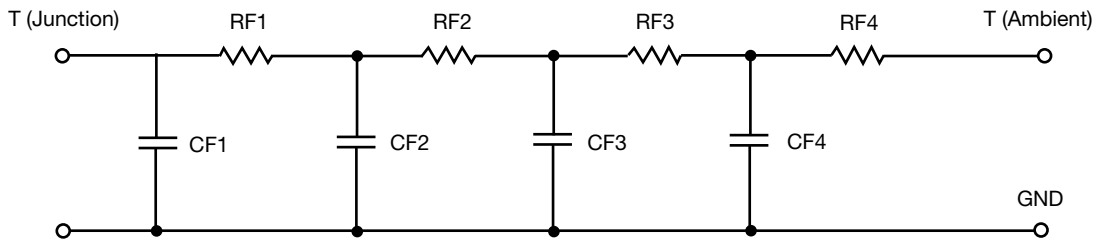
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	17.5943	242.6354m	n/a
RT2	8.8608	250.9797m	n/a
RT3	2.0349	863.3998m	n/a
RT4	39.0461	843.4121m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	559.6179m	2.9607m	n/a
CT2	57.7840m	16.9595m	n/a
CT3	5.5039m	48.4205m	n/a
CT4	2.8006	50.4714m	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	5.6770	462.0213m	n/a
RF2	10.9579	525.9103m	n/a
RF3	23.4707	321.9318m	n/a
RF4	27.8154	890.4791m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	13.4929m	2.6173m	n/a
CF2	97.1894m	13.1221m	n/a
CF3	574.5237m	4.2374m	n/a
CF4	3.5528	18.0655m	n/a

Note

- n/a indicates not applicable