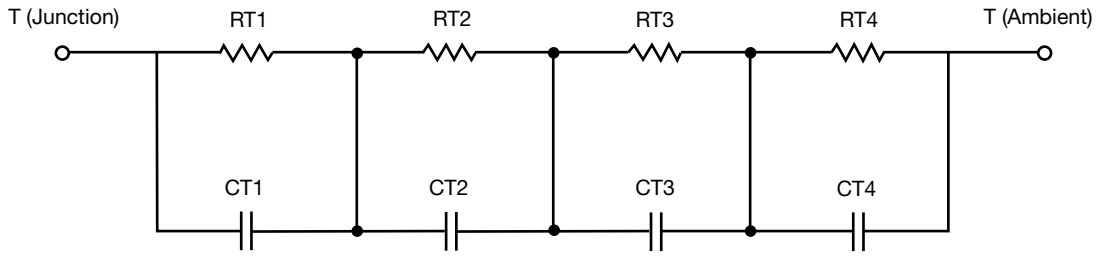
R-C Thermal Model Parameters

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



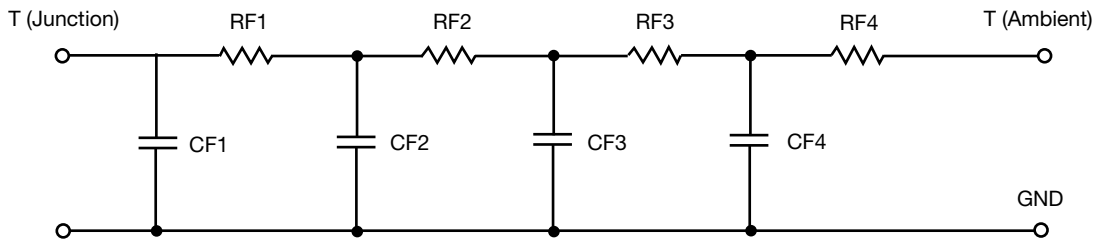
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	14.2035	1.0081	n/a
RT2	13.9188	720.0677m	n/a
RT3	4.1783	123.3236m	n/a
RT4	36.9226	360.3305m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	904.2198m	2.0447m	n/a
CT2	25.7618m	8.1063m	n/a
CT3	2.0397m	380.2789m	n/a
CT4	2.4069	300.1448u	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	5.5004	463.3544m	n/a
RF2	13.9674	1.1945	n/a
RF3	25.0260	474.0975m	n/a
RF4	24.7634	75.2252m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	2.2838m	278.9045u	n/a
CF2	26.0506m	1.1425m	n/a
CF3	674.8050m	12.8185m	n/a
CF4	2.7591	3.2484m	n/a

Note

- n/a indicates not applicable