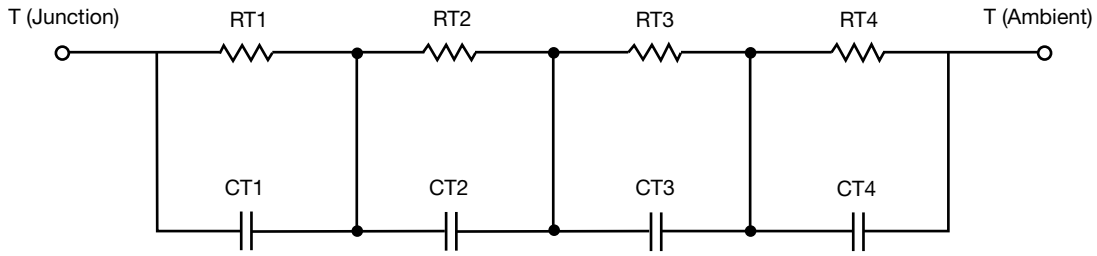
R-C Thermal Model Parameters

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



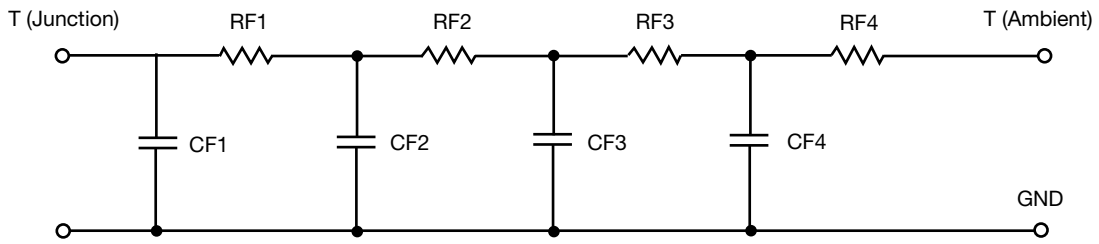
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.8969	228.7859u	n/a
RT2	9.5881	443.5582m	n/a
RT3	10.8237	357.0205m	n/a
RT4	38.6913	1.0978	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	2.5273m	3.9367m	n/a
CT2	590.0161m	512.7070u	n/a
CT3	27.7854m	28.7169m	n/a
CT4	2.0636	2.8064m	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	5.4345	646.1041m	n/a
RF2	12.2187	718.2059m	n/a
RF3	15.7173	396.7723m	n/a
RF4	29.6295	139.8980m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	2.9364m	461.4435u	n/a
CF2	32.5256m	2.2484m	n/a
CF3	620.5195m	2.4743m	n/a
CF4	2.0691	70.0373m	n/a

Note

- n/a indicates not applicable