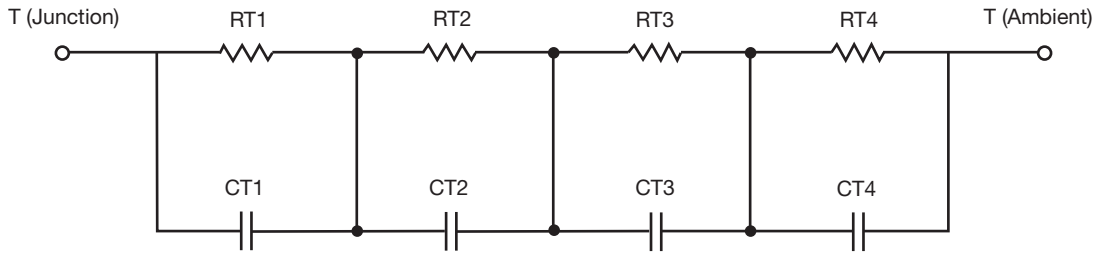
R-C Thermal Model Parameters

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



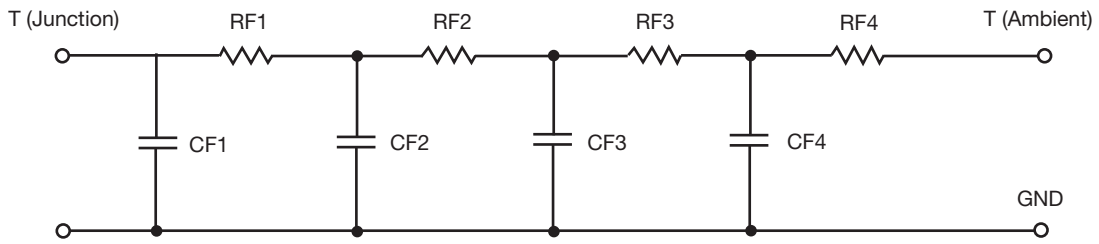
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.7236	497.3660m	n/a
RT2	56.9113	1.1478	n/a
RT3	9.8408	1.4085	n/a
RT4	14.0759	45.1153m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	3.6465m	1.4089m	n/a
CT2	1.2784	9.2730m	n/a
CT3	19.4968m	9.1252m	n/a
CT4	167.9854m	2.5037	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	1.3345	705.8822m	n/a
RF2	12.2752	1.2746	n/a
RF3	16.5609	1.1090	n/a
RF4	54.4453	6.7456m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	413.5986u	959.4871u	n/a
CF2	8.4311m	3.3096m	n/a
CF3	112.0996m	2.7796m	n/a
CF4	1.1969	489.9669m	n/a

Note

- n/a indicates not applicable