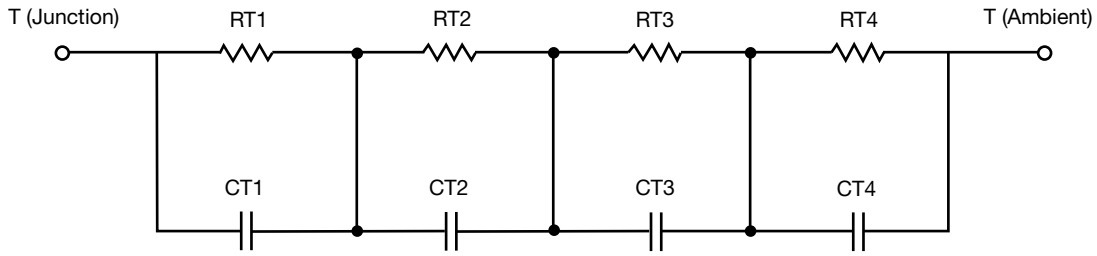
R-C Thermal Model Parameters

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



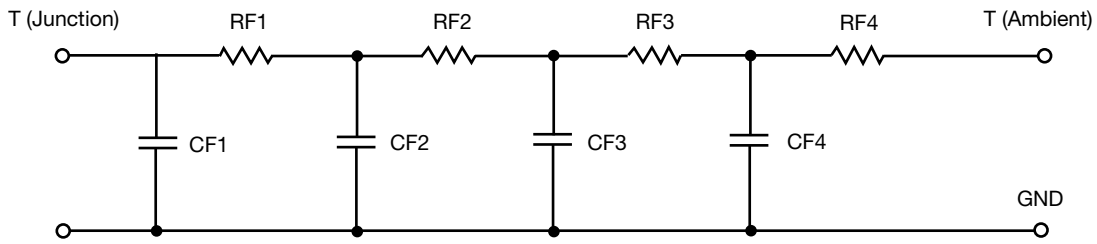
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.6263	27.7226m	n/a
RT2	12.6872	713.3935m	n/a
RT3	14.7860	371.3819m	n/a
RT4	33.9005	787.5020m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	2.0286m	1.2136	n/a
CT2	25.4009m	2.6726m	n/a
CT3	869.7076m	501.3570u	n/a
CT4	2.8648	8.2039m	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	4.1794	646.1041m	n/a
RF2	12.9575	718.2059m	n/a
RF3	22.9128	396.7723m	n/a
RF4	24.9503	139.8980m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.8761m	461.4443u	n/a
CF2	22.4251m	2.2484m	n/a
CF3	642.2086m	2.4743m	n/a
CF4	3.0542	70.0384m	n/a

Note

- n/a indicates not applicable