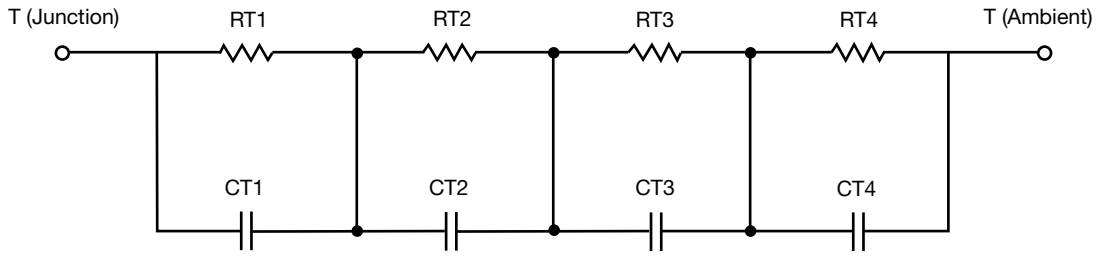
R-C Thermal Model Parameters

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



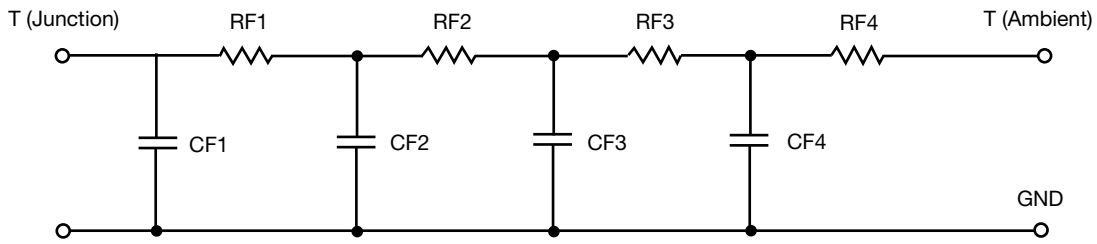
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	5.7021	260.6422m	n/a
RT2	13.9754	1.0679	n/a
RT3	9.4226	254.6160m	n/a
RT4	40.8999	316.8418m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	12.0758m	69.0517m	n/a
CT2	123.3096m	14.6893m	n/a
CT3	2.6530	2.3299m	n/a
CT4	2.1617	8.2052m	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	5.3724	725.9037m	n/a
RF2	12.4797	756.4991m	n/a
RF3	18.6481	285.4420m	n/a
RF4	33.4998	132.1552m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	8.5526m	1.8856m	n/a
CF2	64.8705m	10.9340m	n/a
CF3	581.9017m	21.0225u	n/a
CF4	1.7338	9.8232m	n/a

Note

- n/a indicates not applicable