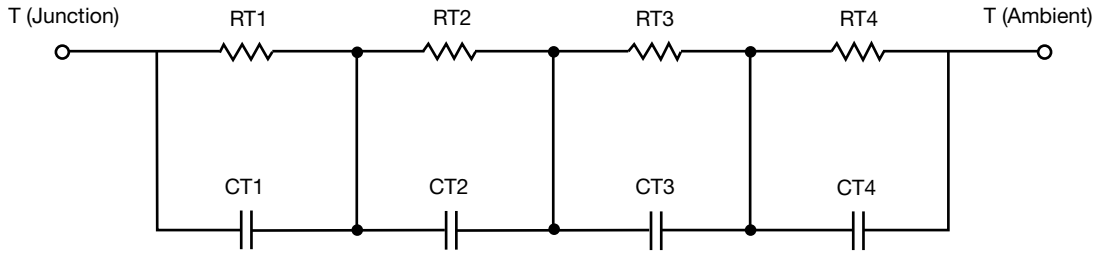
R-C Thermal Model Parameters

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



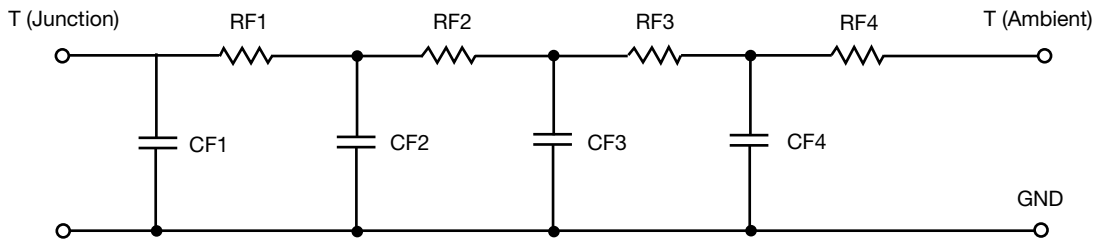
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	67.7607	N/A	33.8195
RT2	40.5600	N/A	8.6163
RT3	10.2083	N/A	2.2158
RT4	47.6041	N/A	5.3483
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.2898	N/A	11.3530m
CT2	3.1752m	N/A	3.3518m
CT3	611.7545u	N/A	101.7525u
CT4	16.8256m	N/A	580.1236m

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	20.4177	N/A	9.3737
RF2	51.0342	N/A	21.0777
RF3	28.4453	N/A	14.1308
RF4	66.2658	N/A	5.3241
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	649.1798u	N/A	949.3018u
CF2	2.8484m	N/A	6.2622m
CF3	24.8030m	N/A	13.5907m
CF4	1.2944	N/A	232.4038m

Note

- n/a indicates not applicable