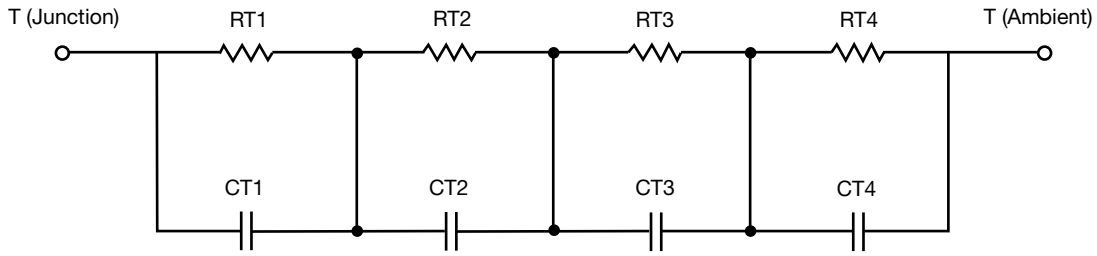
R-C Thermal Model Parameters

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



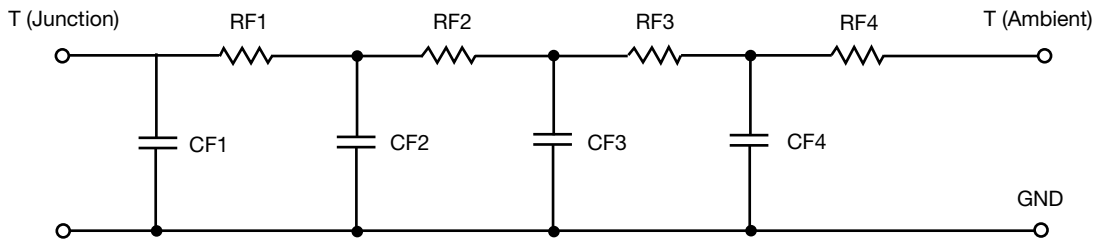
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	52.6164	n/a	10.2676
RT2	20.2011	n/a	7.0228
RT3	8.9569	n/a	272.0916m
RT4	3.3757	n/a	5.4556
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.3873	n/a	90.6579m
CT2	41.0148m	n/a	6.6873m
CT3	328.2196m	n/a	246.8953m
CT4	6.7295m	n/a	1.8053

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	2.0796	n/a	7.0065
RF2	14.0631	n/a	7.9005
RF3	19.2010	n/a	3.5232
RF4	49.4923	n/a	2.8984
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	4.7306m	n/a	5.3881m
CF2	14.0810m	n/a	46.8641m
CF3	75.3765m	n/a	303.9293m
CF4	1.3630	n/a	323.4056m

Note

- n/a indicates not applicable