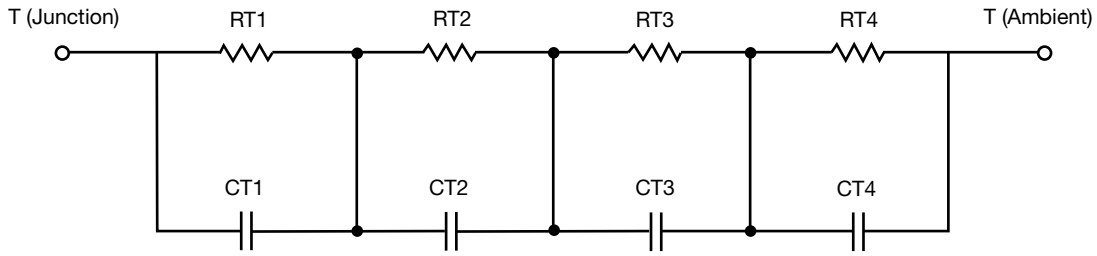
R-C Thermal Model Parameters

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



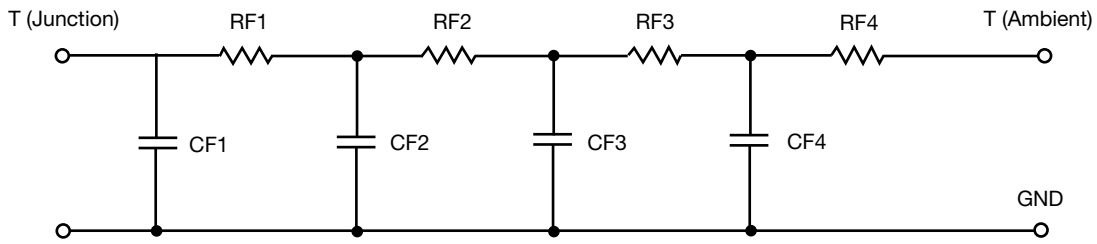
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	19.0622	1.9449	n/a
RT2	5.5905	1.3662	n/a
RT3	15.1457	342.5063m	n/a
RT4	50.2016	346.3937m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	13.3637m	1.0966m	n/a
CT2	2.1202m	373.3589u	n/a
CT3	166.9091m	103.4327u	n/a
CT4	1.4665	7.4215m	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	6.1085	701.7873m	n/a
RF2	21.5578	2.4517	n/a
RF3	15.4113	479.1094m	n/a
RF4	46.9224	367.4033m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.4939m	64.2168u	n/a
CF2	9.8827m	315.5110u	n/a
CF3	158.6035m	1.6700m	n/a
CF4	1.3692	112.1401u	n/a

Note

- n/a indicates not applicable