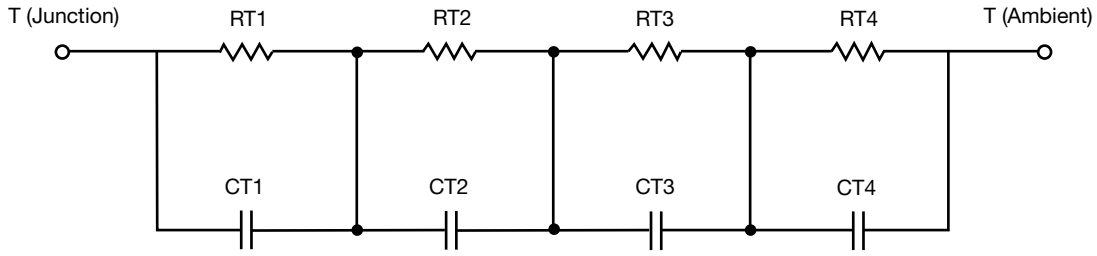
R-C Thermal Model Parameters

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



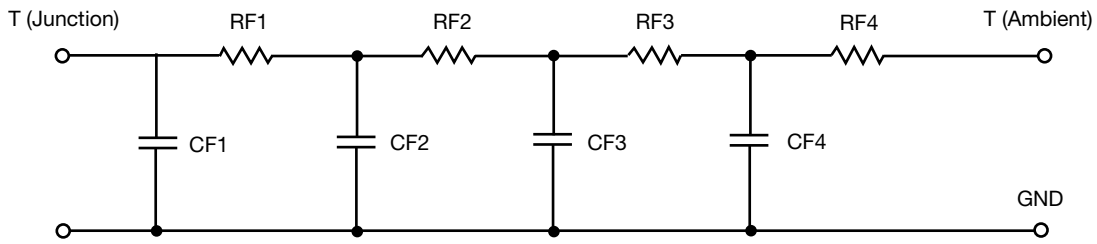
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	10.5177	N/A	19.3013
RT2	37.9559	N/A	9.4271
RT3	51.7871	N/A	18.0868
RT4	63.8222	N/A	2.6933
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	550.7121u	N/A	15.7164m
CT2	31.6325m	N/A	4.2230m
CT3	3.1559m	N/A	46.2532m
CT4	1.2424	N/A	270.4818u

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	10.1343	N/A	2.0667
RF2	54.8722	N/A	7.6964
RF3	35.6355	N/A	17.5041
RF4	63.3470	N/A	21.8806
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	321.6793u	N/A	154.2708u
CF2	2.0865m	N/A	1.6101m
CF3	21.0786m	N/A	4.3038m
CF4	1.1840	N/A	17.9949m

Note

- n/a indicates not applicable