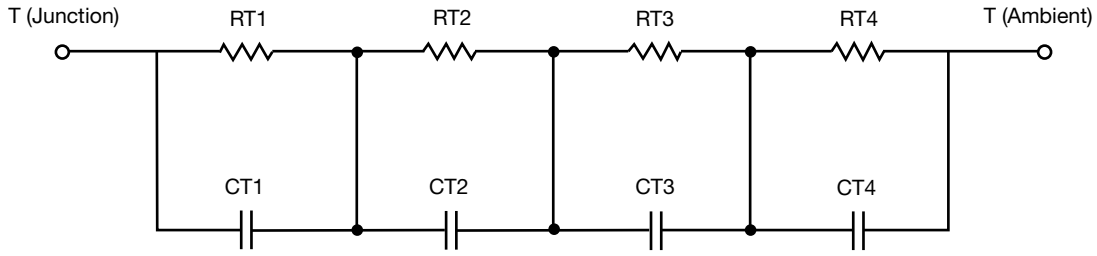
R-C Thermal Model Parameters

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



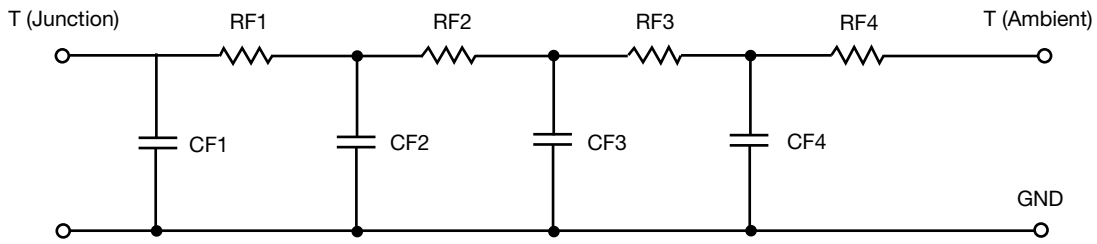
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	10.2763	N/A	24.2752
RT2	33.8885	N/A	26.1738
RT3	45.3466	N/A	18.1868
RT4	39.8732	N/A	6.3642
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	141.6319u	N/A	2.2581m
CT2	36.8657m	N/A	3.3937m
CT3	3.3779m	N/A	41.9984m
CT4	2.3404	N/A	263.5947u

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	11.2306	N/A	5.7412
RF2	42.4653	N/A	20.6062
RF3	35.9569	N/A	37.7124
RF4	39.9016	N/A	10.9403
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	145.2339u	N/A	182.6338u
CF2	2.5913m	N/A	657.1023u
CF3	19.3080m	N/A	1.4255m
CF4	2.3232	N/A	112.9639m

Note

- n/a indicates not applicable