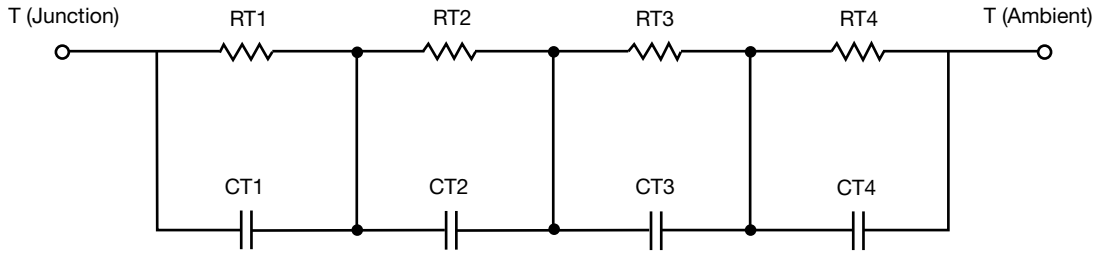
R-C Thermal Model Parameters

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



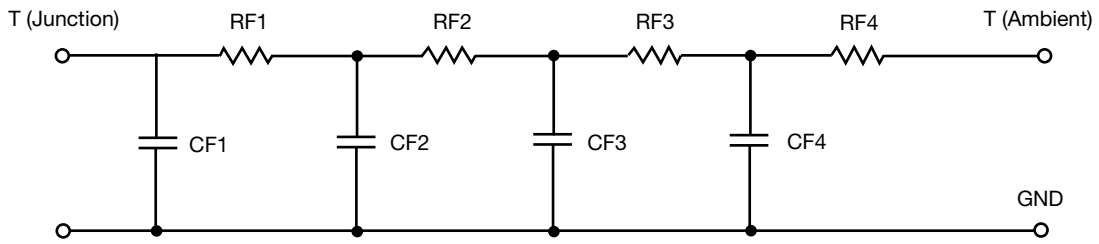
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	9.1269	N/A	10.5908
RT2	21.2130	N/A	7.4177
RT3	25.3885	N/A	9.4763
RT4	53.8524	N/A	2.4128
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	2.2738m	N/A	7.8210m
CT2	96.8178m	N/A	31.5309m
CT3	13.8222m	N/A	184.9110m
CT4	1.2398	N/A	1.8053m

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	10.3430	N/A	2.0423
RF2	32.9775	N/A	16.1046
RF3	21.1938	N/A	3.8534
RF4	45.7088	N/A	7.8852
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.8891m	N/A	711.2824u
CF2	9.1589m	N/A	4.8048m
CF3	194.6842m	N/A	23.7621m
CF4	1.4002	N/A	176.9434m

Note

- n/a indicates not applicable