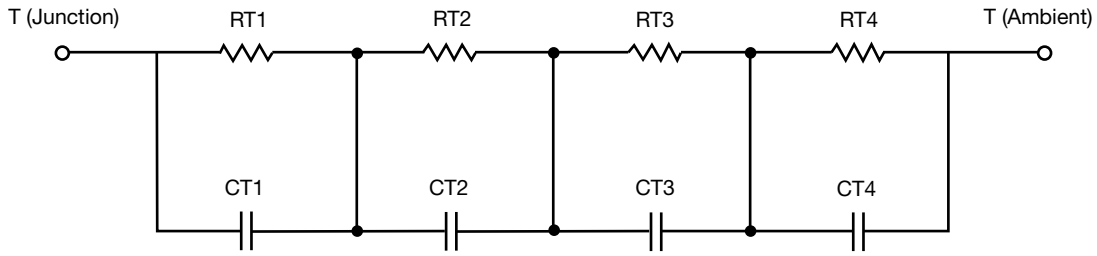
R-C Thermal Model Parameters

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



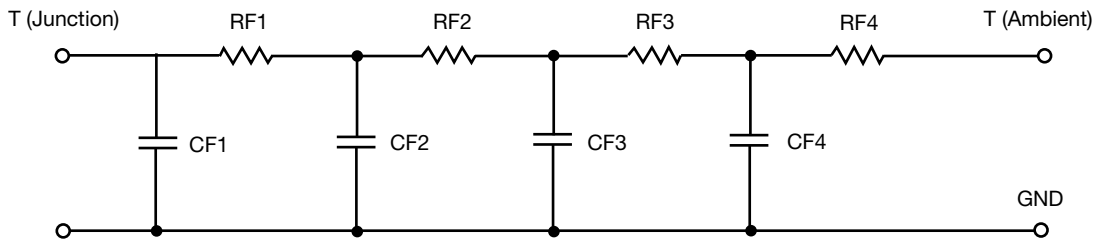
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.8940	N/A	988.6144m
RT2	23.5181	N/A	5.4419
RT3	39.2235	N/A	9.6114
RT4	13.6591	N/A	4.9234
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	13.0940m	N/A	6.8893m
CT2	47.4237m	N/A	10.8965m
CT3	2.5063	N/A	147.3825m
CT4	2.0954	N/A	119.7709m

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	8.7137	N/A	1.3066
RF2	19.2553	N/A	7.9366
RF3	11.6211	N/A	7.7176
RF4	40.4787	N/A	4.0148
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	13.0287m	N/A	2.0825m
CF2	40.8943m	N/A	8.5330m
CF3	564.7938m	N/A	79.9560m
CF4	1.3629	N/A	103.8193m

Note

- n/a indicates not applicable