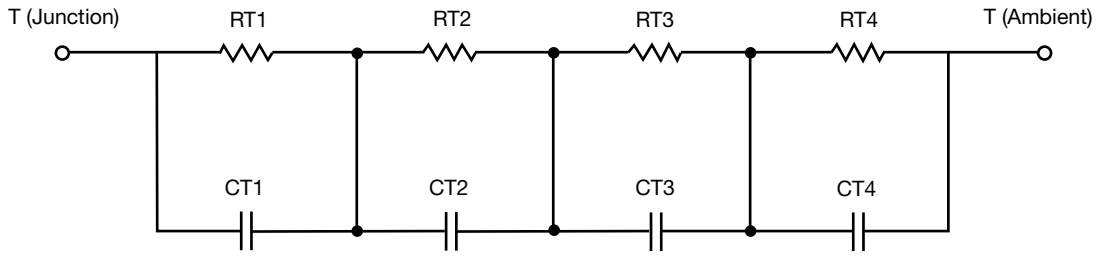
R-C Thermal Model Parameters

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



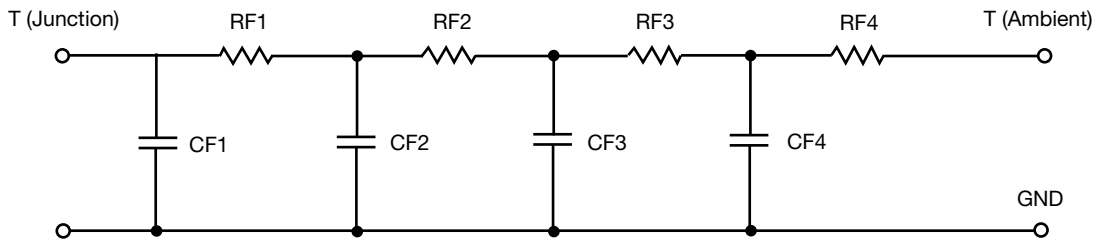
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	13.9916	936.3000m	n/a
RT2	4.4499	1.0991	n/a
RT3	9.9032	1.5848	n/a
RT4	56.6553	1.8798	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	162.9002m	366.0951m	n/a
CT2	822.0862u	1.3228m	n/a
CT3	14.1530m	1.0030m	n/a
CT4	1.2919	7.8014m	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	5.1174	2.8058	n/a
RF2	12.0756	1.7443	n/a
RF3	17.3749	666.5175m	n/a
RF4	50.4321	283.3825m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	829.7558u	532.0980u	n/a
CF2	12.5911m	5.2834m	n/a
CF3	194.7555m	280.7718m	n/a
CF4	1.2941	30.5028m	n/a

Note

- n/a indicates not applicable