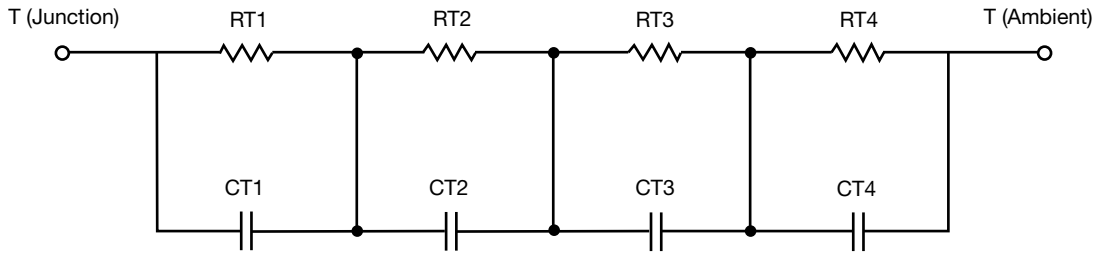
R-C Thermal Model Parameters

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



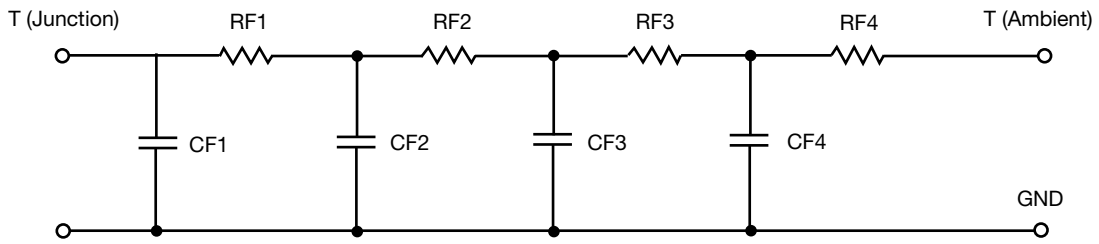
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	4.2629	1.4401	n/a
RT2	9.5811	599.8824m	n/a
RT3	14.6044	2.5349	n/a
RT4	56.1586	925.1176m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.4542m	13.1661m	n/a
CT2	12.2035m	911.9265u	n/a
CT3	154.9077m	1.0314m	n/a
CT4	1.3013	328.5748m	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	1.8428	1.4470	n/a
RF2	12.6955	1.9879	n/a
RF3	15.1210	1.2262	n/a
RF4	55.3407	838.8999m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	216.8348u	406.7999u	n/a
CF2	5.8451m	711.8035u	n/a
CF3	111.7565m	12.1527m	n/a
CF4	1.1569	345.9767m	n/a

Note

- n/a indicates not applicable