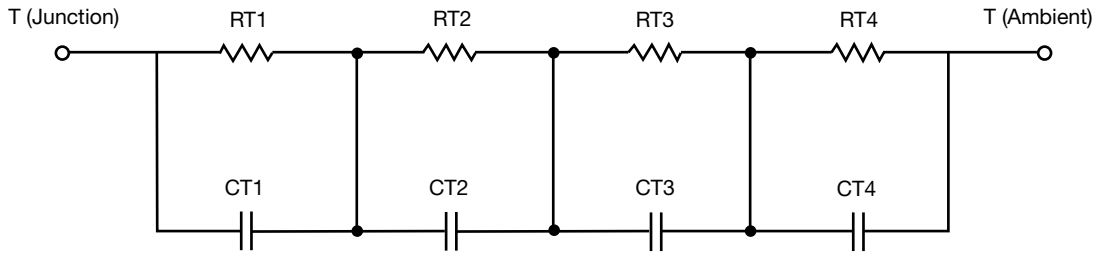
R-C Thermal Model Parameters

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



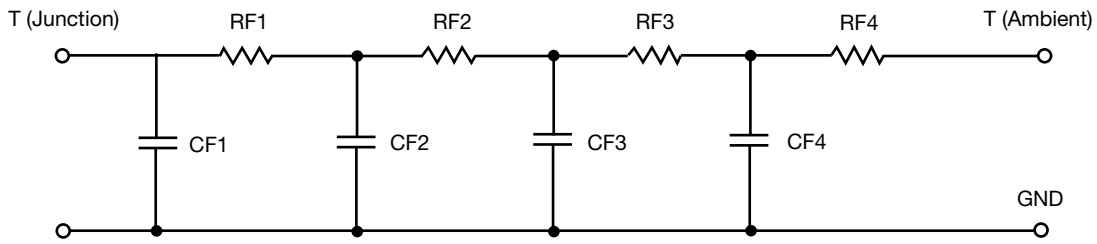
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	14.5376	289.7000m	n/a
RT2	7.2679	1.7612	n/a
RT3	18.4542	1.0195	n/a
RT4	40.8488	2.4296	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	50.7714m	4.3484	n/a
CT2	7.8355m	17.5650m	n/a
CT3	984.8648m	1.2533m	n/a
CT4	1.8985	42.4232m	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	3.3402	952.2955m	n/a
RF2	14.9218	1.0457	n/a
RF3	16.5555	3.0262	n/a
RF4	46.1825	478.4063m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.8638m	1.0152m	n/a
CF2	17.5701m	4.9135m	n/a
CF3	231.0234m	13.8728m	n/a
CF4	1.0584	1.7188	n/a

Note

- n/a indicates not applicable