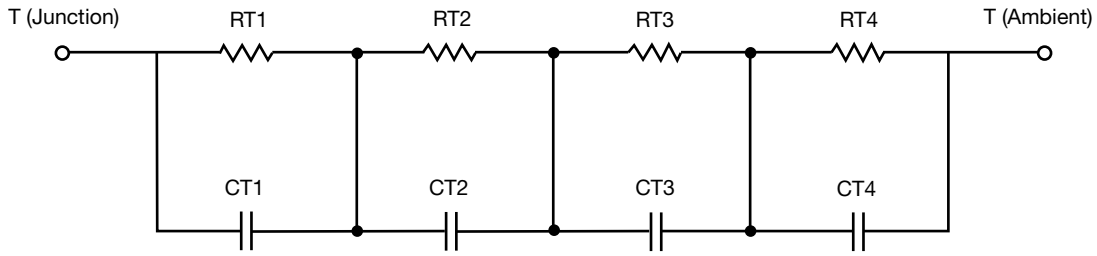
R-C Thermal Model Parameters

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



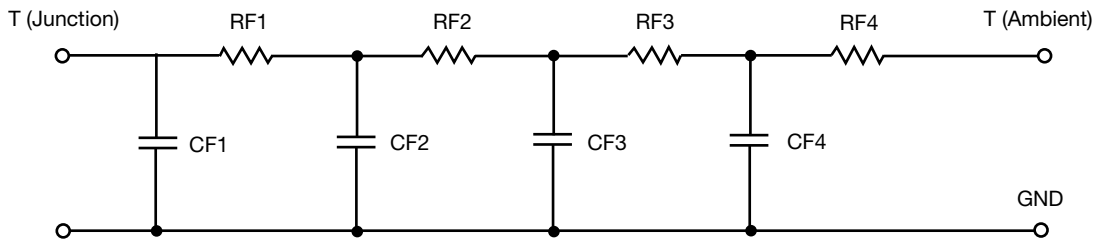
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	4.5563	683.8879m	n/a
RT2	13.3052	2.3722	n/a
RT3	11.3436	761.0978m	n/a
RT4	40.7949	682.8143m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	5.4628m	77.9376m	n/a
CT2	74.3898m	30.1809m	n/a
CT3	1.8809	1.9841m	n/a
CT4	1.7463	152.9970m	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	5.2689	869.6941m	n/a
RF2	13.8113	989.7059m	n/a
RF3	21.8049	1.0670	n/a
RF4	29.1149	1.5736	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	5.3076m	1.7739m	n/a
CF2	60.0311m	14.9464m	n/a
CF3	689.3571m	288.1015u	n/a
CF4	1.2071	16.1166m	n/a

Note

- n/a indicates not applicable