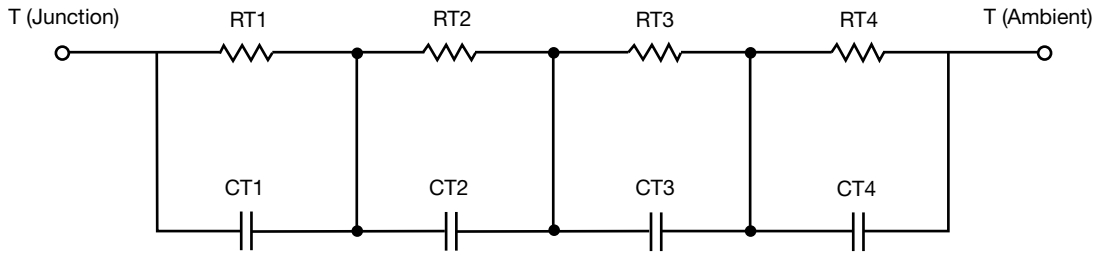
R-C Thermal Model Parameters

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



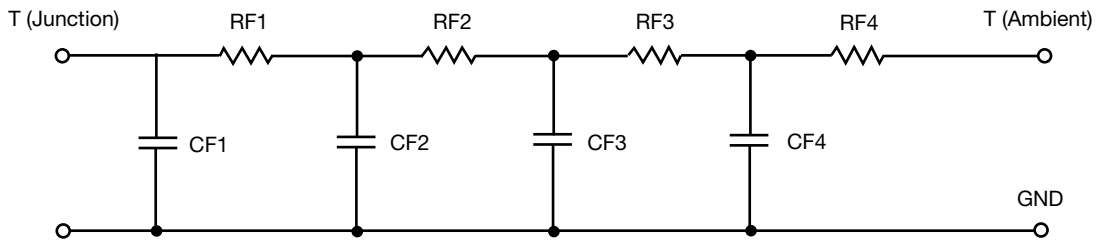
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	4.3246	27.9896m	n/a
RT2	11.0928	777.7286m	n/a
RT3	9.2821	746.2153m	n/a
RT4	45.3005	448.0667m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	9.7306m	59.1099m	n/a
CT2	85.9629m	23.3754m	n/a
CT3	909.3327m	15.2400m	n/a
CT4	1.8216	2.0989m	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	4.7140	826.8657m	n/a
RF2	12.7157	801.0706m	n/a
RF3	17.1305	273.0069m	n/a
RF4	35.4398	99.0565m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	7.5453m	1.8691m	n/a
CF2	59.0522m	11.0614m	n/a
CF3	529.7055m	2.4837m	n/a
CF4	1.6468	11.1477m	n/a

Note

- n/a indicates not applicable