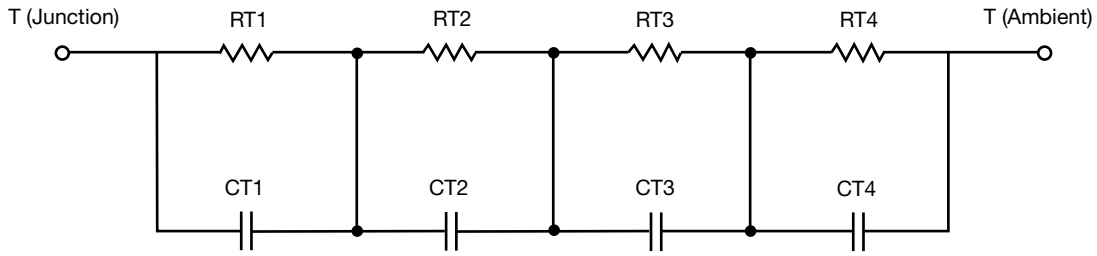
R-C Thermal Model Parameters

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



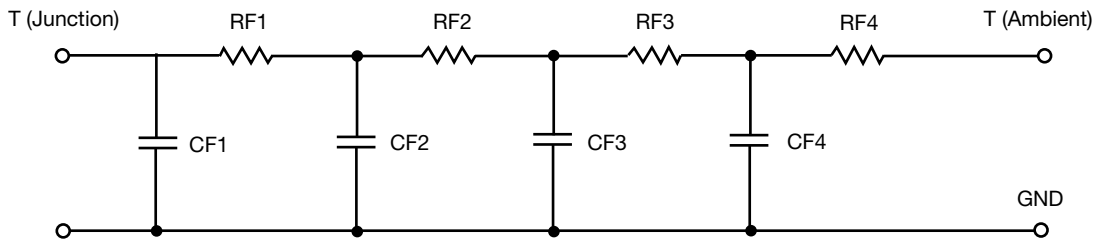
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	9.3661	2.0916	n/a
RT2	19.6575	4.5656	n/a
RT3	15.0144	645.7639m	n/a
RT4	35.962	697.0361m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	209.5064u	286.9578u	n/a
CT2	7.0242m	249.3949u	n/a
CT3	426.7359m	23.2734u	n/a
CT4	2.4303	147.4927u	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	9.1532	2.7844	n/a
RF2	18.6206	4.9281	n/a
RF3	16.1151	250.0314m	n/a
RF4	36.1111	37.4686m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	165.3227u	38.9515u	n/a
CF2	5.5073m	130.2004u	n/a
CF3	206.0570m	21.7573m	n/a
CF4	1.9019	721.3697m	n/a

Note

- n/a indicates not applicable