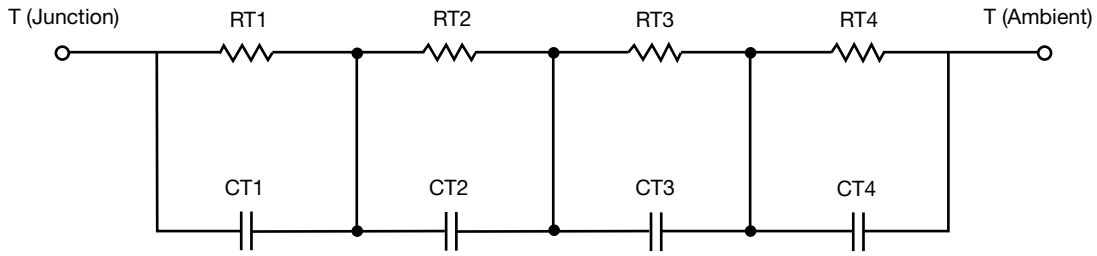
R-C Thermal Model Parameters

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



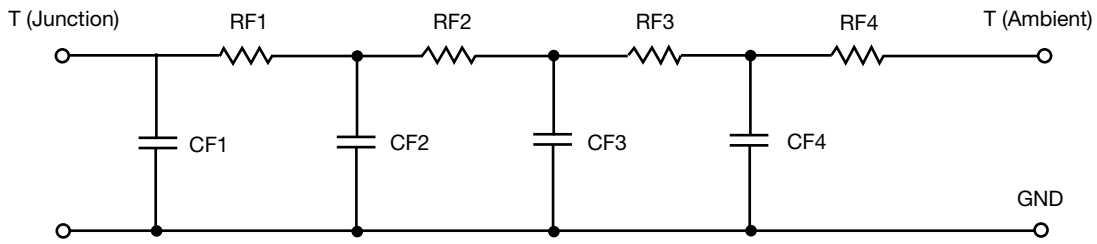
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.2954	2.4838	n/a
RT2	15.1652	1.3158	n/a
RT3	13.5875	2.1985	n/a
RT4	48.2257	1.0558m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	581.7734u	3.3156m	n/a
CT2	129.7508m	435.9729u	n/a
CT3	10.8397m	9.0246m	n/a
CT4	1.4492	91.7671u	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	4.1111	1.9287	n/a
RF2	15.7503	59.9847m	n/a
RF3	15.7315	3.8888	n/a
RF4	44.7296	128.9627m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	683.1377u	326.1815u	n/a
CF2	10.1772m	2.6491m	n/a
CF3	136.8470m	457.6298u	n/a
CF4	1.4315	1.4683m	n/a

Note

- n/a indicates not applicable