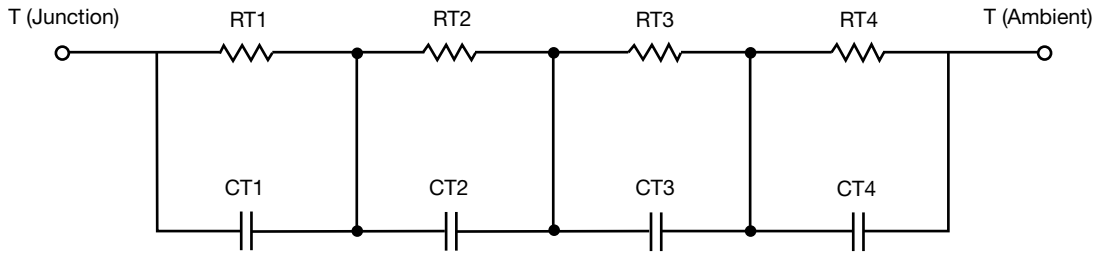
R-C Thermal Model Parameters

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



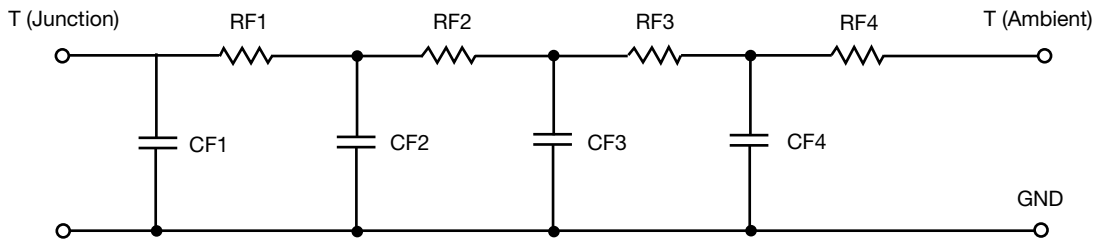
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	5.8682	1.1854	n/a
RT2	16.4116	3.2874	n/a
RT3	11.4715	1.0221	n/a
RT4	46.2487	1.0260	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	490.5194u	207.2482u	n/a
CT2	6.8276m	565.5615u	n/a
CT3	151.7546m	5.4532m	n/a
CT4	1.6675	4.9615m	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	6.7252	2.0174	n/a
RF2	15.7322	3.2226	n/a
RF3	11.6591	315.5717m	n/a
RF4	45.8835	959.7824m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	479.1047u	149.5893u	n/a
CF2	5.5974m	302.3271u	n/a
CF3	95.7505m	1.7876m	n/a
CF4	1.3544	1.1791m	n/a

Note

- n/a indicates not applicable