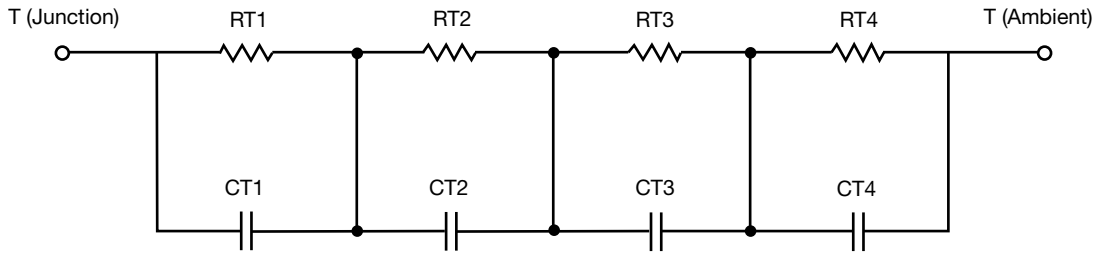
R-C Thermal Model Parameters

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



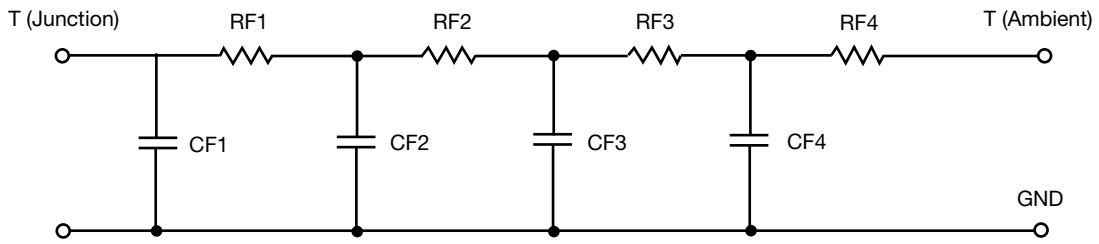
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	44.9703	1.0560	n/a
RT2	10.6391	2.5762	n/a
RT3	13.3062	624.8384m	n/a
RT4	3.2076	442.9616m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	7.2939	6.5011m	n/a
CT2	61.7614m	523.5445u	n/a
CT3	575.9812m	14.7966m	n/a
CT4	2.1881m	114.3034u	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	3.3032	1.1106	n/a
RF2	11.7354	1.7206	n/a
RF3	14.0056	1.7786	n/a
RF4	43.0950	90.2000m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	2.1295m	128.2995u	n/a
CF2	47.8846m	439.5268u	n/a
CF3	446.9357m	1.4009m	n/a
CF4	7.1005	768.3448m	n/a

Note

- n/a indicates not applicable