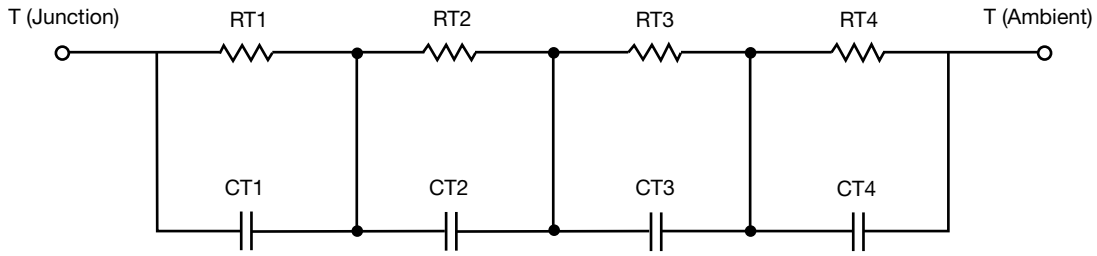
R-C Thermal Model Parameters

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



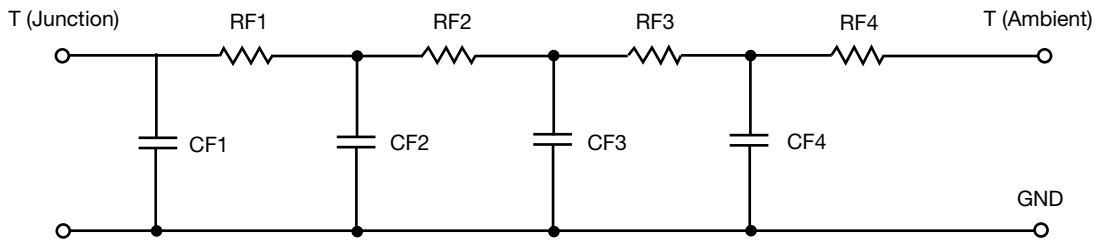
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	1.9547	661.8751m	n/a
RT2	14.4662	535.9743m	n/a
RT3	9.8989	222.3351m	n/a
RT4	38.6802	165.2433m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	10.3678m	31.0506m	n/a
CT2	1.1173	6.8204m	n/a
CT3	69.6317m	247.5164u	n/a
CT4	2.5621	1.3925m	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	2.1896	415.7359m	n/a
RF2	10.4050	850.0858m	n/a
RF3	22.7948	44.3769m	n/a
RF4	29.6106	286.3484m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	7.2923m	263.6163u	n/a
CF2	50.8448m	5.7829m	n/a
CF3	615.2411m	67.2383m	n/a
CF4	2.4193	40.2826m	n/a

Note

- n/a indicates not applicable