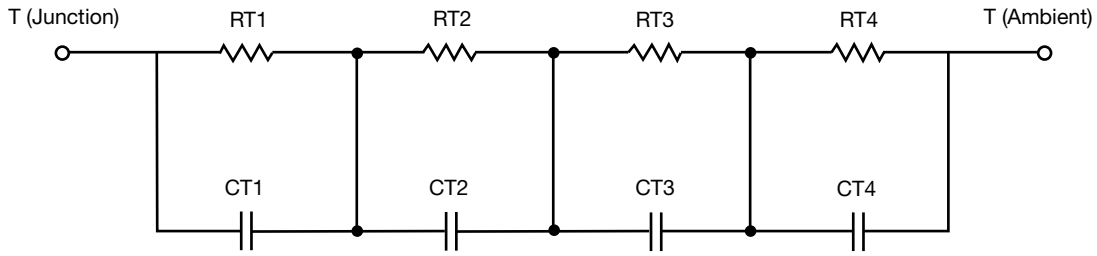
R-C Thermal Model Parameters

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



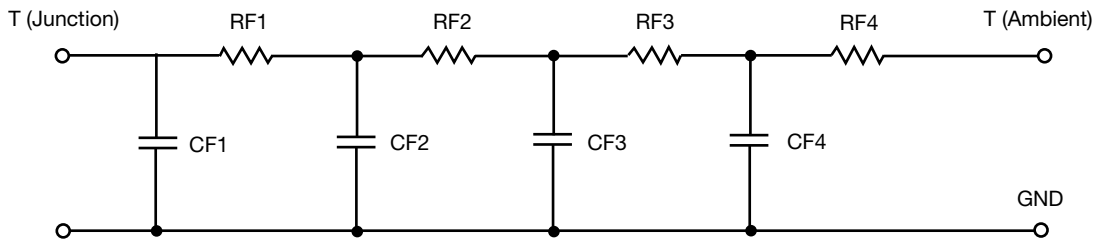
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	13.3607	561.4669m	n/a
RT2	13.9701	631.3764m	n/a
RT3	4.2526	284.1554m	n/a
RT4	38.4166	723.0013m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	898.3766m	16.4363m	n/a
CT2	26.4625m	5.3507m	n/a
CT3	2.0792m	295.7118u	n/a
CT4	2.3744	1.9717m	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	4.5173	493.1385m	n/a
RF2	14.5446	1.1919	n/a
RF3	22.3821	193.5761m	n/a
RF4	28.5560	321.3854m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.7528m	259.5036u	n/a
CF2	22.2819m	1.3388m	n/a
CF3	604.1645m	8.7094m	n/a
CF4	2.4536	3.3858m	n/a

Note

- n/a indicates not applicable