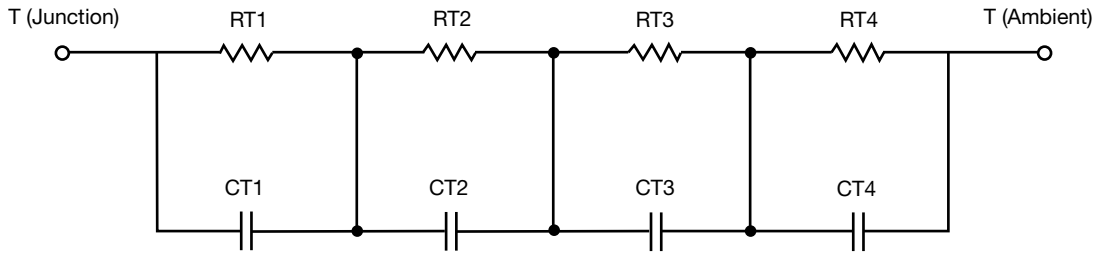
R-C Thermal Model Parameters

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



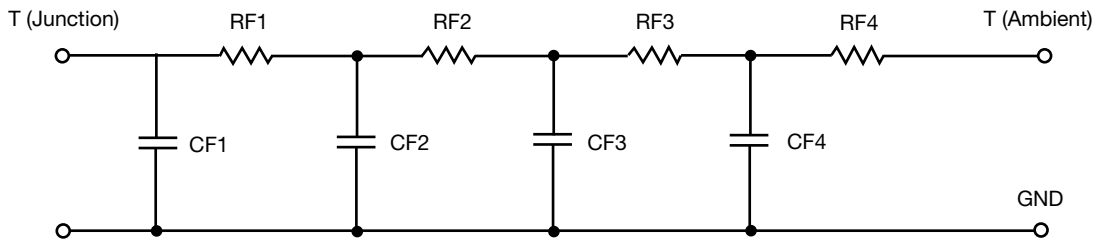
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	1.7702	n/a	9.7972
RT2	21.2674	n/a	16.4418
RT3	32.8694	n/a	9.1896
RT4	56.0930	n/a	2.5667
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	184.5499m	n/a	15.8132m
CT2	2.2199m	n/a	3.6701m
CT3	29.1193m	n/a	166.8802m
CT4	1.2382	n/a	437.0881u

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	25.5296	n/a	4.0904
RF2	27.9239	n/a	24.2066
RF3	23.9549	n/a	1.6022
RF4	34.5916	n/a	8.1008
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	2.1402m	n/a	389.3073u
CF2	23.9047m	n/a	3.0130m
CF3	668.2397m	n/a	42.2801m
CF4	1.2532	n/a	131.0694m

Note

- n/a indicates not applicable