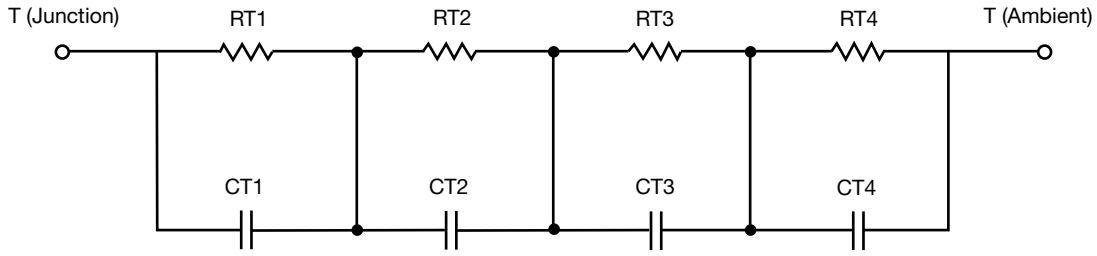
R-C Thermal Model Parameters

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



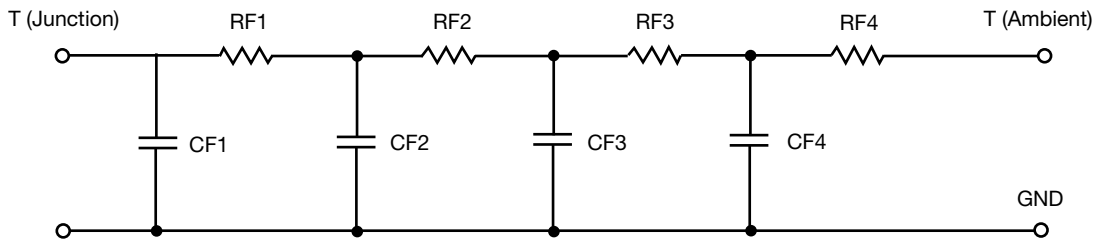
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	64.2037	N/A	31.2091
RT2	66.3670	N/A	42.1352
RT3	20.2490	N/A	8.5022
RT4	22.7290	N/A	2.3628
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.3708	N/A	12.4089m
CT2	4.5043m	N/A	1.3844m
CT3	900.9103u	N/A	265.4291u
CT4	144.0703m	N/A	51.7727m

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	21.7189	N/A	12.5104
RF2	64.3524	N/A	49.2897
RF3	26.0480	N/A	10.8726
RF4	61.5302	N/A	11.6852
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	595.2422u	N/A	235.8873u
CF2	3.0923m	N/A	1.0226m
CF3	87.9301m	N/A	15.8088m
CF4	1.3148	N/A	128.9958u

Note

- n/a indicates not applicable