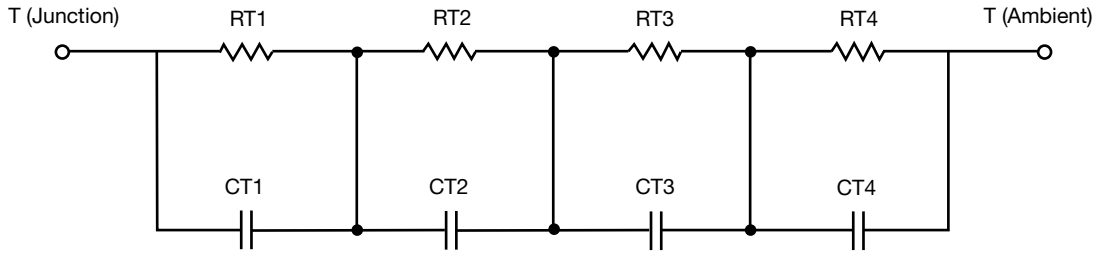
R-C Thermal Model Parameters

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



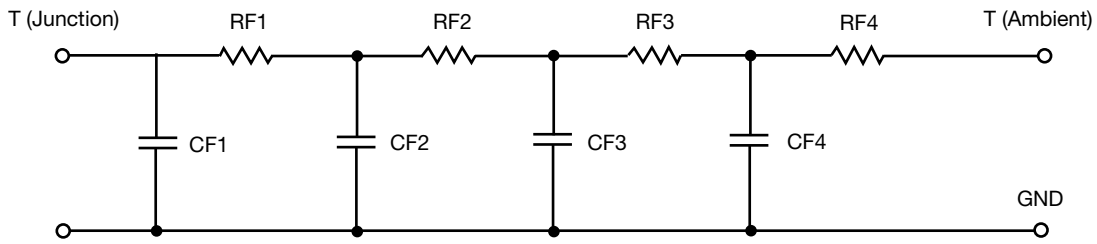
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	63.6821	N/A	2.2027
RT2	37.6297	N/A	19.9947
RT3	52.0147	N/A	7.5222
RT4	12.6735	N/A	20.2804
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.4032	N/A	175.6792u
CT2	37.2353m	N/A	47.7707m
CT3	3.4572m	N/A	3.6107m
CT4	727.7891u	N/A	11.3919m

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	28.7960	N/A	3.6261
RF2	60.1202	N/A	20.0953
RF3	22.4304	N/A	8.3705
RF4	54.6534	N/A	17.9081
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	814.3452u	N/A	281.7006u
CF2	4.5750m	N/A	3.4348m
CF3	215.8505m	N/A	17.7774m
CF4	1.4874	N/A	1.6074m

Note

- n/a indicates not applicable