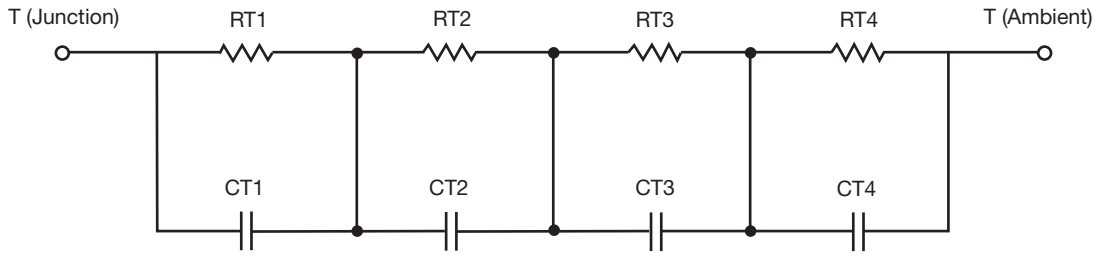
R-C Thermal Model Parameters

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



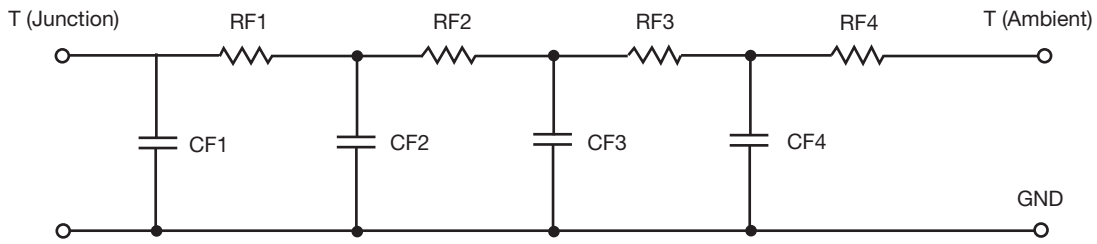
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	6.9283	n/a	10.4782
RT2	12.6147	n/a	10.1939
RT3	39.0660	n/a	7.1151
RT4	51.3004	n/a	2.3544
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	73.2380m	n/a	9.1665m
CT2	1.9900m	n/a	5.4411m
CT3	12.1674m	n/a	64.2066m
CT4	1.1733	n/a	431.4754u

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	17.3395	n/a	3.7864
RF2	40.9431	n/a	20.1116
RF3	19.6103	n/a	1.2367
RF4	32.1085	n/a	4.8568
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	1.7519m	n/a	561.6411u
CF2	9.1062m	n/a	2.9895m
CF3	864.0119m	n/a	17.8896m
CF4	763.6066m	n/a	42.0762m

Note

- n/a indicates not applicable