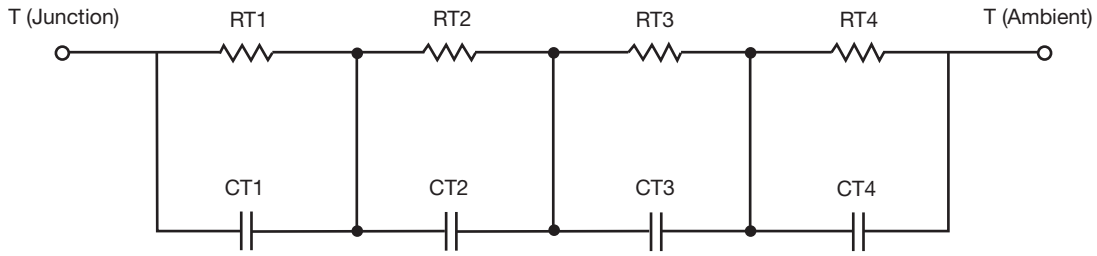
R-C Thermal Model Parameters

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



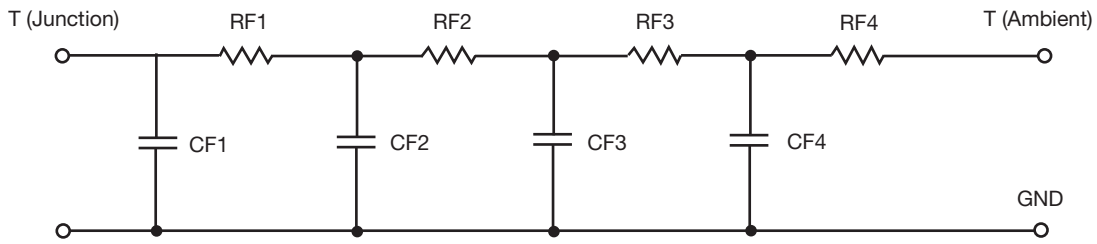
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	12.3982	5.0636	n/a
RT2	17.4393	54.8303m	n/a
RT3	5.4067	986.2177m	n/a
RT4	44.7558	395.3520m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	191.7834m	454.5468u	n/a
CT2	6.4519m	107.4511m	n/a
CT3	423.3705u	161.3369u	n/a
CT4	1.8244	49.2307m	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	5.2447	2.1214	n/a
RF2	18.0348	3.8137	n/a
RF3	13.0229	416.9999m	n/a
RF4	43.6976	147.9001m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	319.5563u	137.8181u	n/a
CF2	5.0300m	405.1145u	n/a
CF3	137.9555m	12.3579m	n/a
CF4	1.6422	328.6476u	n/a

Note

- n/a indicates not applicable