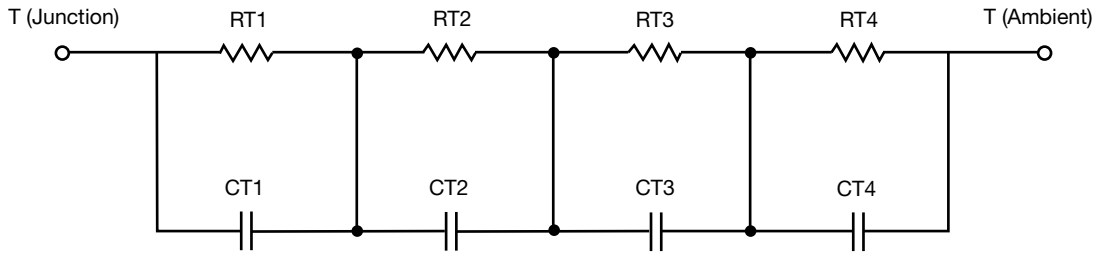
R-C Thermal Model Parameters

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



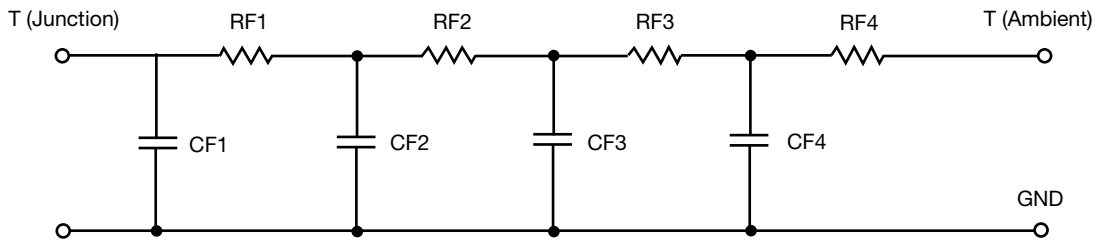
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	6.1496	70.1999m	n/a
RT2	20.0501	1.8412	n/a
RT3	24.7233	4.4538	n/a
RT4	39.0770	4.6348	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	136.9841u	6.3828	n/a
CT2	4.3567m	5.4714m	n/a
CT3	54.3275m	153.3873u	n/a
CT4	1.9532	899.6851u	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	7.6399	6.0690	n/a
RF2	23.9568	2.1259	n/a
RF3	22.5067	2.5711	n/a
RF4	35.8966	234.0000m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	171.5562u	125.8945u	n/a
CF2	4.6864m	809.5970u	n/a
CF3	74.2884m	449.0211u	n/a
CF4	2.1891	144.2688m	n/a

Note

- n/a indicates not applicable