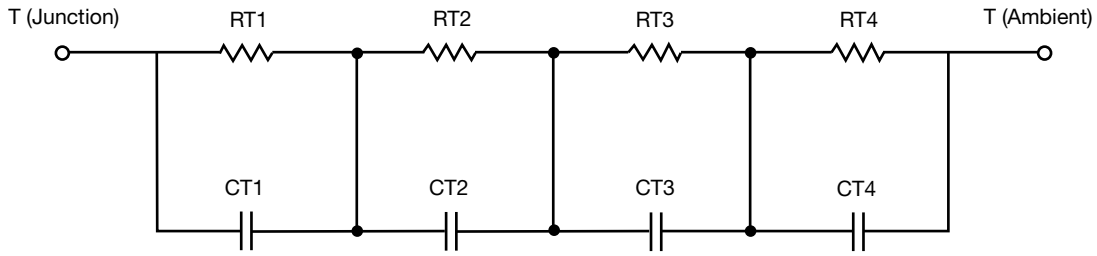
R-C Thermal Model Parameters

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



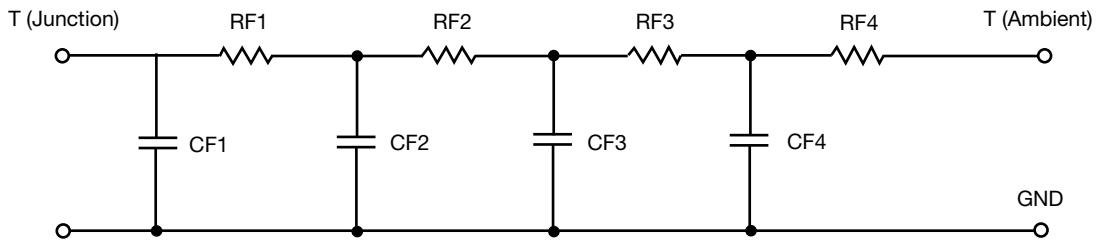
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	37.1460	594.6666m	n/a
RT2	13.1152	1.0461	n/a
RT3	14.1066	1.3598	n/a
RT4	6.1001	1.5249	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	2.0711	1.6173m	n/a
CT2	101.3948m	43.1681m	n/a
CT3	2.3229	107.3227m	n/a
CT4	7.3834m	32.6007m	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	5.9724	890.7806m	n/a
RF2	13.4037	908.9473m	n/a
RF3	21.9995	2.2561	n/a
RF4	28.7009	454.7927m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	6.5790m	1.8117m	n/a
CF2	63.8190m	15.8345m	n/a
CF3	704.1907m	825.3213u	n/a
CF4	1.2253	197.9658m	n/a

Note

- n/a indicates not applicable