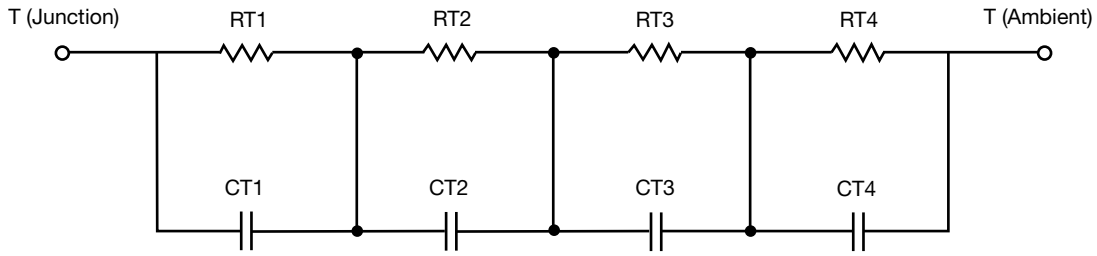
R-C Thermal Model Parameters

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



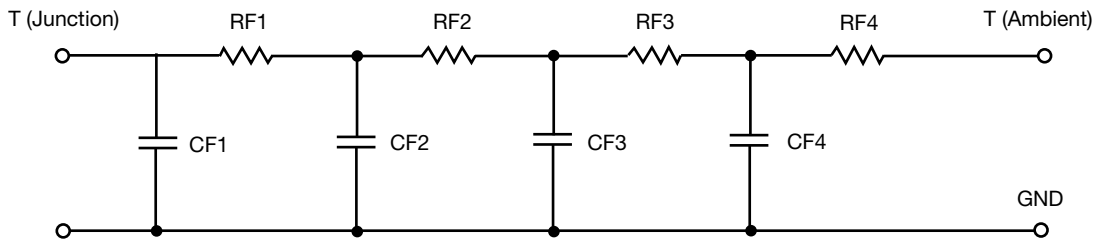
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	41.0337	1.3633	n/a
RT2	13.9708	863.8000m	n/a
RT3	9.8641	1.3102	n/a
RT4	5.1314	62.7000m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.6872	23.7874m	n/a
CT2	71.8895m	1.8188m	n/a
CT3	2.9577	87.4016m	n/a
CT4	1.7815m	528.5193u	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	1.7396	562.4638m	n/a
RF2	5.3330	491.0110m	n/a
RF3	15.9102	1.5679	n/a
RF4	47.0172	978.6252m	n/a
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	725.3233u	1.3619m	n/a
CF2	4.3433m	104.9047u	n/a
CF3	82.8729m	16.6061m	n/a
CF4	1.2651	53.3452m	n/a

Note

- n/a indicates not applicable