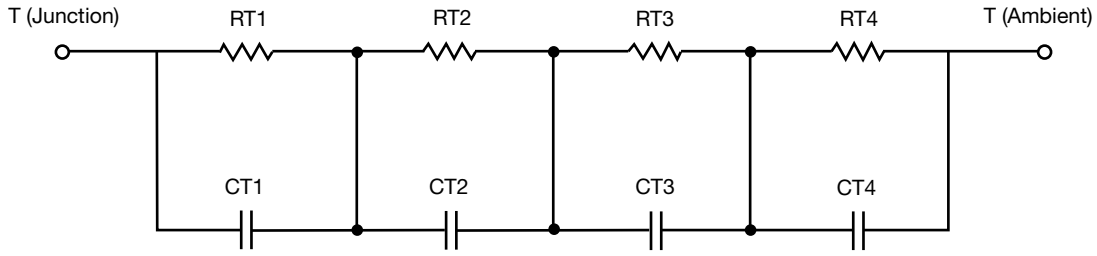
R-C Thermal Model Parameters

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 P-SPICE, 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 P-SPICE 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 P-SPICE Platform”.

R-C THERMAL MODEL FOR TANK CONFIGURATION



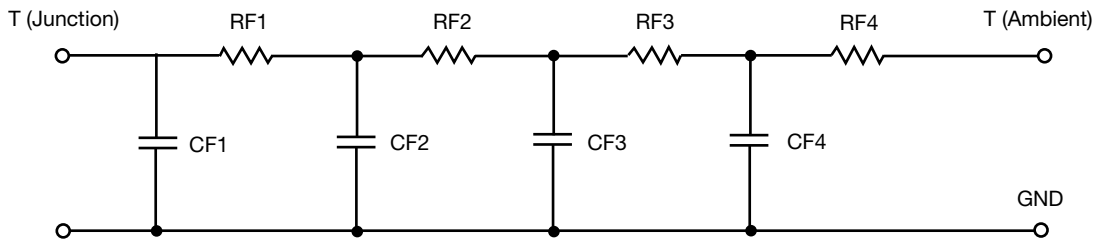
R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	11.9104	328.7294m	N/A
RT2	3.1921	31.7490m	N/A
RT3	931.0189m	508.6360m	N/A
RT4	23.9695	131.4747m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	8.2562	2.2721m	N/A
CT2	1.0641	9.5272m	N/A
CT3	147.3202m	21.8478m	N/A
CT4	4.0108	838.6015m	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	884.7234m	436.1692m	N/A
RF2	6.5762	496.8216m	N/A
RF3	23.1425	67.4821m	N/A
RF4	9.4830	1.2096m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	24.3391m	1.7367m	N/A
CF2	882.6174m	26.0266m	N/A
CF3	1.7594	3.1613	N/A
CF4	2.6137	61.6300	N/A

Note

- n/a indicates not applicable