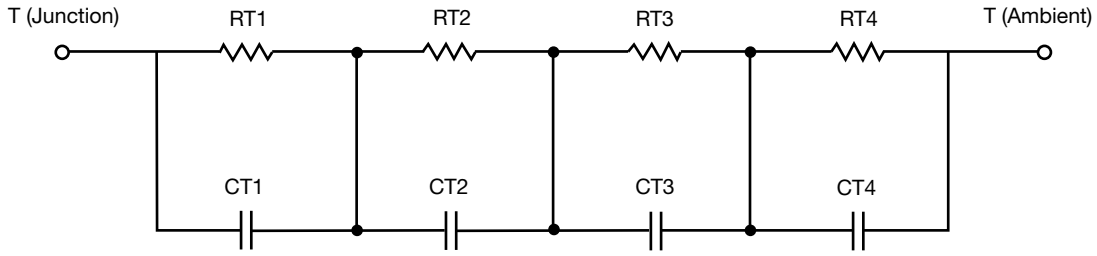
R-C Thermal Model Parameters

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

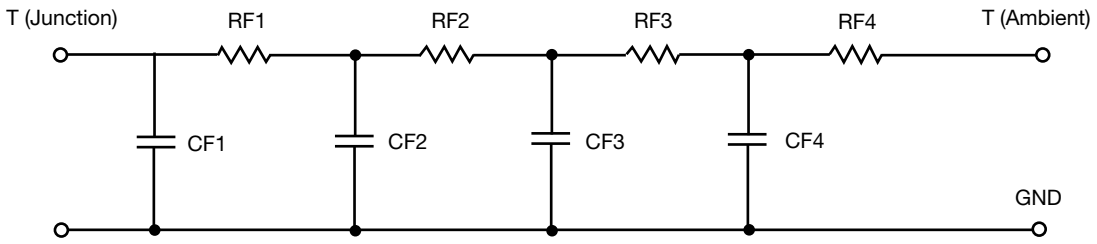


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	11.9104	93.8654m	N/A
RT2	3.1921	378.5166m	N/A
RT3	931.0189m	239.2657m	N/A
RT4	23.9695	238.1694m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	8.2562	3.6479m	N/A
CT2	1.0641	13.7655m	N/A
CT3	147.3202m	7.7714m	N/A
CT4	4.0108	92.1153m	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	460.3714m	N/A
RF2	6.5762	422.0865m	N/A
RF3	23.1425	52.6637m	N/A
RF4	9.4830	26.2853m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	24.3391m	2.5280m	N/A
CF2	882.6174m	14.1294m	N/A
CF3	1.7594	713.2634m	N/A
CF4	2.6137	3.7495	N/A

Note
N/A indicates not applicable