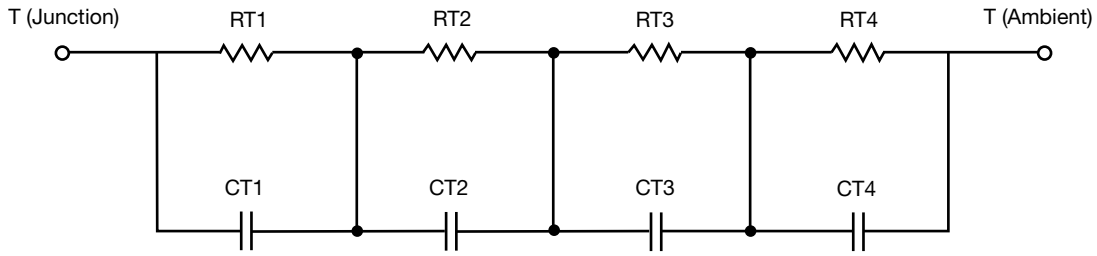
R-C Thermal Model Parameters

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	47.2319	n/a	11.8112
RT2	71.4074	n/a	3.3928
RT3	39.3859	n/a	23.4627
RT4	7.9601	n/a	34.3333
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	2.8177	n/a	2.5381m
CT2	4.6742m	n/a	122.1134u
CT3	1.1275m	n/a	9.4311m
CT4	60.9621u	n/a	23.2457m

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.

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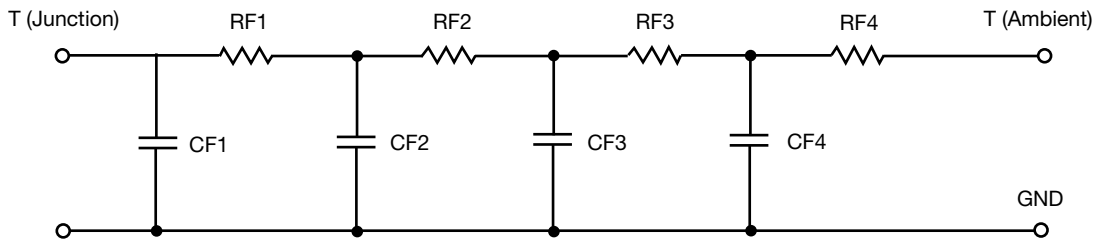
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	10.4558	n/a	3.7221
RF2	60.6849	n/a	15.2781
RF3	48.1149	n/a	33.2932
RF4	46.7444	n/a	20.7066
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	74.5093u	n/a	124.2893u
CF2	955.5587u	n/a	1.4799m
CF3	5.6669m	n/a	4.2948m
CF4	2.8283	n/a	29.1744m

Note

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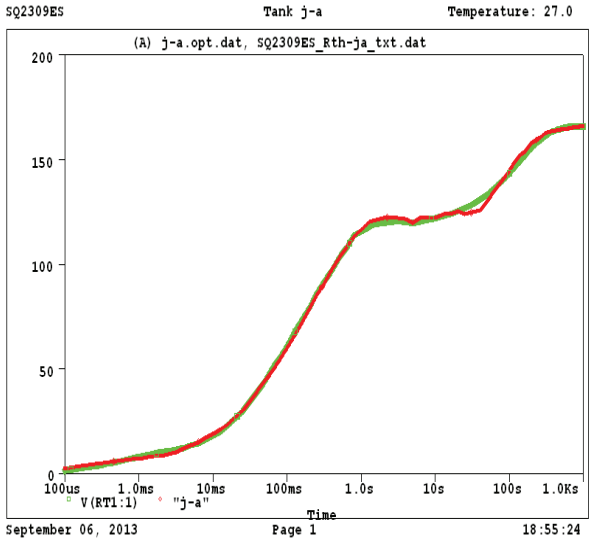

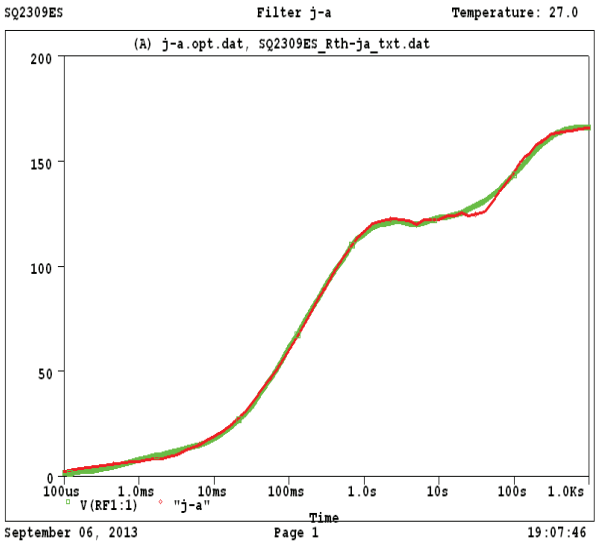

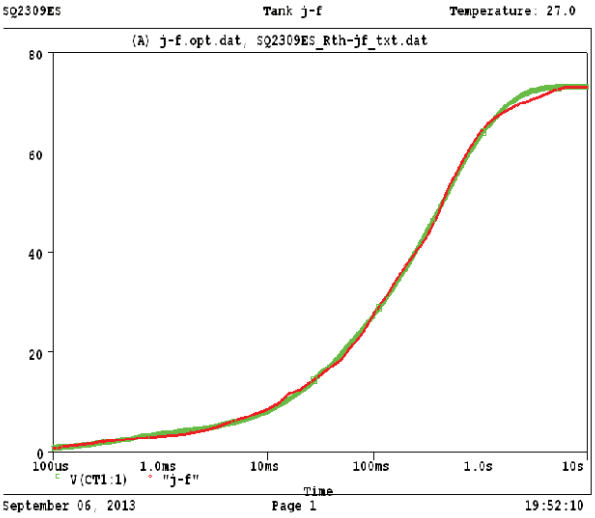

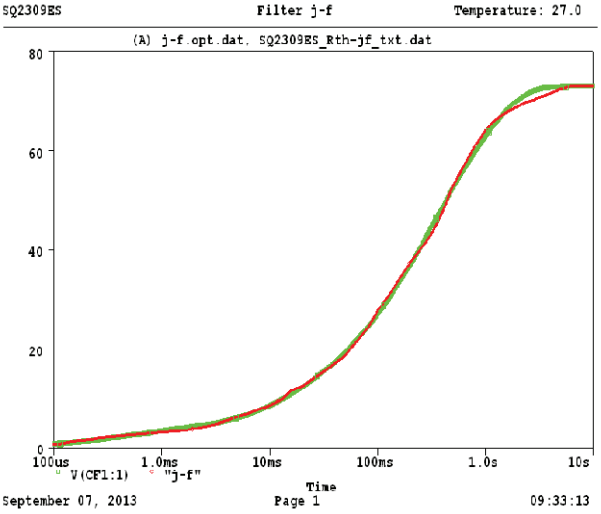

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