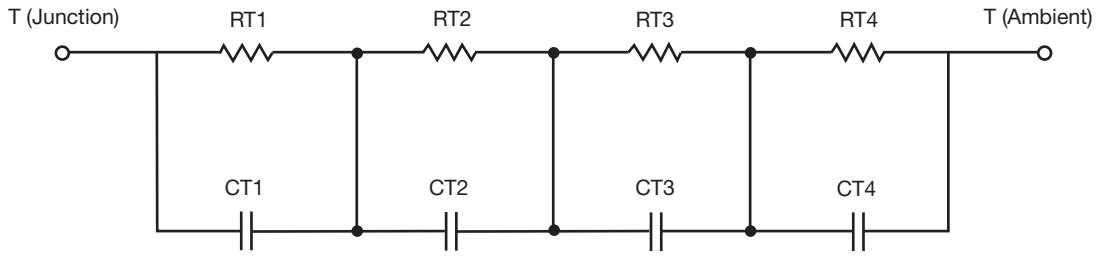
R-C Thermal Model Parameters

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	22.1283	n/a	11.3025
RT2	8.7036	n/a	8.1099
RT3	21.9660	n/a	2.8436
RT4	47.2021	n/a	2.7440
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	40.4158m	n/a	5.5818m
CT2	1.2464m	n/a	88.8967m
CT3	400.5996m	n/a	3.6116m
CT4	1.8615	n/a	303.5644u

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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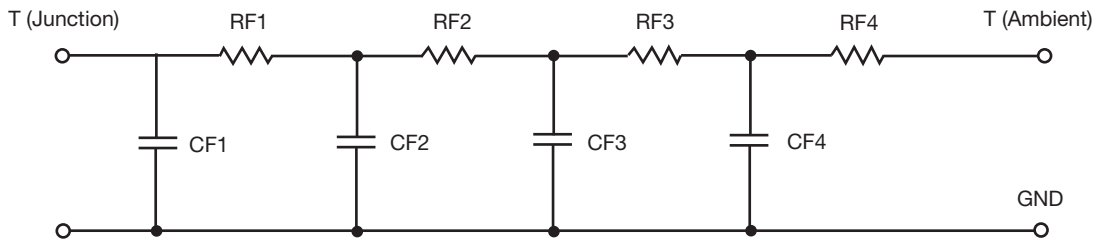
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	7.9016	n/a	5.0821
RF2	22.1184	n/a	9.9028
RF3	26.6173	n/a	4.7321
RF4	43.3627	n/a	5.2830
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	929.0194u	n/a	382.0542u
CF2	26.0250m	n/a	3.7324m
CF3	183.4393m	n/a	16.8789m
CF4	1.6717	n/a	129.6758m

Note

- n/a indicates not applicable

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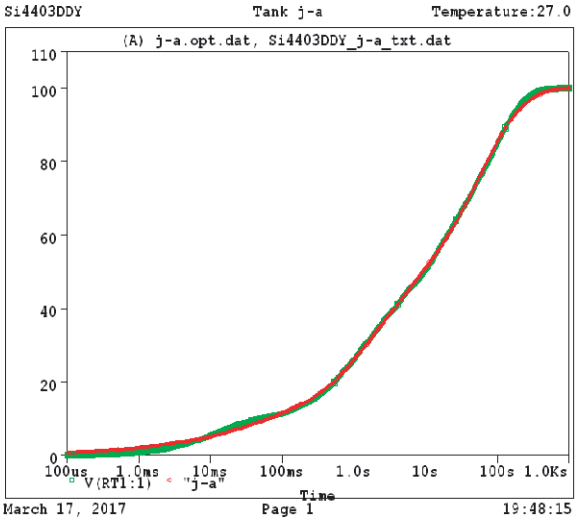

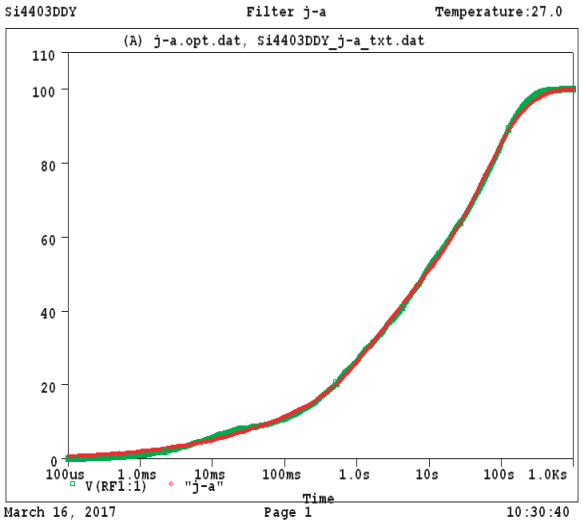

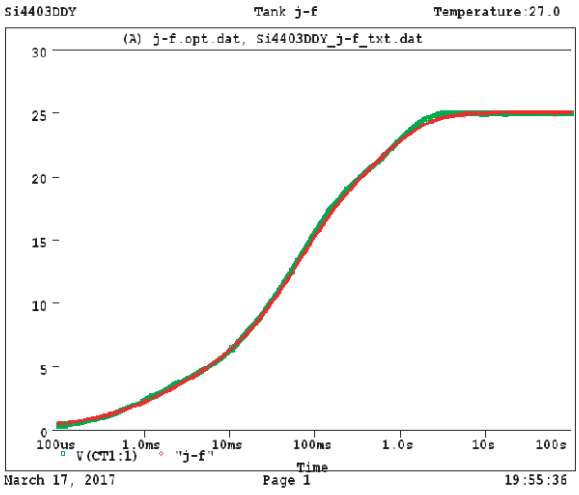

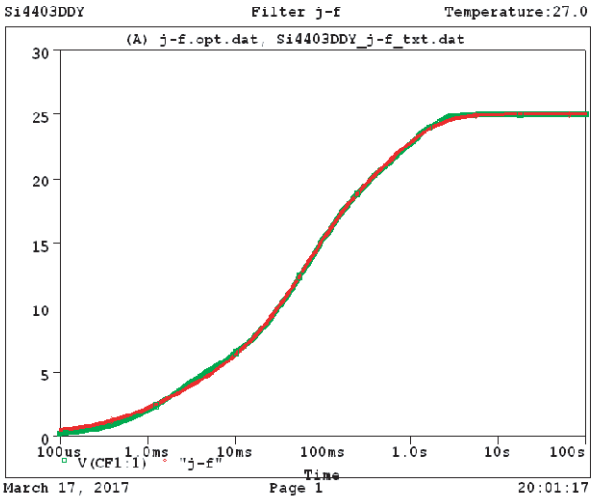

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