

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

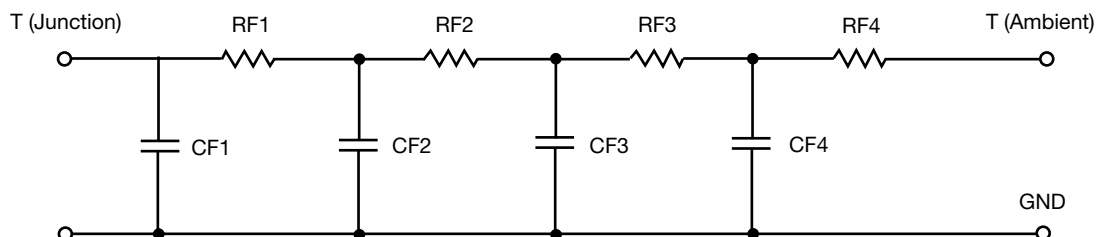


R-C VALUES FOR TANK CONFIGURATION					
THERMAL RESISTANCE (°C/W)					
Junction to	Ambient CH1	Ambient CH2	Case	Foot CH1	Foot CH2
RT1	7.5574	27.0649	N/A	3.4807	19.0930
RT2	10.0125	25.9226	N/A	13.5565	15.9337
RT3	33.3794	7.7216	N/A	12.7787	3.4662
RT4	55.9318	49.2909	N/A	5.0590	6.5071
THERMAL CAPACITANCE (Joules/°C)					
Junction to	Ambient CH1	Ambient CH2	Case	Foot CH2	Foot CH2
CT1	43.9737 m	7.6418 m	N/A	1.7076 m	48.4792 m
CT2	428.2893 u	104.4938 m	N/A	103.2453 m	6.7571 m
CT3	46.7080 m	362.7509 u	N/A	5.6932 m	137.0701 u
CT4	1.0996	1.8965	N/A	253.6803 u	1.9632 m

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

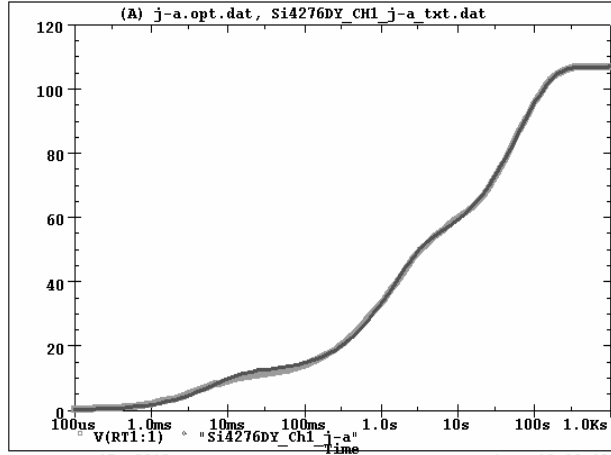
R-C VALUES FOR FILTER CONFIGURATION					
THERMAL RESISTANCE (°C/W)					
Junction to	Ambient CH1	Ambient CH2	Case	Foot CH1	Foot CH2
RF1	10.6953	9.5029	N/A	7.6631	5.0442
RF2	9.2360	30.0367	N/A	14.2207	13.6446
RF3	33.1686	25.2253	N/A	12.0959	17.4983
RF4	53.4317	45.2351	N/A	1.8840	8.8129
THERMAL CAPACITANCE (Joules/°C)					
Junction to	Ambient CH1	Ambient CH2	Case	Foot CH1	Foot CH2
CF1	544.8653 u	415.3406 u	N/A	227.1360 u	157.0495 u
CF2	14.6301 m	7.4217 m	N/A	3.6827 m	1.9464 m
CF3	26.4041 m	113.7839 m	N/A	88.3764 m	10.5662 m
CF4	1.0831	1.9996	N/A	3.7215	137.5881 m

Note

- N/A indicates not applicable



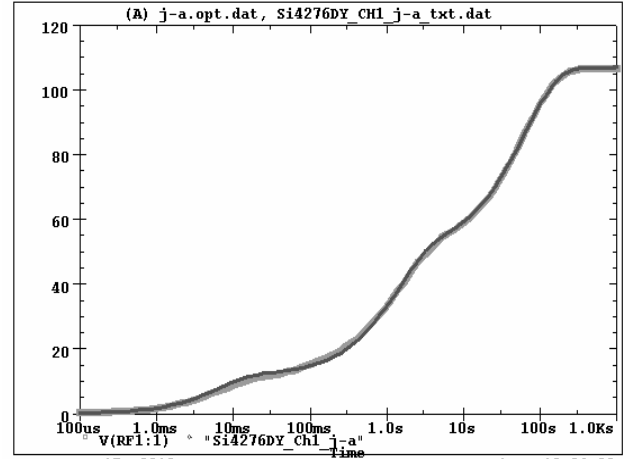
Si4276DY Ch1 Tank j-a Temperature: 27.0



Date: May 17, 2010

Time: 18:23:42

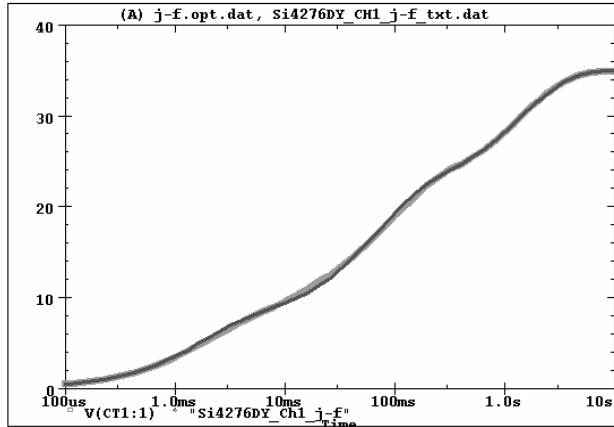
Si4276DY Ch1 Filter j-a Temperature: 27.0



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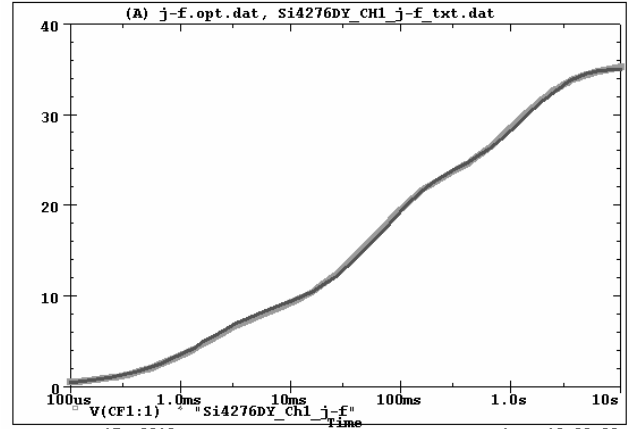
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Date: May 17, 2010

Time: 18:46:11

Si4276DY Ch1 Filter j-f Temperature: 27.0

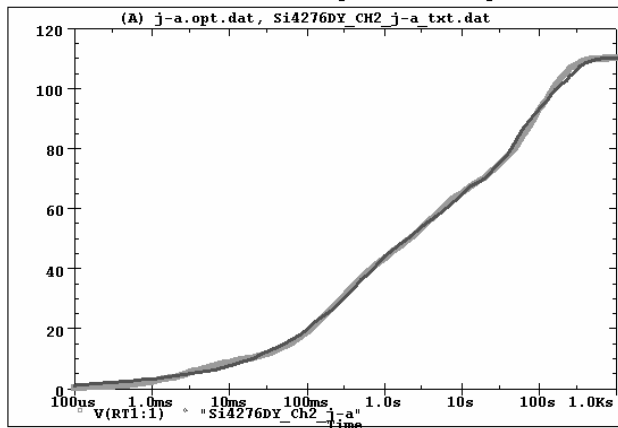


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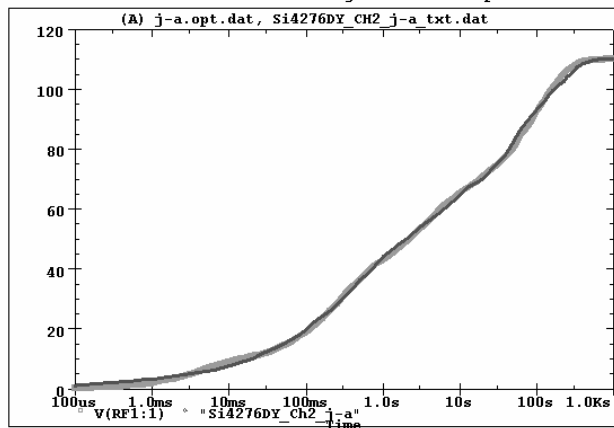
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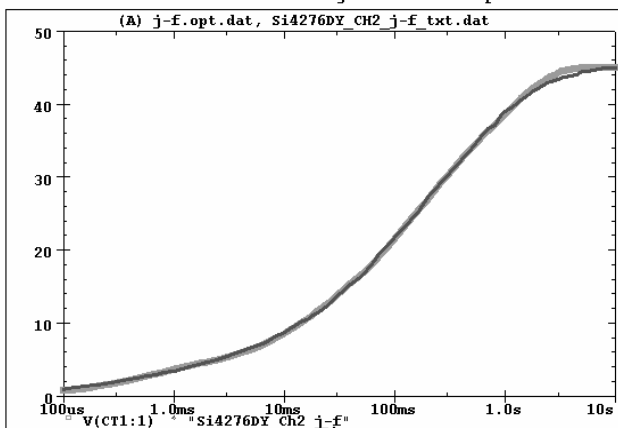
Si4276DY Ch2 Tank j-a Temperature: 27.0



Si4276DY Ch2 Filter j-a Temperature: 27.0



Si4276DY Ch2 Tank j-f Temperature: 27.0



Si4276DY Ch2 Filter j-f Temperature: 27.0

