



R-C Thermal Model Parameters

DESCRIPTION

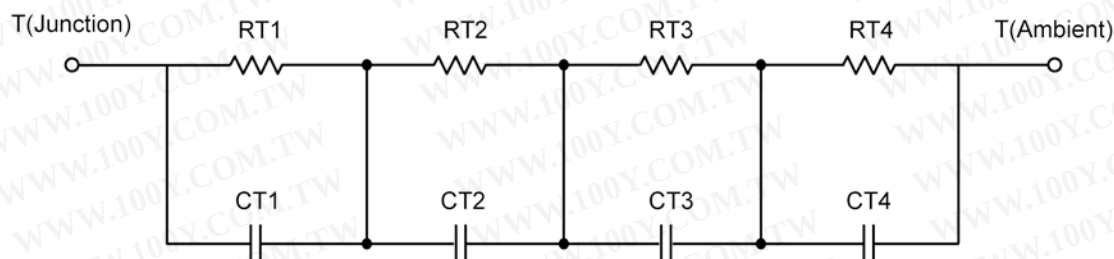
The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "A Simple Method of Generating Thermal Models for a Power MOSFET"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse Transient Thermal Impedance curves for the MOSFET.

R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included.

Note:

For a detailed explanation of implementing these values in P-SPICE, refer to Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform.

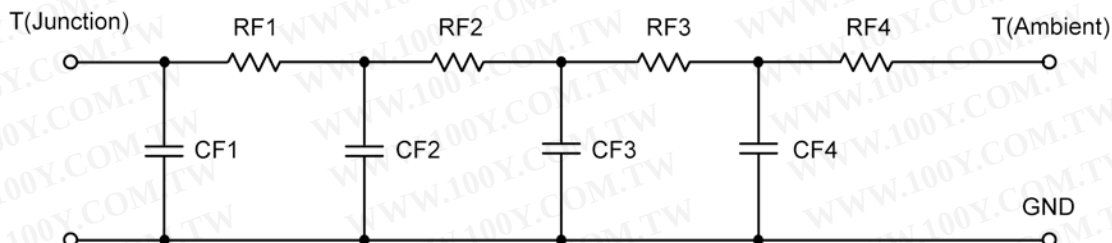
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION

Thermal Resistance (°C/W)			
Junction to	Ambient	Case Drain Top	Case Source
RT1	44.9153	13.1408 m	229.4359 m
RT2	8.1738	487.0575 m	2.4496
RT3	10.1018	322.8526 m	18.9606 m
RT4	4.8091	176.9491 m	2.0035 m
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case Drain Top	Case Source
CT1	1.7371	250.3660 u	1.5956 m
CT2	2.4265	31.6715 m	27.3818 m
CT3	107.0599 m	63.7476 m	1.2618
CT4	32.5154 m	3.3166 m	5.0487 m

This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

R-C THERMAL MODEL FOR FILTER CONFIGURATION**R-C VALUES FOR FILTER CONFIGURATION**

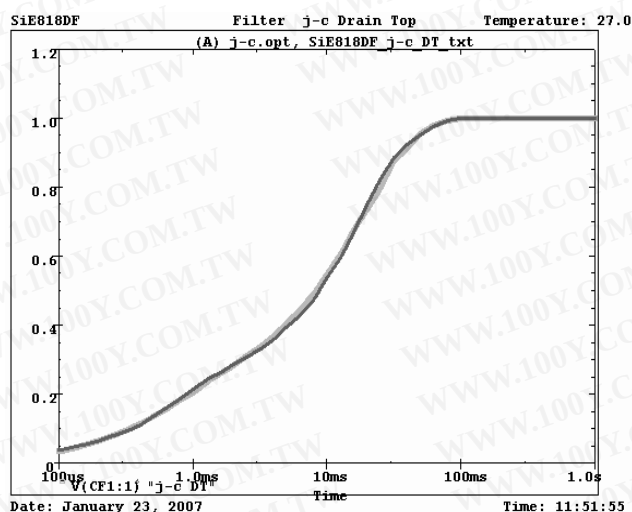
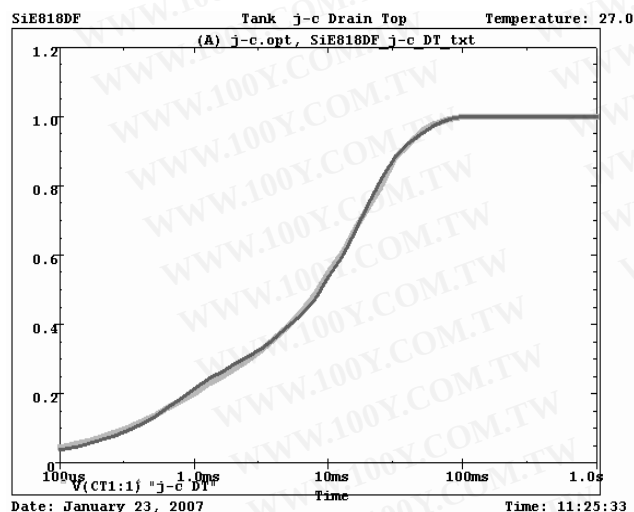
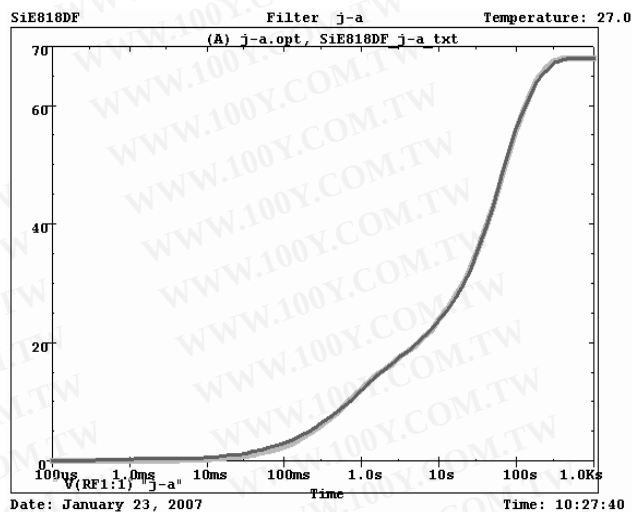
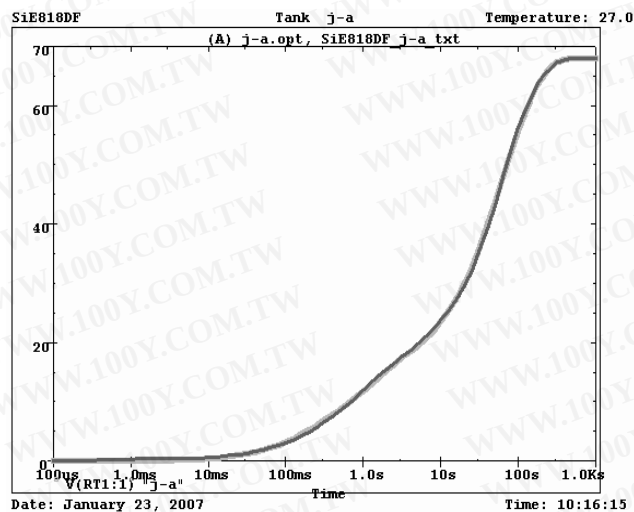
Thermal Resistance ($^{\circ}\text{C}/\text{W}$)			
Junction to	Ambient	Case Drain Top	Case Source
RF1	7.1102	270.5949 m	286.8241 m
RF2	8.2275	945.5000 u	1.2831
RF3	11.3316	8.1951 m	1.0331
RF4	41.3307	720.2645 m	96.9759 m
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case Drain Top	Case Source
CF1	32.8978 m	2.7316 m	1.7681 m
CF2	27.9921 m	5.1728 m	25.3698 m
CF3	605.6687 m	13.7470 m	1.9573 m
CF4	955.9072 m	2.9036 m	135.6344 m

Note: NA indicates not applicable

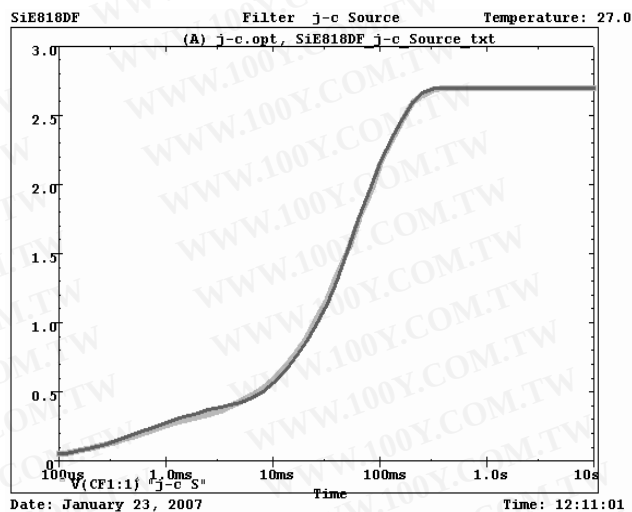
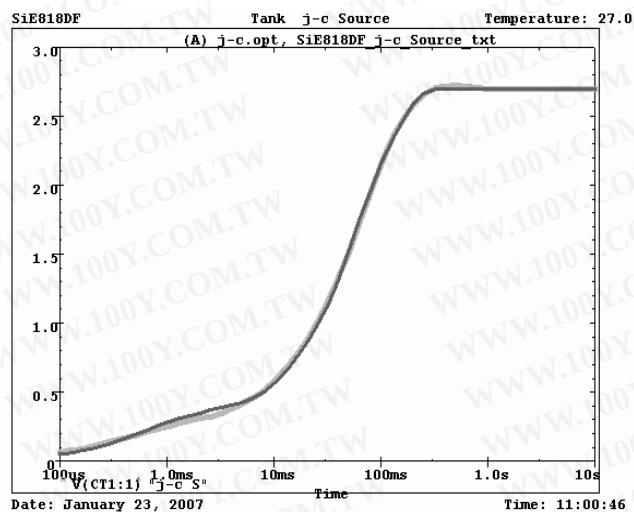
Reference:

[1] "A Simple Method of Generating Thermal Models for a Power MOSFET" by Wharton McDaniel and Kandarp Pandya, IEEE / SEMITHERM 2002

勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-34970699
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)



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