

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 Drain Top	Case Source
RT1	37.1751	390.6431 m	991.9351 m
RT2	17.7516	316.8882 m	1.0219
RT3	9.3082	136.0295 m	827.6268 m
RT4	3.7651	258.6697 m	458.5381 m
Thermal Capacitance (Joules/°C)			
Junction to	Ambient	Case Drain Top	Case Source
CT1	3.3487	10.7571 m	19.3694 m
CT2	1.2099	73.6756 m	160.1653 m
CT3	106.8798 m	556.3263 m	10.4141
CT4	18.6824 m	698.7013 u	1.1651 m

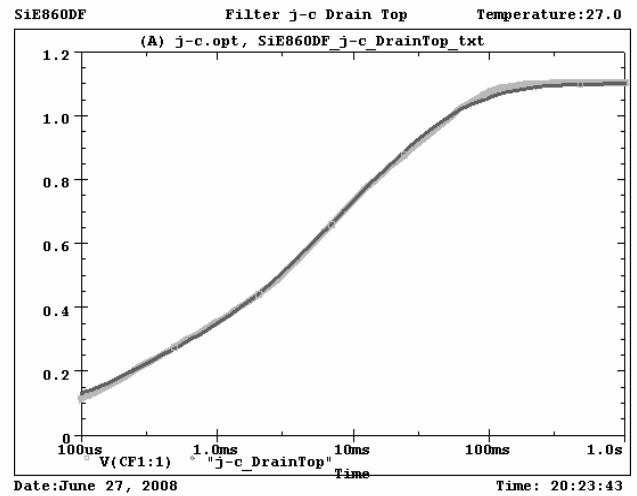
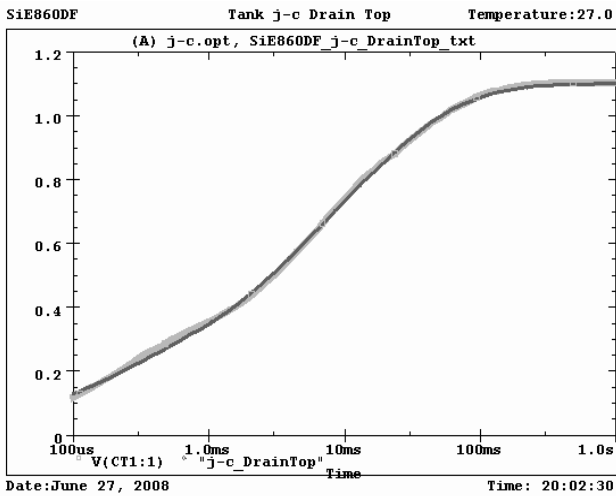
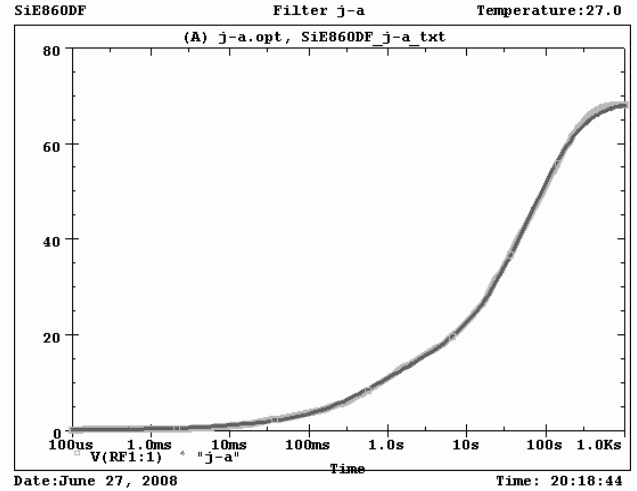
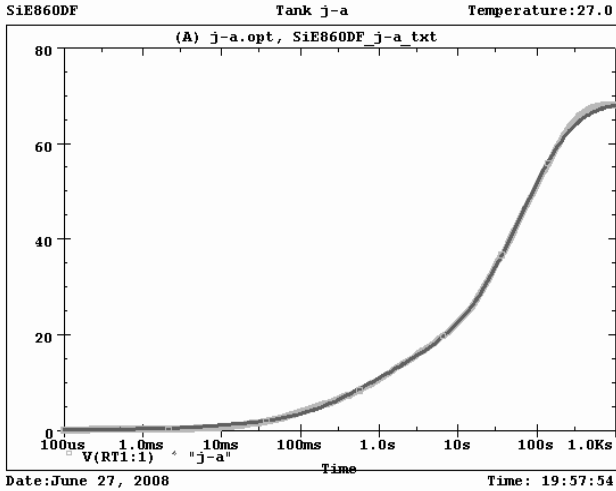
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

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	3.3382	243.7074 m	455.8700 m
RF2	11.1361	141.1494 m	949.5900 m
RF3	28.4141	405.1340 m	1.0279
RF4	25.1116	310.0092 m	866.6400 m
Thermal Capacitance (Joules/ $^{\circ}\text{C}$)			
Junction to	Ambient	Case Drain Top	Case Source
CF1	10.3586 m	664.0958 u	956.0032 u
CF2	63.3882 m	2.9142 m	12.2331 m
CF3	791.3262 m	8.6804 m	87.8375 m
CF4	3.9257	101.7040 m	8.4422

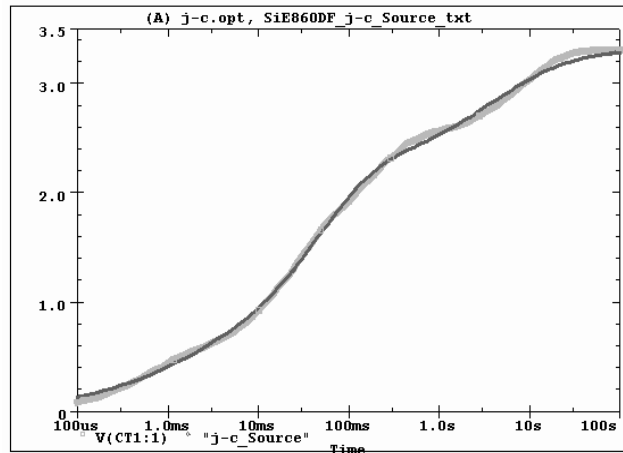
Note

NA indicates not applicable





SiE860DF Tank j-c Source Temperature:27.0



SiE860DF Filter j-c Source Temperature:27.0

