

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	4.0839	13.1408 m	229.4359 m
RT2	2.8985	487.0575 m	2.4496
RT3	10.5925	322.8526 m	18.9606 m
RT4	50.4251	176.9491 m	2.0035 m
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case-Drain Top	Case-Source
CT1	42.8964 m	250.3603 u	1.7816 m
CT2	113.1816 m	31.6765 m	27.4580 m
CT3	191.5102 m	63.7950 m	1.4509
CT4	1.3901	3.3354 m	1.5555 m

Note

N/A indicates not applicable

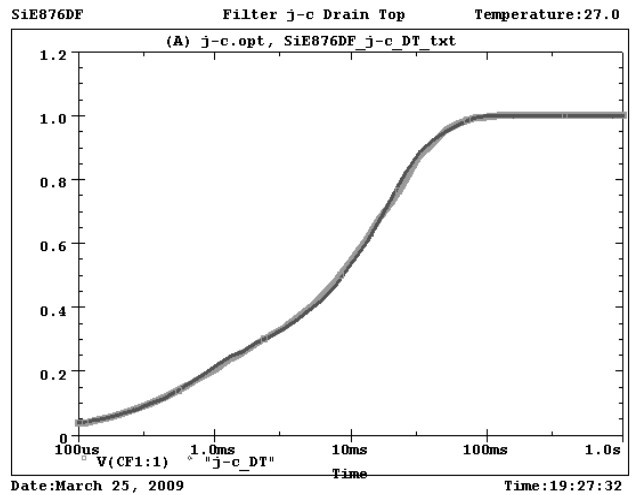
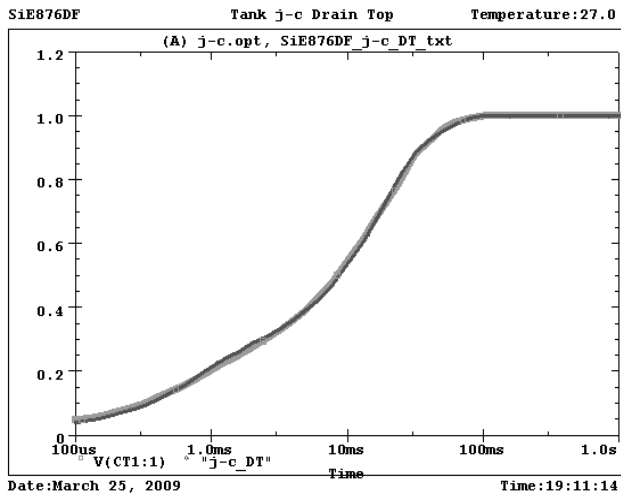
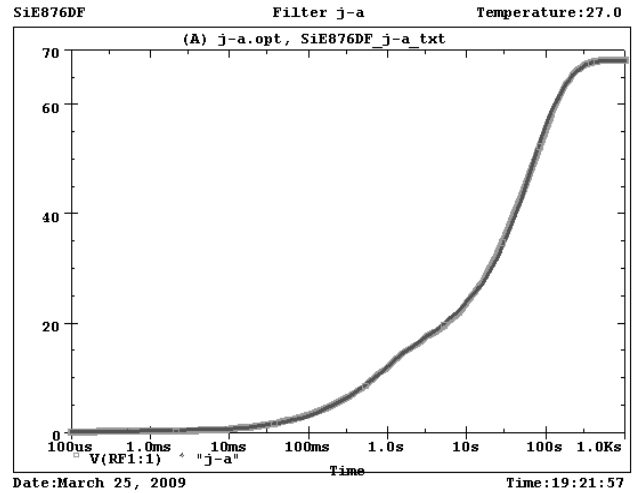
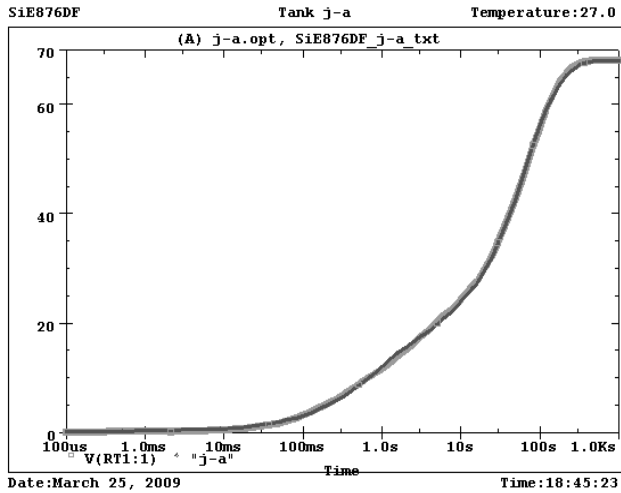
This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.

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

THERMAL RESISTANCE (°C/W)			
Junction to	Ambient	Case-Drain Top	Case-Source
RF1	3.7413	270.5949 m	286.8241 m
RF2	12.3473	945.5000 u	1.2831
RF3	28.3916	8.1951 m	1.0331
RF4	23.5198	720.2645 m	96.9759 m
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case-Drain Top	Case-Source
CF1	17.4636 m	2.7316 m	1.7681 m
CF2	46.2435 m	5.1728 m	25.3698 m
CF3	894.9969 m	13.7470 m	1.9573 m
CF4	1.8159	2.9036 m	135.6344 m

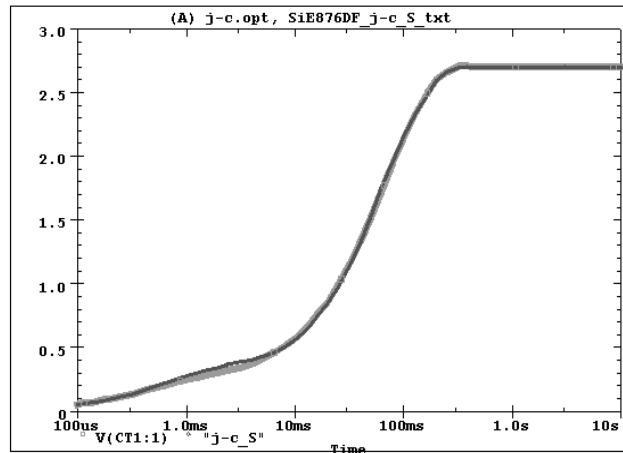
Note

N/A indicates not applicable





SiE876DF Tank j-c Source Temperature:27.0



SiE876DF Filter j-c Source Temperature:27.0

