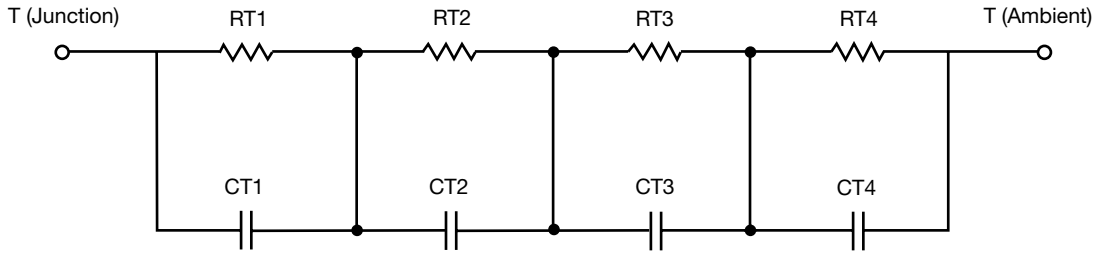
R-C Thermal Model Parameters

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

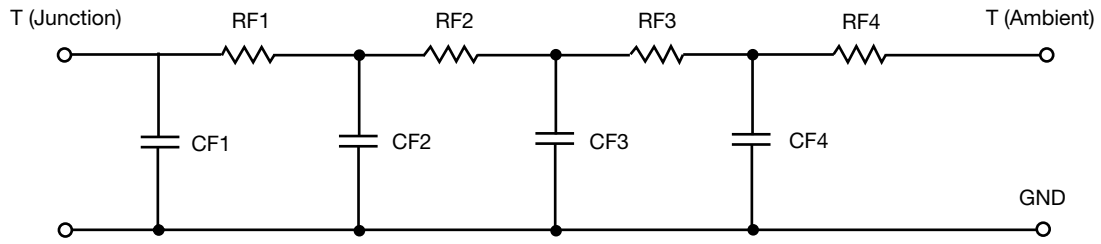


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	49.1065	714.0639 m	N/A
RT2	17.0470	762.7202 m	N/A
RT3	8.7341	711.3159 m	N/A
RT4	6.1124	1.6119	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	1.5218	558.9606 u	N/A
CT2	27.5314 m	6.1452 m	N/A
CT3	748.7952 m	28.6777 m	N/A
CT4	4.2555 m	9.1652 m	N/A

Note
N/A indicates not applicable

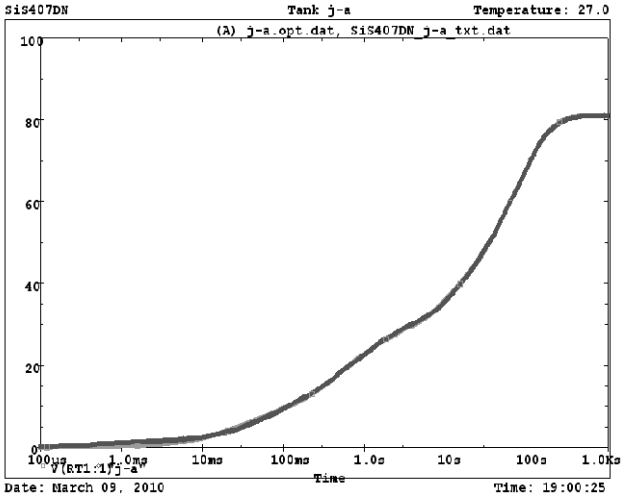
This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.

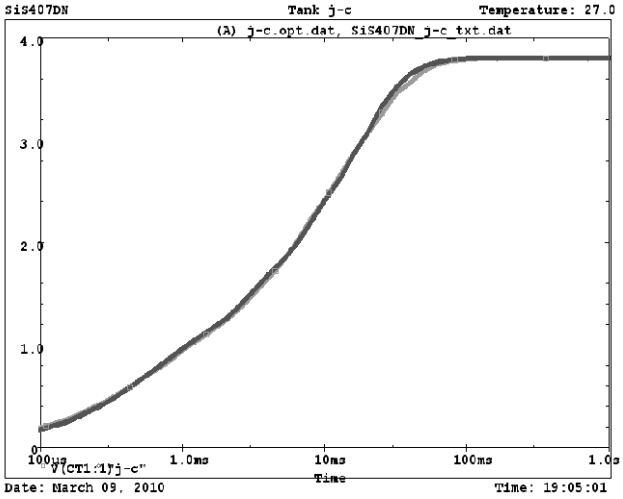
R-C THERMAL MODEL FOR FILTER CONFIGURATION

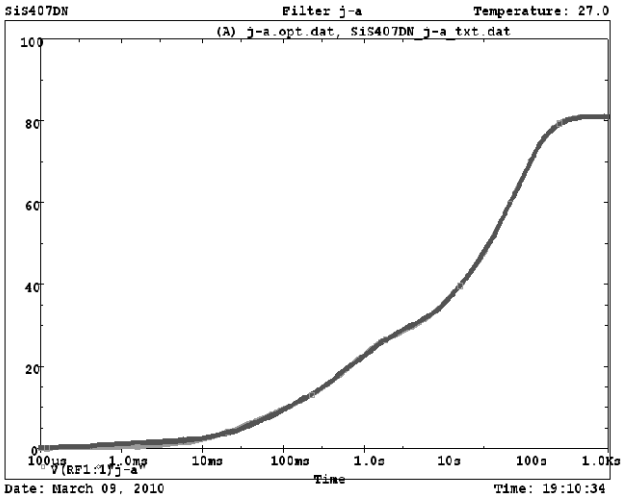


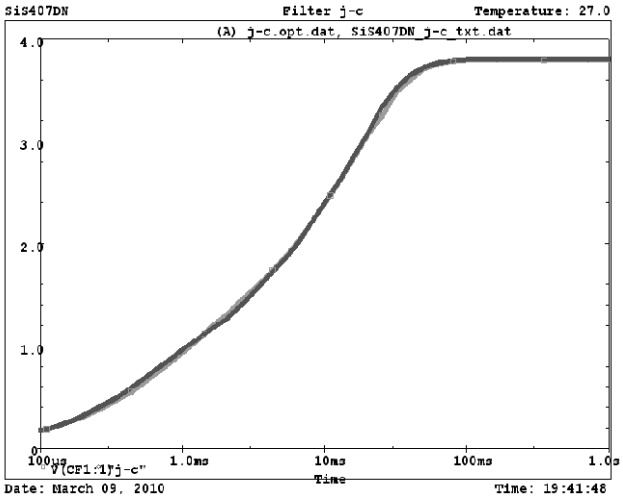
R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	8.8174	768.7097 m	N/A
RF2	17.4872	695.3237 m	N/A
RF3	21.8233	1.5672	N/A
RF4	32.8721	763.0844 m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	3.9175 m	520.4699 u	N/A
CF2	28.3429 m	747.0122 u	N/A
CF3	690.8084 m	4.7701 m	N/A
CF4	1.4062	2.6818 m	N/A

Note
N/A indicates not applicable


SiS407DN
Tank j-a
Temperature: 27.0
(A) j-a.opt.dat, SiS407DN_j-a_txt.dat
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)j-a"
Time
Date: March 09, 2010
Time: 19:00:25


SiS407DN
Tank j-c
Temperature: 27.0
(A) j-c.opt.dat, SiS407DN_j-c_txt.dat
4.0
3.0
2.0
1.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CT1:1)j-c"
Time
Date: March 09, 2010
Time: 19:05:01


SiS407DN
Filter j-a
Temperature: 27.0
(A) j-a.opt.dat, SiS407DN_j-a_txt.dat
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)j-a"
Time
Date: March 09, 2010
Time: 19:10:34


SiS407DN
Filter j-c
Temperature: 27.0
(A) j-c.opt.dat, SiS407DN_j-c_txt.dat
4.0
3.0
2.0
1.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CF1:1)j-c"
Time
Date: March 09, 2010
Time: 19:41:48