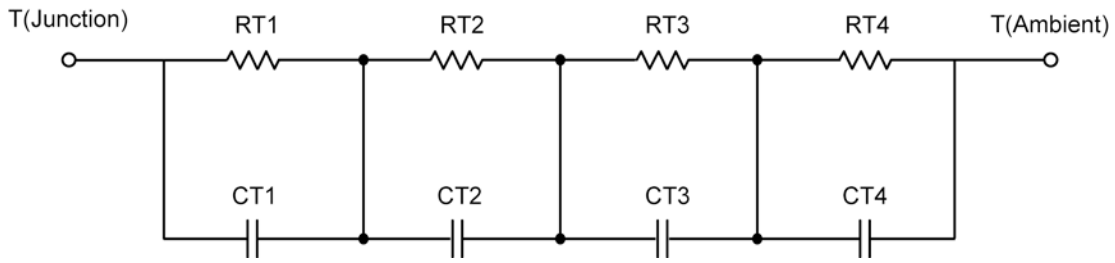
R-C Thermal Model Parameters

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."

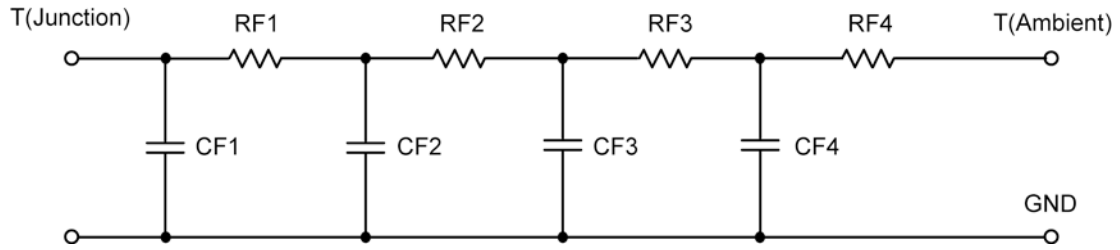
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	1.6621	2.6142 m	N/A
RT2	10.8283	79.5977 m	N/A
RT3	9.6105	1.2909	N/A
RT4	42.8991	426.8881 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	11.3885 m	260.0671 u	N/A
CT2	1.0702	65.2811 u	N/A
CT3	68.0021 m	11.7843 m	N/A
CT4	1.7459	10.1327 m	N/A

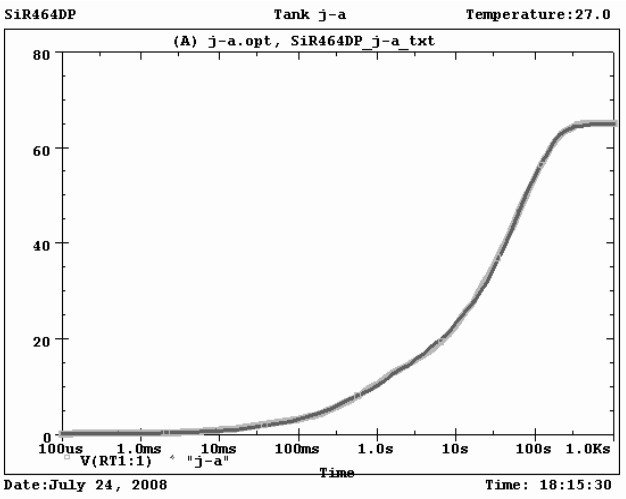
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

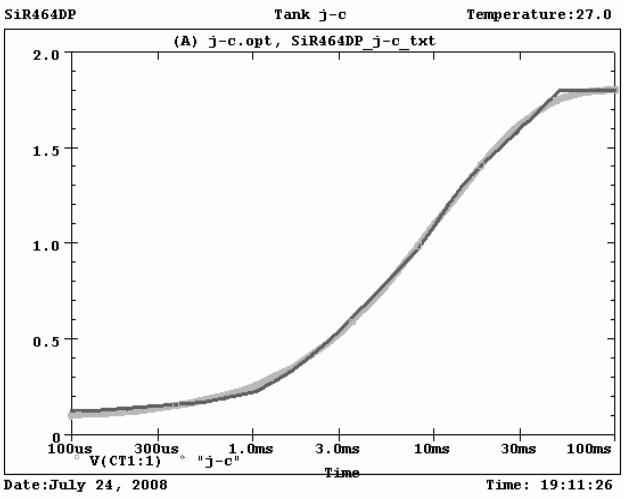
R-C THERMAL MODEL FOR FILTER CONFIGURATION

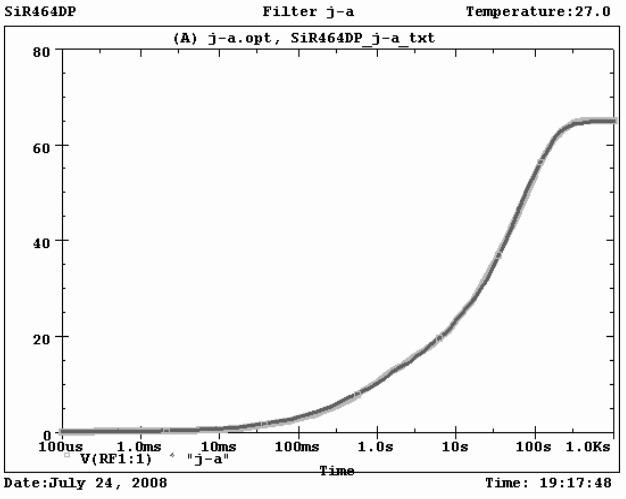


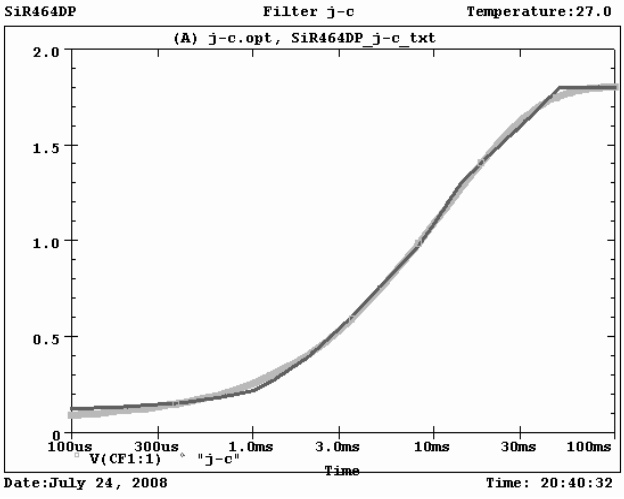
R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	2.9048	93.0663 m	N/A
RF2	11.2283	1.0569	N/A
RF3	20.3146	646.9451 m	N/A
RF4	30.5523	3.0886 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	18.0920 m	539.8341 u	N/A
CF2	52.8432 m	4.6571 m	N/A
CF3	633.8348 m	14.1488 m	N/A
CF4	1.5002	289.4735 m	N/A

Note
NA indicates not applicable


SiR464DP
Tank j-a
Temperature:27.0
(A) j-a.opt, SiR464DP_j-a_txt
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date:July 24, 2008
Time: 18:15:30


SiR464DP
Tank j-c
Temperature:27.0
(A) j-c.opt, SiR464DP_j-c_txt
2.0
1.5
1.0
0.5
0
100us
300us
1.0ms
3.0ms
10ms
30ms
100ms
V(CT1:1)
"j-c"
Time
Date:July 24, 2008
Time: 19:11:26


SiR464DP
Filter j-a
Temperature:27.0
(A) j-a.opt, SiR464DP_j-a_txt
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date:July 24, 2008
Time: 19:17:48


SiR464DP
Filter j-c
Temperature:27.0
(A) j-c.opt, SiR464DP_j-c_txt
2.0
1.5
1.0
0.5
0
100us
300us
1.0ms
3.0ms
10ms
30ms
100ms
V(CF1:1)
"j-c"
Time
Date:July 24, 2008
Time: 20:40:32