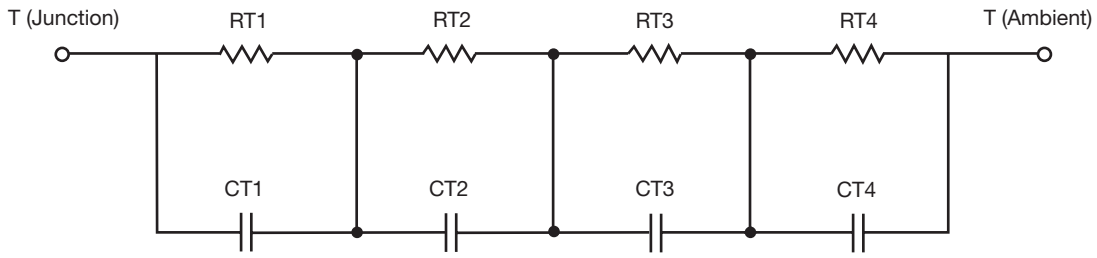
R-C Thermal Model Parameters

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

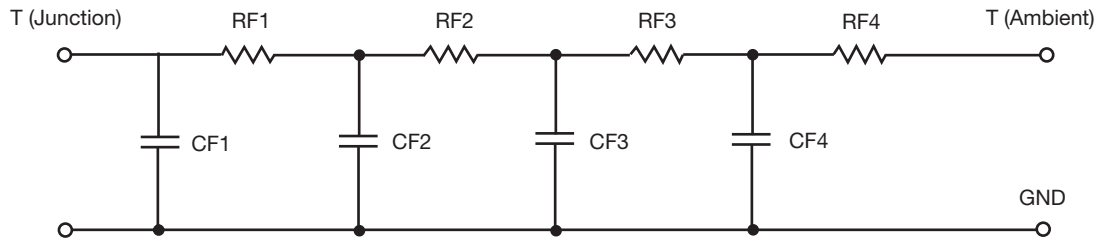


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	14.6969	735.2652 m	N/A
RT2	18.0407	819.5592 m	N/A
RT3	7.2956	800.2994 m	N/A
RT4	41.0302	1.6440	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	51.8800 m	665.0922 u	N/A
CT2	1.0096	13.1069 m	N/A
CT3	7.2823 m	3.8662 m	N/A
CT4	1.8828	5.9933 m	N/A

Note
N/A indicates not applicable

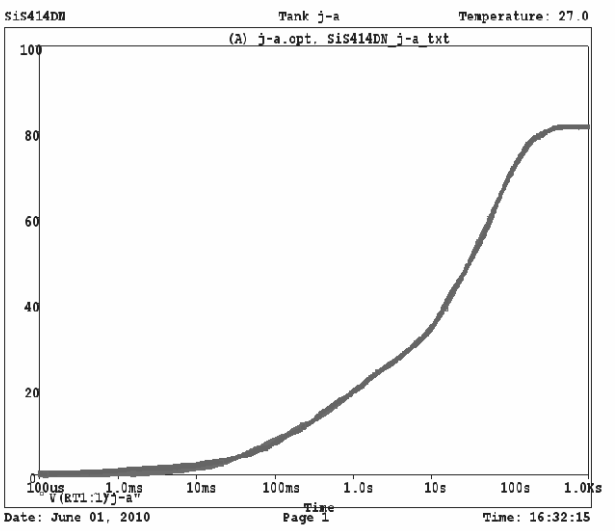
This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.

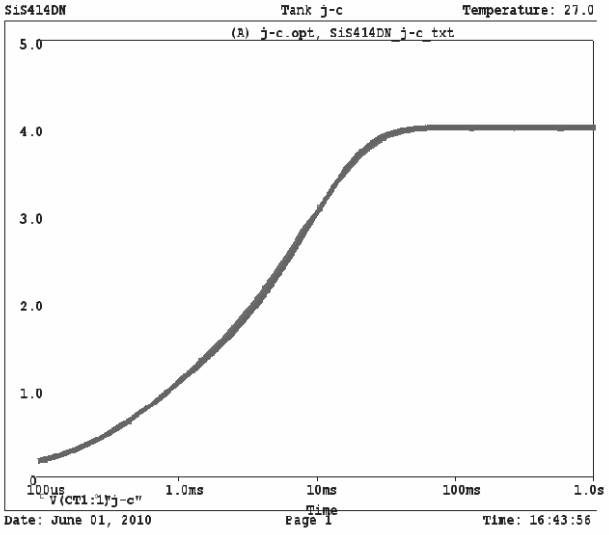
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	7.3672	972.6592m	N/A
RF2	14.3928	1.7272	N/A
RF3	23.8535	1.2890	N/A
RF4	35.2782	21.6632m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	5.2606m	493.3872u	N/A
CF2	29.6081m	1.0120m	N/A
CF3	439.7158m	6.8916m	N/A
CF4	1.3034	24.0056m	N/A

Note
N/A indicates not applicable


SiS414DN
Tank j-a
Temperature: 27.0
(A) j-a.opt, SiS414DN_j-a_txt
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)j-a"
Time
Date: June 01, 2010
Page 1
Time: 16:32:15


SiS414DN
Tank j-c
Temperature: 27.0
(A) j-c.opt, SiS414DN_j-c_txt
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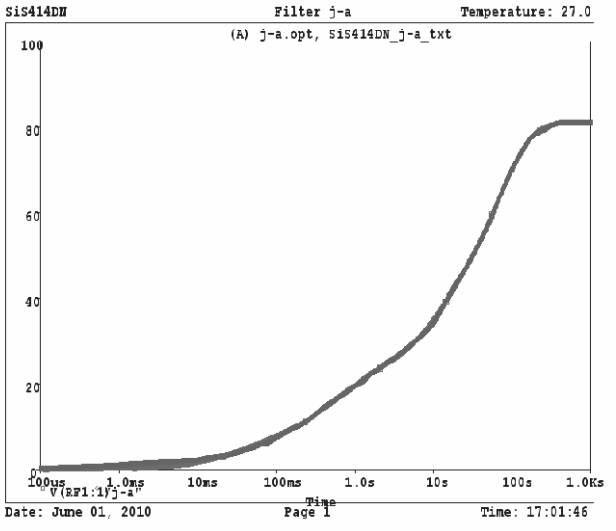
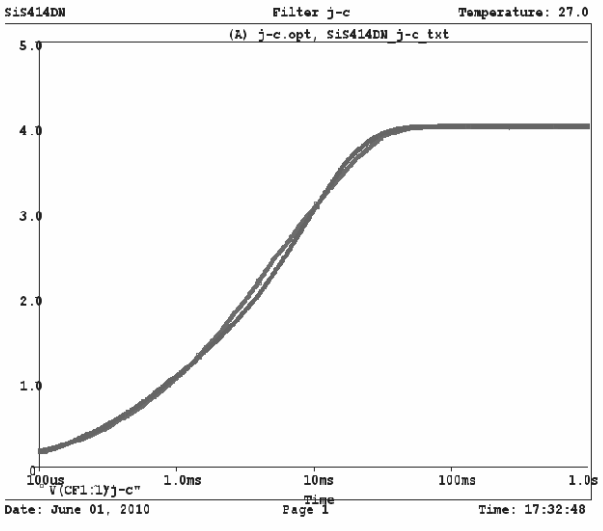
4.0
3.0
2.0
1.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CT1:1)j-c"
Time
Date: June 01, 2010
Page 1
Time: 16:43:56


SiS414DN
Filter j-a
Temperature: 27.0
(A) j-a.opt, SiS414DN_j-a_txt
100
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)j-a"
Time
Date: June 01, 2010
Page 1
Time: 17:01:46


SiS414DN
Filter j-c
Temperature: 27.0
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5.0
4.0
3.0
2.0
1.0
0
100us
1.0ms
10ms
100ms
1.0s
V(CF1:1)j-c"
Time
Date: June 01, 2010
Page 1
Time: 17:32:48