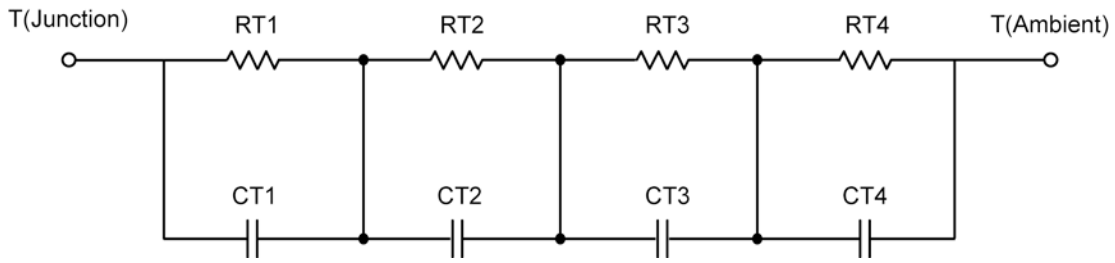
R-C Thermal Model Parameters

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."

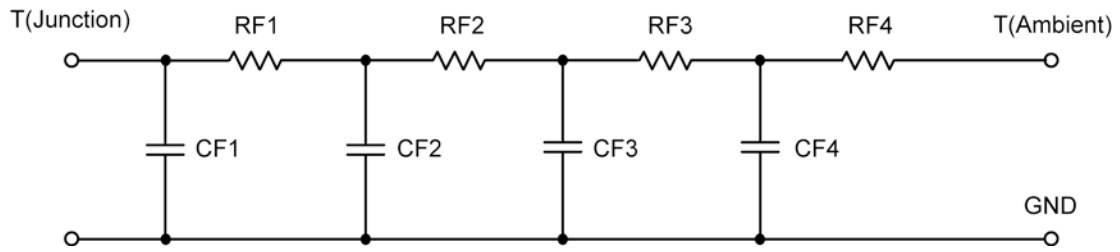
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	10.8021	N/A	22.5673
RT2	32.0528	N/A	5.9073
RT3	26.7226	N/A	10.0559
RT4	55.4225	N/A	6.4695
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	269.0443 u	N/A	2.3671 m
CT2	2.6906 m	N/A	159.1424 u
CT3	38.8076 m	N/A	1.9810 m
CT4	1.3433	N/A	153.2519 m

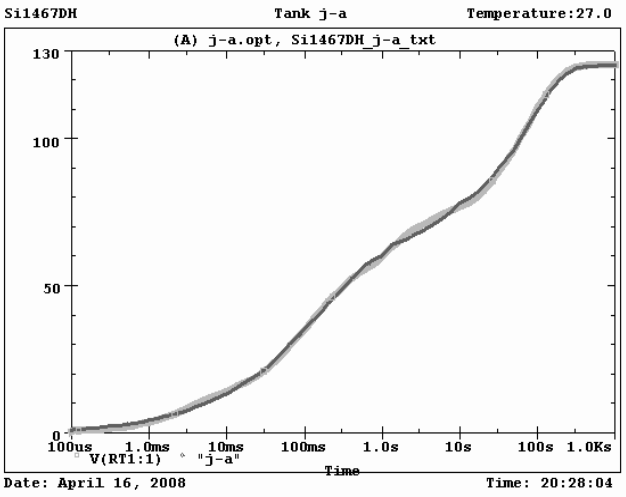
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

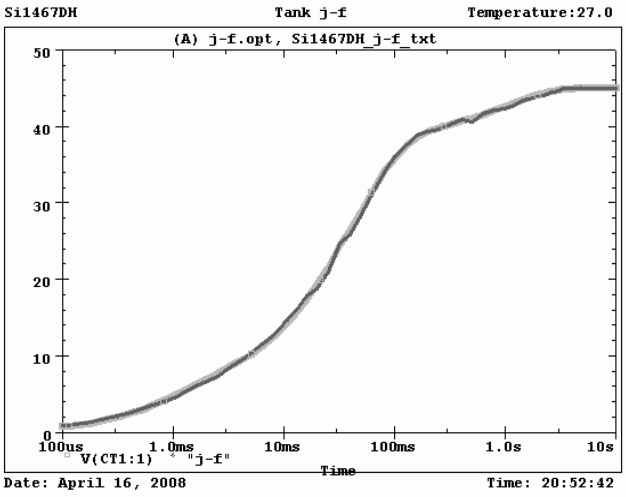
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	15.4733	N/A	5.8690
RF2	36.9994	N/A	16.9248
RF3	20.3571	N/A	16.2295
RF4	52.1702	N/A	5.9767
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	301.4050 u	N/A	115.3882 u
CF2	3.0406 m	N/A	709.6487 u
CF3	78.0503 m	N/A	1.7618 m
CF4	1.3825	N/A	164.7689 m

Note
NA indicates not applicable


Si1467DH
Tank j-a
Temperature:27.0
(A) j-a.opt, Si1467DH_j-a_txt
130
100
50
0
100us 1.0ms 10ms 100ms 1.0s 10s 100s 1.0Ks
V(RT1:1) "j-a"
Time
Date: April 16, 2008
Time: 20:28:04


Si1467DH
Tank j-f
Temperature:27.0
(A) j-f.opt, Si1467DH_j-f_txt
50
40
30
20
10
0
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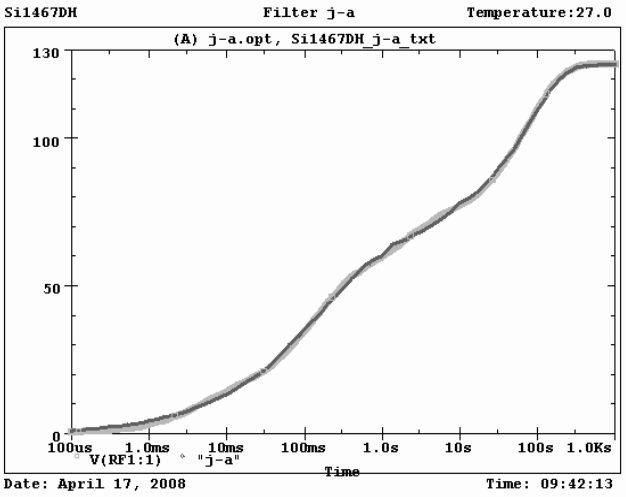
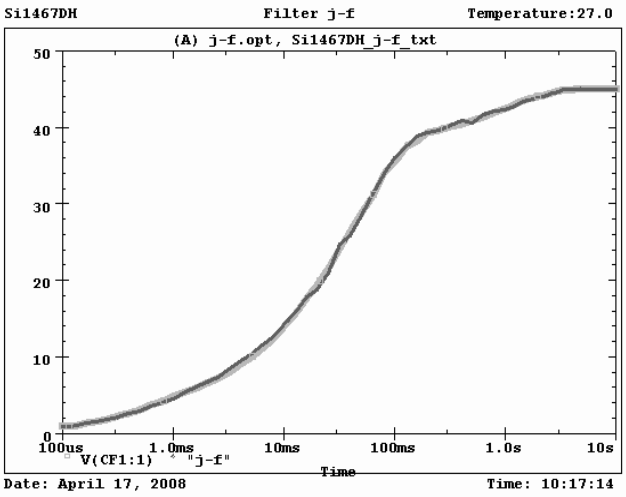
V(CT1:1) "j-f"
Time
Date: April 16, 2008
Time: 20:52:42


Si1467DH
Filter j-a
Temperature:27.0
(A) j-a.opt, Si1467DH_j-a_txt
130
100
50
0
100us 1.0ms 10ms 100ms 1.0s 10s 100s 1.0Ks
V(RF1:1) "j-a"
Time
Date: April 17, 2008
Time: 09:42:13


Si1467DH
Filter j-f
Temperature:27.0
(A) j-f.opt, Si1467DH_j-f_txt
50
40
30
20
10
0
100us 1.0ms 10ms 100ms 1.0s 10s
V(CF1:1) "j-f"
Time
Date: April 17, 2008
Time: 10:17:14