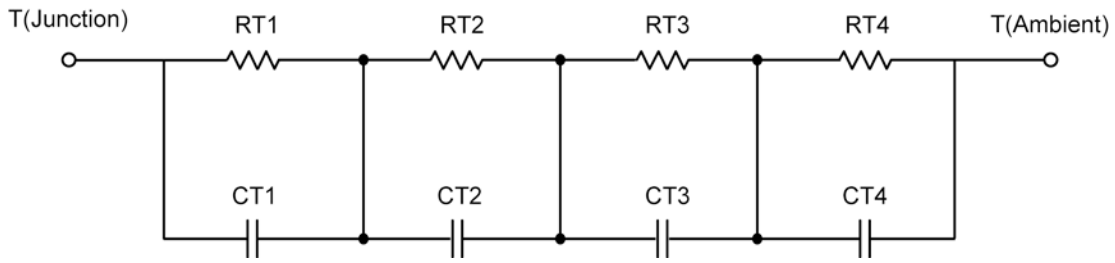
R-C Thermal Model Parameters

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."

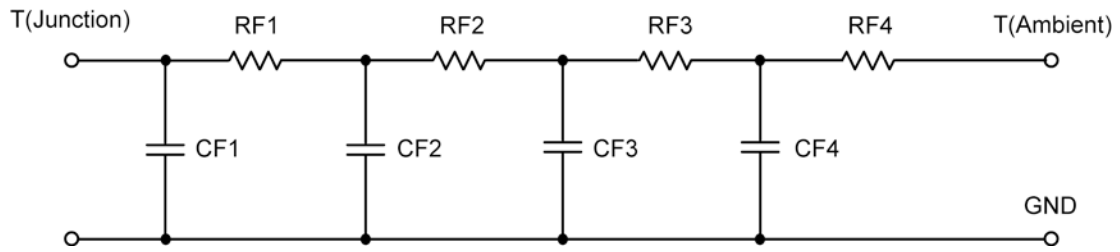
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	1.7360	548.9660 m	N/A
RT2	9.3004	1.0905	N/A
RT3	12.9490	206.1977 m	N/A
RT4	57.0146	554.3363 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	750.1000 u	946.0420 u	N/A
CT2	14.9320 m	10.9982 m	N/A
CT3	94.0691 m	913.6396 m	N/A
CT4	1.2214	20.1843 m	N/A

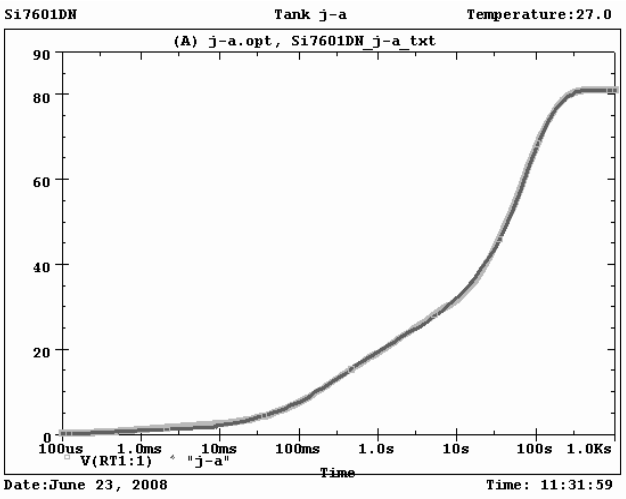
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

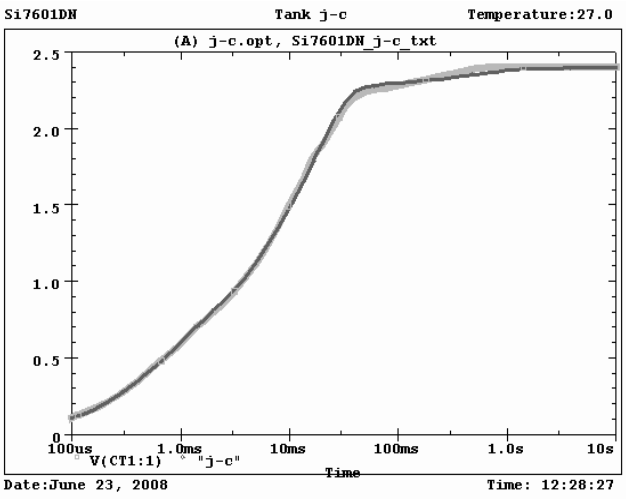
R-C THERMAL MODEL FOR FILTER CONFIGURATION

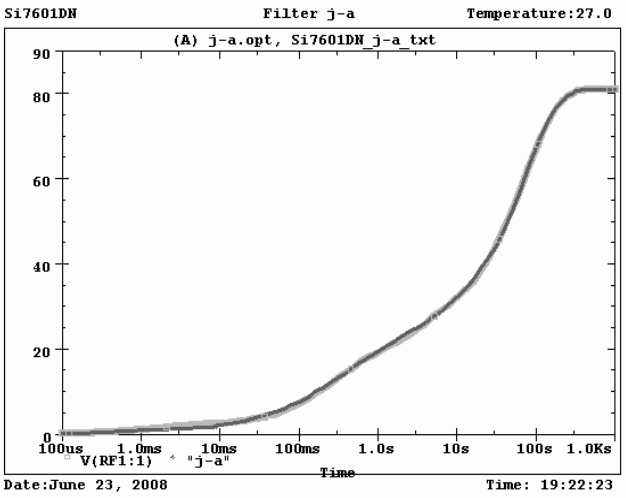


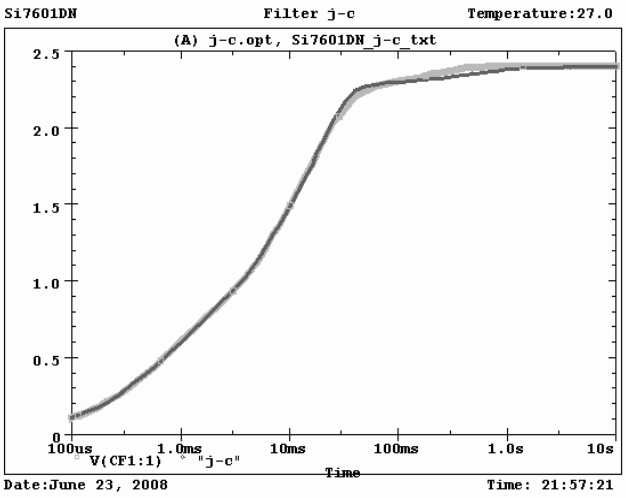
R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	2.0759	729.8738 m	N/A
RF2	15.3978	1.0206	N/A
RF3	11.5370	495.2926 m	N/A
RF4	51.9893	154.2336 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	692.4000 u	858.4211 u	N/A
CF2	15.0523 m	7.2784 m	N/A
CF3	225.0464 m	438.9040 u	N/A
CF4	1.1400	1.0436	N/A

Note
NA indicates not applicable


Si7601DN
Tank j-a
Temperature:27.0
(A) j-a.opt, Si7601DN_j-a_txt
90
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)
"j-a"
Time
Date:June 23, 2008
Time: 11:31:59


Si7601DN
Tank j-c
Temperature:27.0
(A) j-c.opt, Si7601DN_j-c_txt
2.5
2.0
1.5
1.0
0.5
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CT1:1)
"j-c"
Time
Date:June 23, 2008
Time: 12:28:27


Si7601DN
Filter j-a
Temperature:27.0
(A) j-a.opt, Si7601DN_j-a_txt
90
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)
"j-a"
Time
Date:June 23, 2008
Time: 19:22:23


Si7601DN
Filter j-c
Temperature:27.0
(A) j-c.opt, Si7601DN_j-c_txt
2.5
2.0
1.5
1.0
0.5
0
100us
1.0ms
10ms
100ms
1.0s
10s
V(CF1:1)
"j-c"
Time
Date:June 23, 2008
Time: 21:57:21