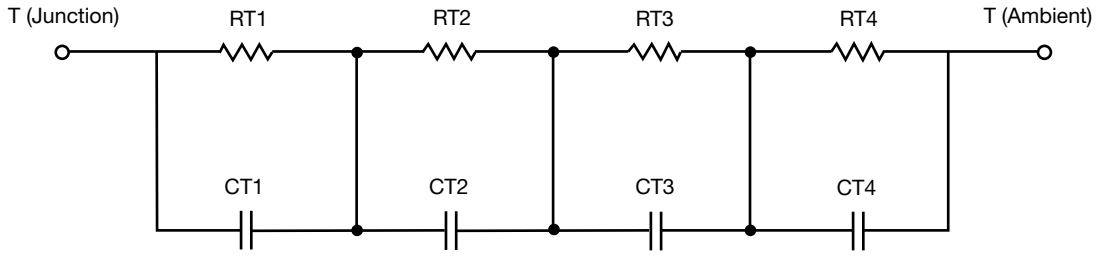
R-C Thermal Model Parameters

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

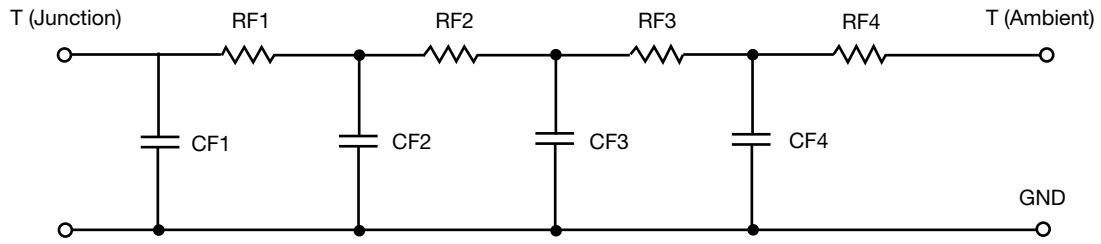


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	3.0012	1.3456	N/A
RT2	9.1158	453.9214m	N/A
RT3	6.3846	757.5327m	N/A
RT4	51.4984	950.8372m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	10.9111m	7.1177m	N/A
CT2	279.9543m	53.3846m	N/A
CT3	89.7184m	1.1730m	N/A
CT4	1.2273	20.0843m	N/A

Note
N/A indicates not applicable

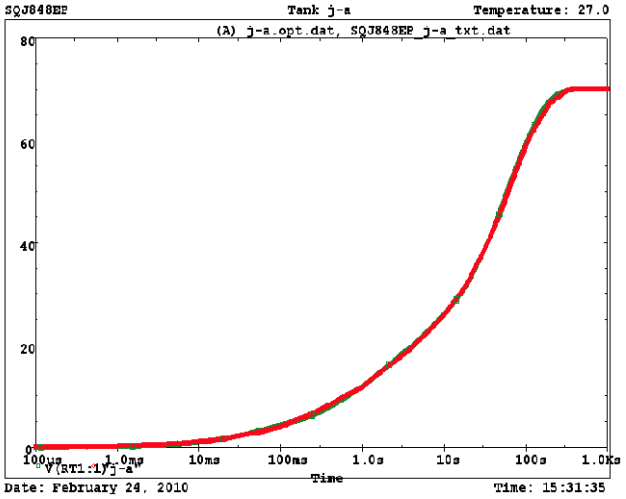
This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.

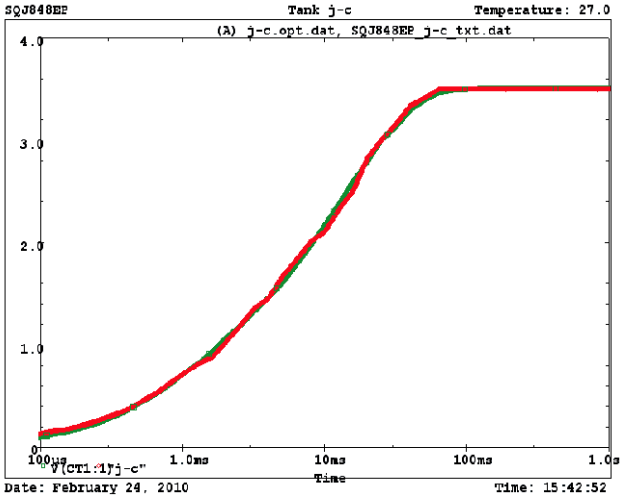
R-C THERMAL MODEL FOR FILTER CONFIGURATION

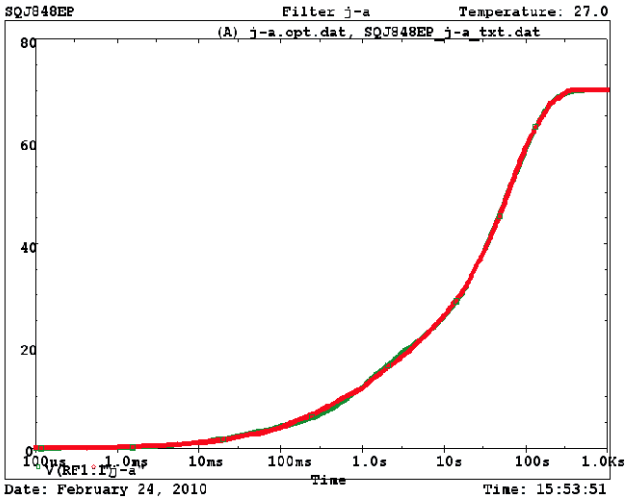


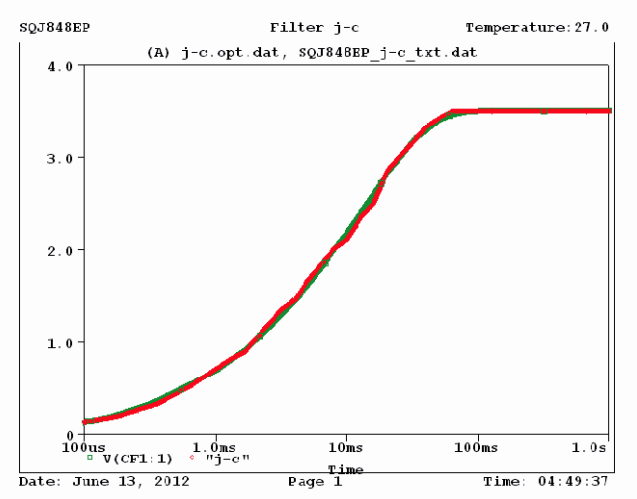
R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	3.6804	674.7241m	N/A
RF2	14.6066	1.3213	N/A
RF3	25.2882	1.2332	N/A
RF4	26.3153	274.1517m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	7.6595m	712.3856u	N/A
CF2	67.7619m	2.0872m	N/A
CF3	822.3240m	6.1929m	N/A
CF4	1.2999	18.4122m	N/A

Note
N/A indicates not applicable


SQJ848EP
Tank j-a
Temperature: 27.0
(A) j-a.opt.dat, SQJ848EP_j-a_txt.dat
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)"j-a"
Time
Date: February 24, 2010
Time: 15:31:35


SQJ848EP
Tank j-c
Temperature: 27.0
(A) j-c.opt.dat, SQJ848EP_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: February 24, 2010
Time: 15:42:52


SQJ848EP
Filter j-a
Temperature: 27.0
(A) j-a.opt.dat, SQJ848EP_j-a_txt.dat
80
60
40
20
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)"j-a"
Time
Date: February 24, 2010
Time: 15:53:51


SQJ848EP
Filter j-c
Temperature: 27.0
(A) j-c.opt.dat, SQJ848EP_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: June 13, 2012
Page 1
Time: 04:49:37