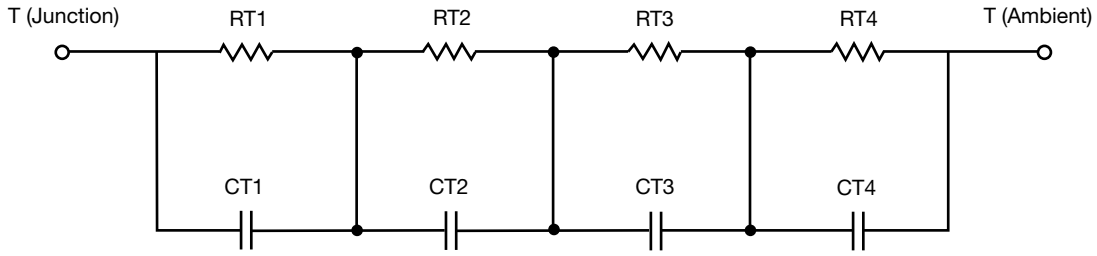
R-C Thermal Model Parameters

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

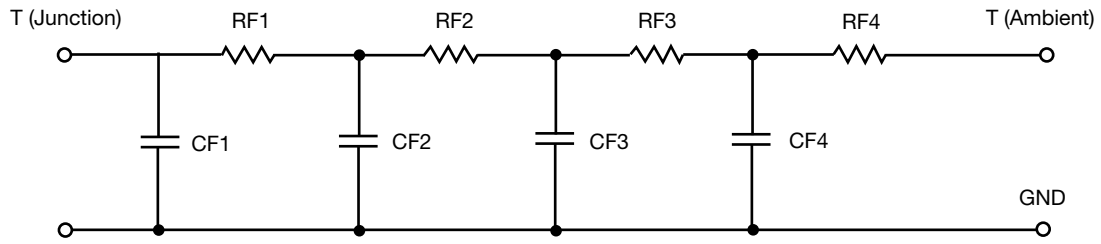


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	8.7526	931.1129m	N/A
RT2	675.3907m	722.5760m	N/A
RT3	1.3509	433.8956m	N/A
RT4	38.9115	295.8187m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	117.7725m	9.5694m	N/A
CT2	11.0877m	184.5385m	N/A
CT3	7.1240m	2.0440m	N/A
CT4	1.6561	2.5947m	N/A

Note
N/A indicates not applicable

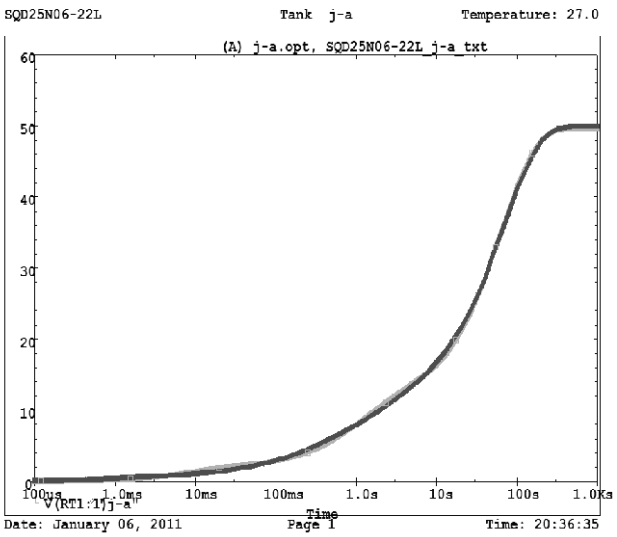
This document is intended as a SPICE modeling guideline and does not constitute a commercial product datasheet. Designers should refer to the appropriate datasheet of the same number for guaranteed specification limits.

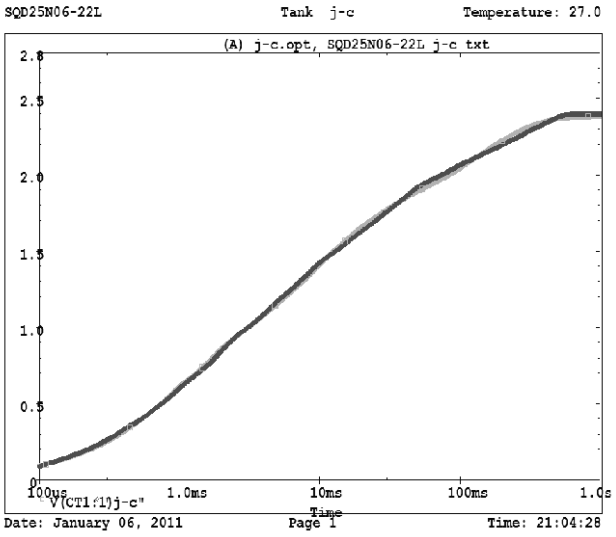
R-C THERMAL MODEL FOR FILTER CONFIGURATION

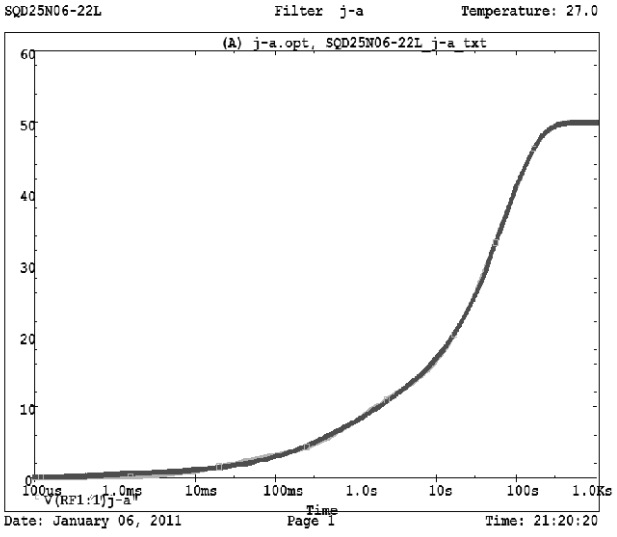


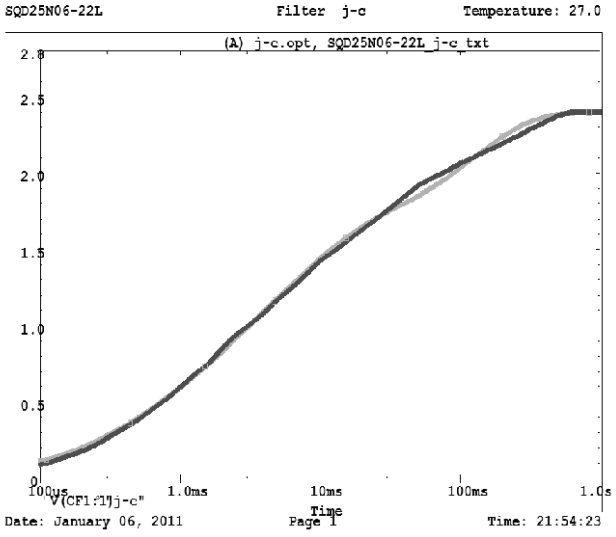
R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	2.6879	575.2571m	N/A
RF2	8.1476	643.8896m	N/A
RF3	20.2619	475.7954m	N/A
RF4	18.9122	705.0579m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	8.6716m	807.5318u	N/A
CF2	101.0862m	2.4864m	N/A
CF3	1.1245	11.5066m	N/A
CF4	1.9615	159.4368m	N/A

Note
N/A indicates not applicable


SQD25N06-22L
Tank j-a
Temperature: 27.0
(A) j-a.opt, SQD25N06-22L_j-a_txt
60
50
40
30
20
10
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RT1:1)j-a"
Time
Date: January 06, 2011
Page 1
Time: 20:36:35


SQD25N06-22L
Tank j-c
Temperature: 27.0
(A) j-c.opt, SQD25N06-22L_j-c_txt
2.5
2.0
1.5
1.0
0.5
0
100us
1.0ms
10ms
100ms
1.0s
V(CT1:1)j-c"
Time
Date: January 06, 2011
Page 1
Time: 21:04:28


SQD25N06-22L
Filter j-a
Temperature: 27.0
(A) j-a.opt, SQD25N06-22L_j-a_txt
60
50
40
30
20
10
0
100us
1.0ms
10ms
100ms
1.0s
10s
100s
1.0Ks
V(RF1:1)j-a"
Time
Date: January 06, 2011
Page 1
Time: 21:20:20


SQD25N06-22L
Filter j-c
Temperature: 27.0
(A) j-c.opt, SQD25N06-22L_j-c_txt
2.5
2.0
1.5
1.0
0.5
0
100us
1.0ms
10ms
100ms
1.0s
V(CF1:1)j-c"
Time
Date: January 06, 2011
Page 1
Time: 21:54:23