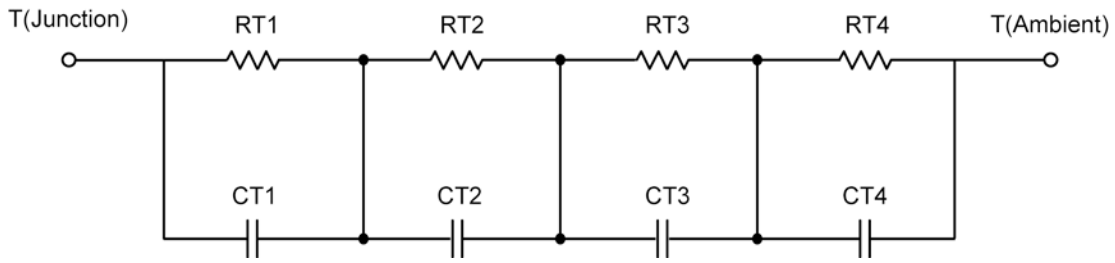
R-C Thermal Model Parameters

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."

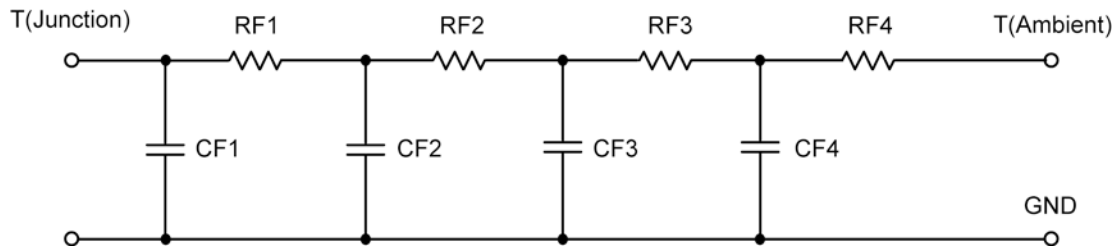
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	N/A	297.2010 m	N/A
RT2	N/A	314.3634 m	N/A
RT3	N/A	1.3649	N/A
RT4	N/A	23.5356 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	N/A	2.2842 m	N/A
CT2	N/A	2.3781 m	N/A
CT3	N/A	6.4848 m	N/A
CT4	N/A	830.6000 u	N/A

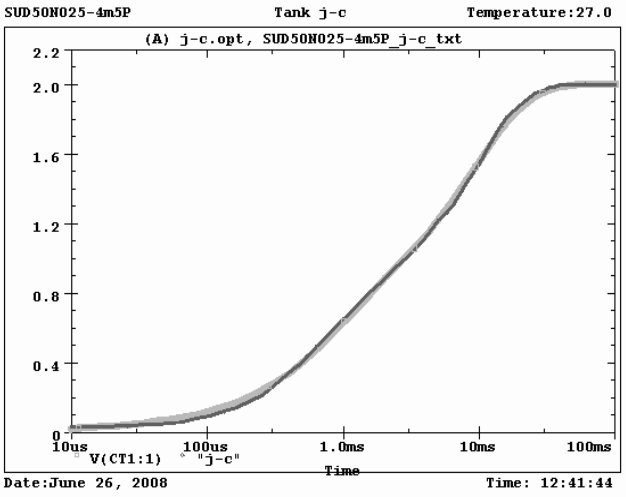
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

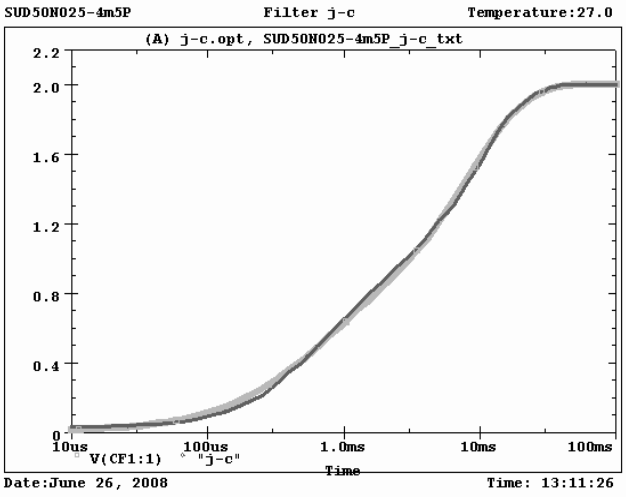
R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	N/A	727.3141 m	N/A
RF2	N/A	871.0617 m	N/A
RF3	N/A	384.3663 m	N/A
RF4	N/A	17.2579 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	N/A	816.0203 u	N/A
CF2	N/A	5.2535 m	N/A
CF3	N/A	1.6015 m	N/A
CF4	N/A	327.9911 m	N/A

Note
NA indicates not applicable


SUD50N025-4m5P
Tank j-c
Temperature:27.0
(A) j-c.opt, SUD50N025-4m5P_j-c_txt
2.2
2.0
1.6
1.2
0.8
0.4
0
10us
100us
1.0ms
10ms
100ms
V(CT1:1) "j-c"
Time
Date:June 26, 2008
Time: 12:41:44


SUD50N025-4m5P
Filter j-c
Temperature:27.0
(A) j-c.opt, SUD50N025-4m5P_j-c_txt
2.2
2.0
1.6
1.2
0.8
0.4
0
10us
100us
1.0ms
10ms
100ms
V(CF1:1) "j-c"
Time
Date:June 26, 2008
Time: 13:11:26