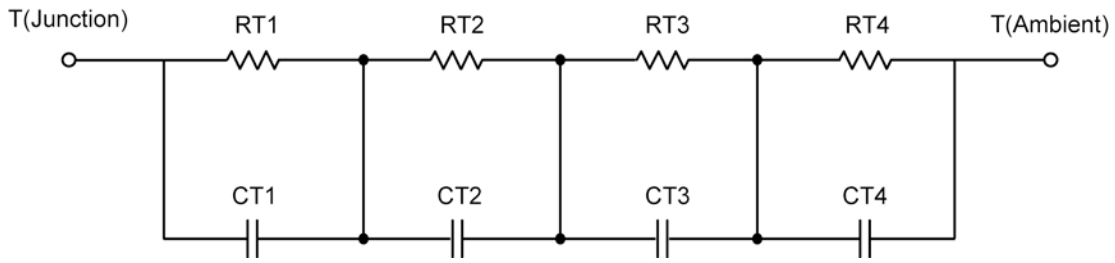
R-C Thermal Model Parameters

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."

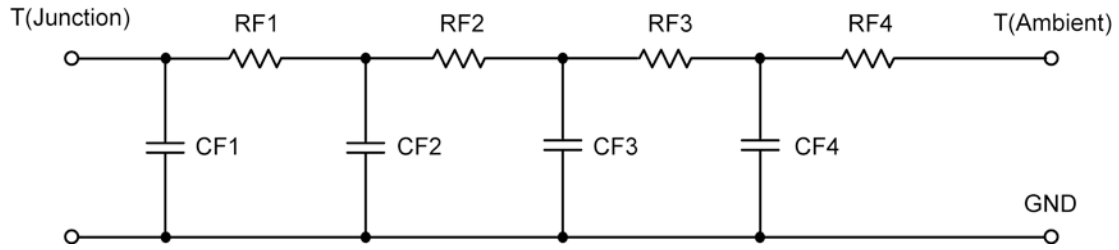
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	70.6811	N/A	77.5424
RT2	235.2264	N/A	137.4284
RT3	13.2362	N/A	119.9919
RT4	80.8563	N/A	15.0373
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	280.0045 m	N/A	523.4378 u
CT2	2.8317 m	N/A	7.3150 m
CT3	45.9281 u	N/A	2.1052 m
CT4	636.7257 u	N/A	32.2187 u

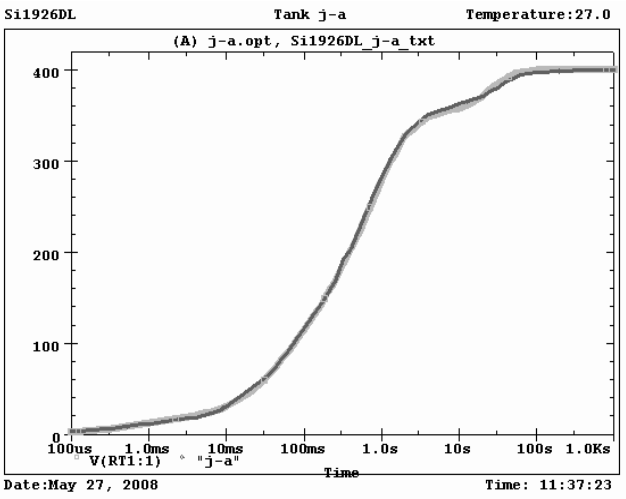
This document is intended as a SPICE modeling guideline and does not constitute a commercial product data sheet. Designers should refer to the appropriate data sheet of the same number for guaranteed specification limits.

R-C THERMAL MODEL FOR FILTER CONFIGURATION



R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	16.5215	N/A	18.9497
RF2	125.1109	N/A	125.1457
RF3	198.1982	N/A	118.9550
RF4	60.1694	N/A	86.9496
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	39.9866 u	N/A	32.5319 u
CF2	542.7781 u	N/A	398.1766 u
CF3	2.7993 m	N/A	1.3807 m
CF4	326.4637 m	N/A	8.6762 m

Note
NA indicates not applicable


Si1926DL
Tank j-a
Temperature:27.0
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300
200
100
0
100us 1.0ms 10ms 100ms 1.0s 10s 100s 1.0Ks
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Time
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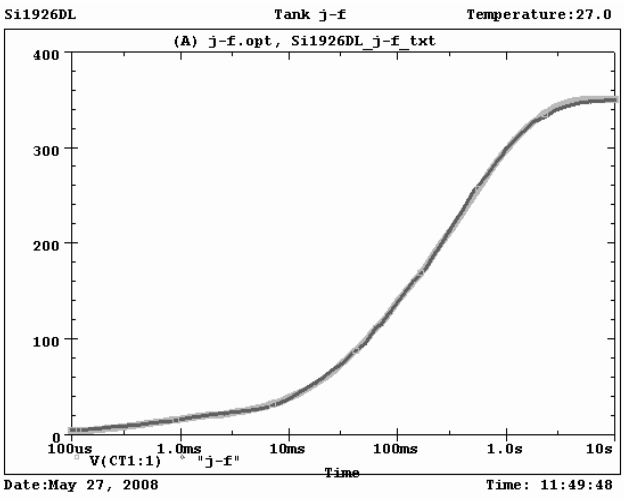
Time: 11:37:23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Tank j-f
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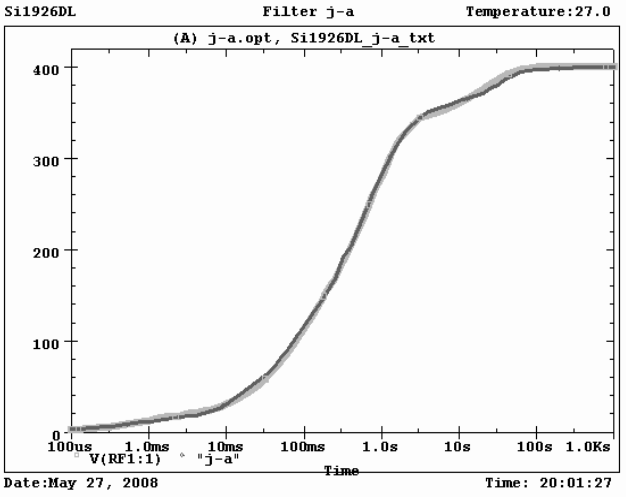
Si1926DL
Filter j-a
Temperature:27.0
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300
200
100
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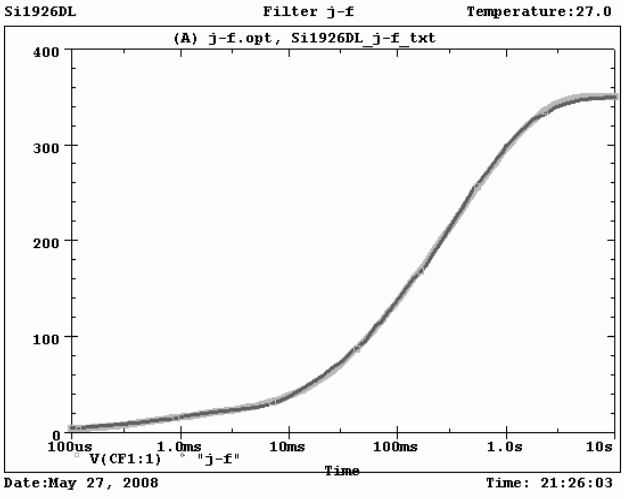
Time
Date:May 27, 2008
Time: 20:01:27


Si1926DL
Filter j-f
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300
200
100
0
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Time
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Time: 21:26:03