R-C Thermal Model Parameters

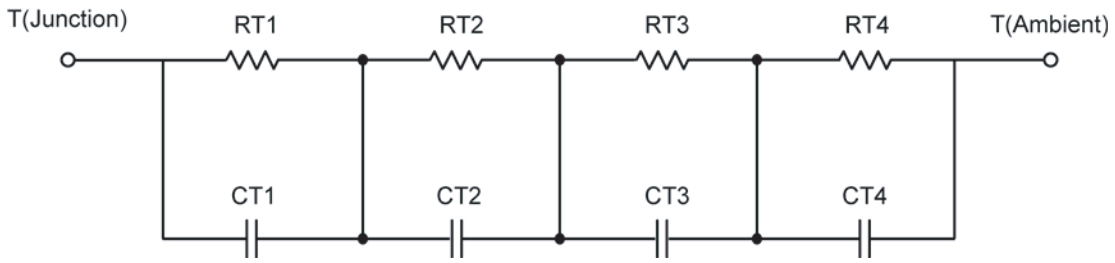
DESCRIPTION

The parametric values in the R-C thermal model have been derived using curve-fitting techniques. These techniques are described in "A Simple Method of Generating Thermal Models for a Power MOSFET"[1]. When implemented in P-Spice, these values have matching characteristic curves to the Single Pulse Transient Thermal Impedance curves for the MOSFET.

R-C values for the electrical circuit in the Foster/Tank and Cauer/Filter configurations are included.

Note:
For a detailed explanation of implementing these values in P-SPICE, refer to Application Note AN609 Thermal Simulations Of Power MOSFETs on P-SPICE Platform.

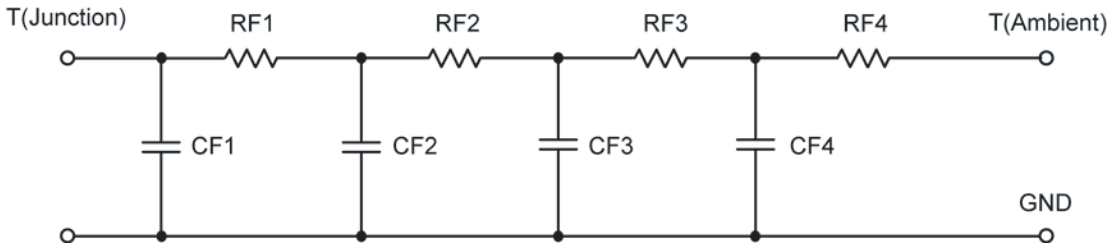
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	4.3079	238.6633 m	N/A
RT2	7.4677	291.1519 m	N/A
RT3	13.8423	1.1148	N/A
RT4	58.8764	1.0727	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	5.2101 m	266.7345 m	N/A
CT2	42.1039 m	5.0160	N/A
CT3	173.3669 m	1.1623 m	N/A
CT4	1.0551	8.8689 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



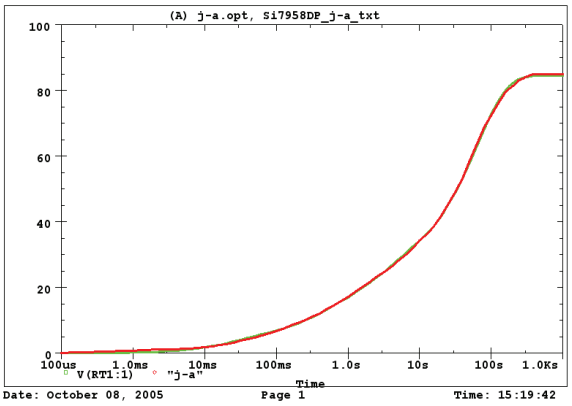
R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	6.8528	1.3023	N/A
RF2	11.7756	686.0837 m	N/A
RF3	14.1535	452.3654 m	N/A
RF4	51.9506	262.6024 m	N/A
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	5.3726 m	982.6144 u	N/A
CF2	40.8226 m	7.1323 m	N/A
CF3	205.7289 m	25.0532 m	N/A
CF4	943.3135 m	5.7964	N/A

Note: NA indicates not applicable

Reference:

[1] "A Simple Method of Generating Thermal Models for a Power MOSFET" by Wharton McDaniel and Kandarp Pandya, IEEE / SEMITHERM 2002

Si7958DP Tank j-a Temperature: 27.0



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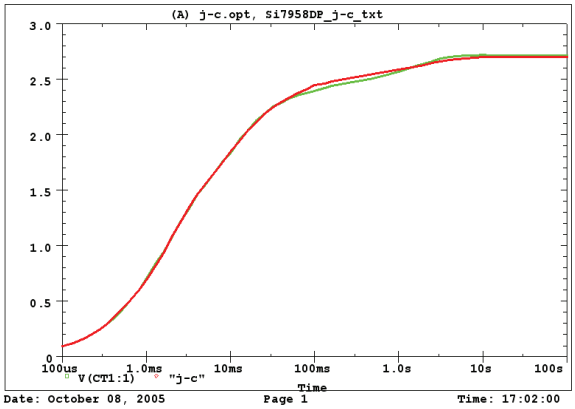
Si7958DP Tank j-c Temperature: 27.0



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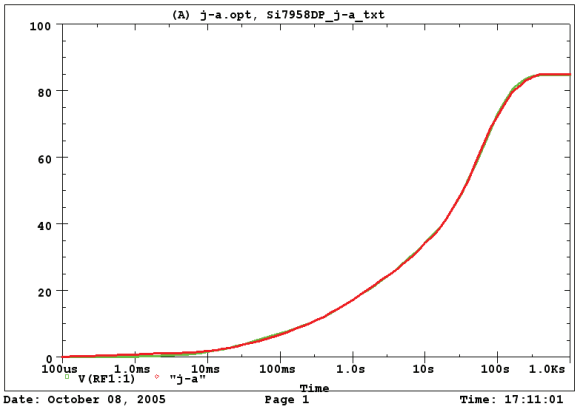
Si7958DP Filter j-a Temperature: 27.0



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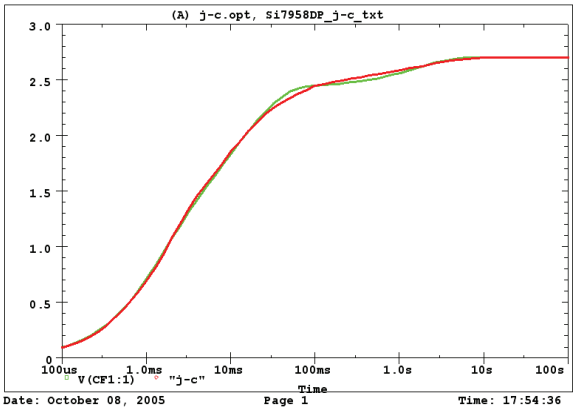
Si7958DP Filter j-c Temperature: 27.0



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