R-C Thermal Model Parameters

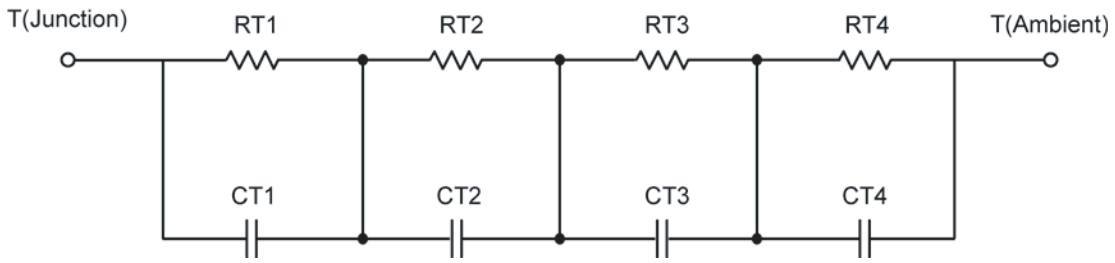
DESCRIPTION

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.

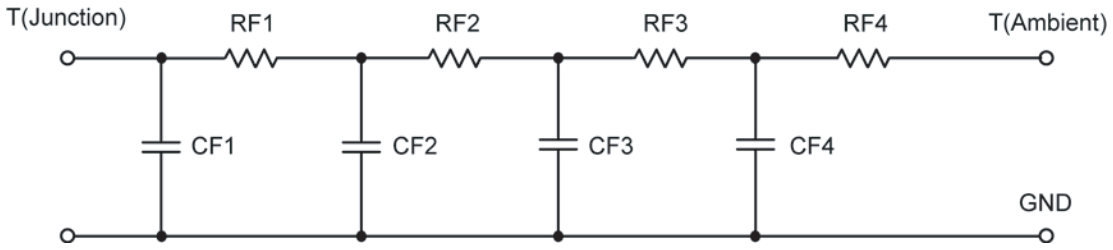
R-C THERMAL MODEL FOR TANK CONFIGURATION



R-C VALUES FOR TANK CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RT1	12.5704	N/A	5.5222
RT2	9.5036	N/A	4.7005
RT3	20.7724	N/A	8.7487
RT4	51.5384	N/A	1.3523
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CT1	7.8379 m	N/A	15.3702 m
CT2	778.1334 u	N/A	894.4294 u
CT3	43.7726 m	N/A	3.4974 m
CT4	1.3048	N/A	1.9739

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



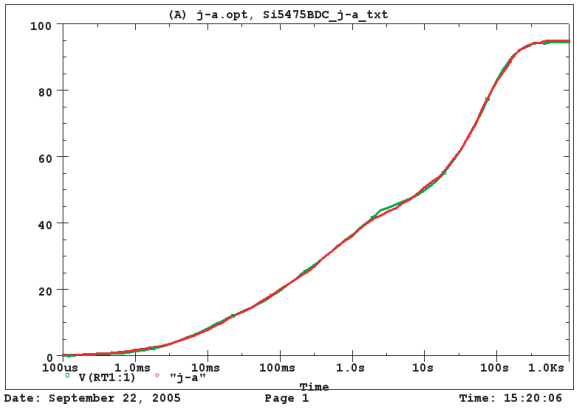
R-C VALUES FOR FILTER CONFIGURATION			
Thermal Resistance (°C/W)			
Junction to	**Ambient**	**Case**	**Foot**
RF1	15.8196	N/A	8.5390
RF2	20.7668	N/A	7.5457
RF3	10.2794	N/A	3.0489
RF4	47.5979	N/A	885.6023 m
Thermal Capacitance (Joules/°C)			
Junction to	**Ambient**	**Case**	**Foot**
CF1	935.7665 u	N/A	728.0729 u
CF2	15.5517 m	N/A	3.1400 m
CF3	213.2942 m	N/A	15.6152 m
CF4	1.1875	N/A	1.6003

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

Si5475BDC Tank j-a Temperature: 27.0



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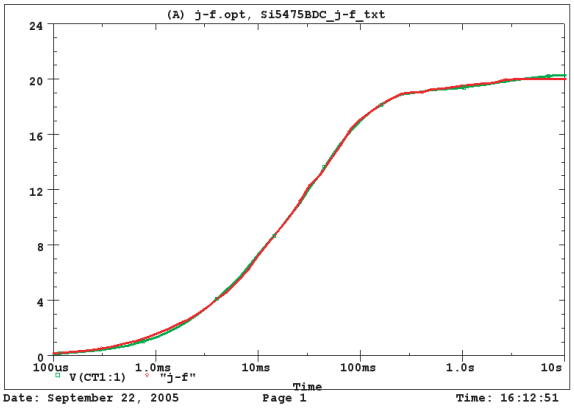
Si5475BDC Tank j-f Temperature: 27.0



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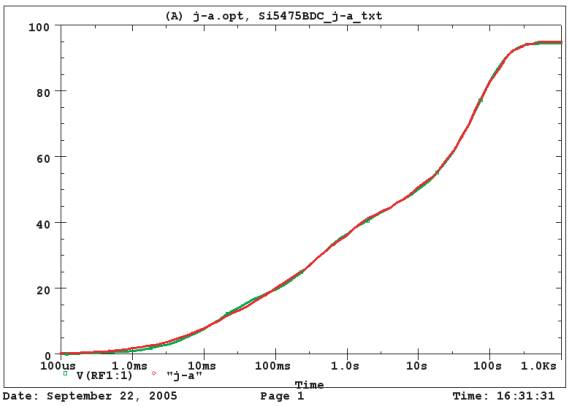
Si5475BDC Filter j-a Temperature: 27.0



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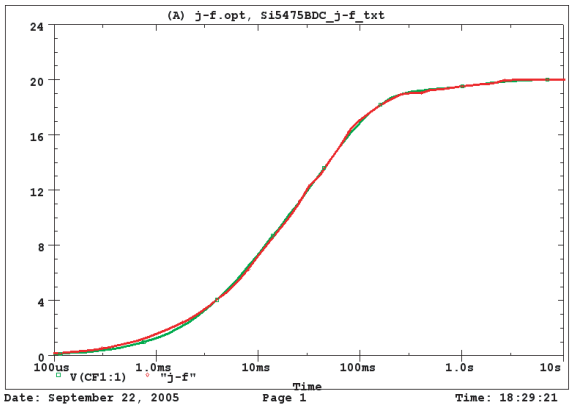
Si5475BDC Filter j-f Temperature: 27.0



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