

## 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

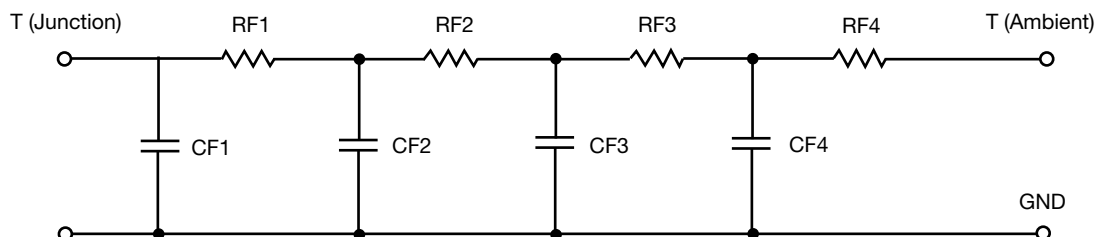


R-C VALUES FOR TANK CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	Ambient	Case	Foot
RT1	24.2346	3.2047	N/A
RT2	7.7573	3.6406	N/A
RT3	20.9158	756.1000m	N/A
RT4	52.0923	4.3986	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	2.8739m	203.1695u	N/A
CT2	167.8209u	3.0822m	N/A
CT3	53.6071m	94.0577m	N/A
CT4	922.7306m	4.5020m	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**

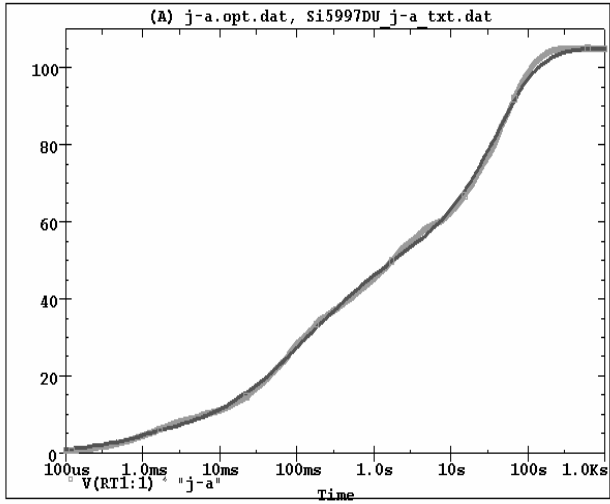
<b>R-C VALUES FOR FILTER CONFIGURATION</b>			
<b>THERMAL RESISTANCE (°C/W)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
RF1	7.2843	3.7960	N/A
RF2	25.4413	7.2334	N/A
RF3	22.5584	581.4058m	N/A
RF4	49.7160	389.1942m	N/A
<b>THERMAL CAPACITANCE (Joules/°C)</b>			
<b>Junction to</b>	<b>Ambient</b>	<b>Case</b>	<b>Foot</b>
CF1	114.2791u	177.1471u	N/A
CF2	2.1537m	1.7556m	N/A
CF3	43.4975m	35.7277m	N/A
CF4	922.9087m	2.1190m	N/A

**Note**

N/A indicates not applicable

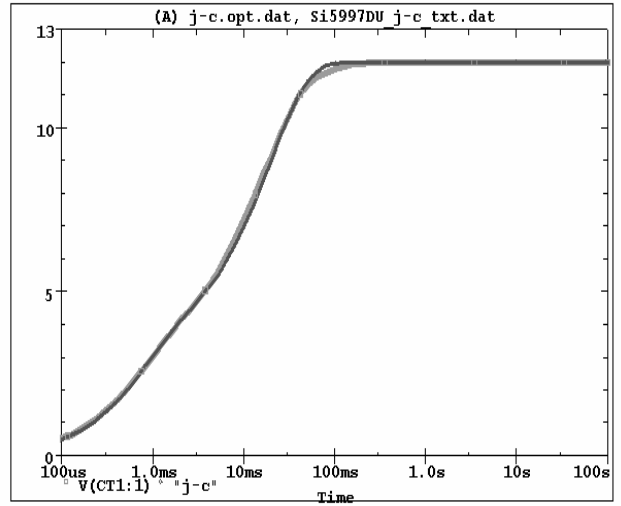


Si5997DU Tank j-a Temperature: 27.0



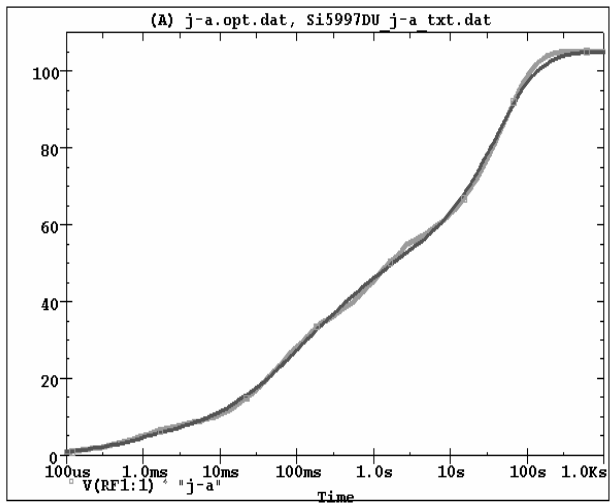
Date: November 16, 2010 Page 1 Time: 10:22:47

Si5997DU Tank j-c Temperature: 27.0



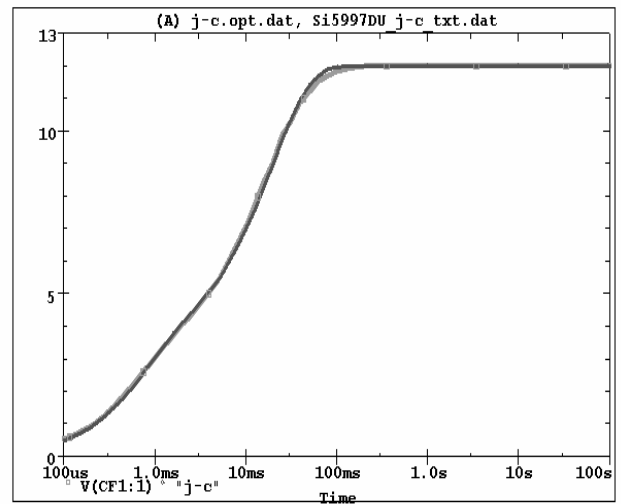
Date: November 16, 2010 Page 1 Time: 10:43:53

Si5997DU Filter j-a Temperature: 27.0



Date: November 16, 2010 Page 1 Time: 11:07:05

Si5997DU Filter j-c Temperature: 27.0



Date: November 16, 2010 Page 1 Time: 12:31:28