

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	5.8043	786.8082m	N/A
RT2	13.4590	555.7392m	N/A
RT3	6.5981	299.9052m	N/A
RT4	34.1386	357.5474m	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CT1	315.0344u	50.0006m	N/A
CT2	1.0495	94.5706m	N/A
CT3	52.7294m	6.8154m	N/A
CT4	3.0851	2.9898m	N/A

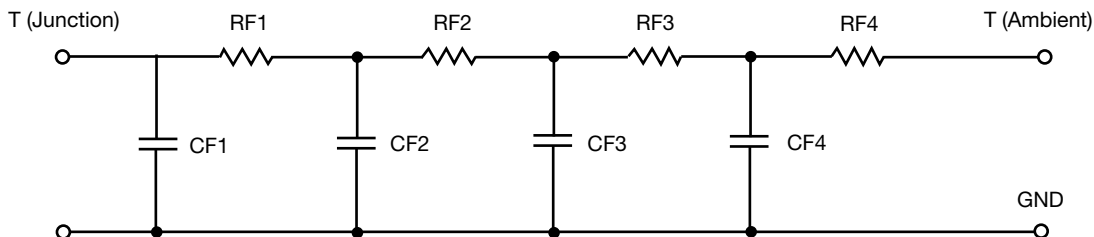
Note

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



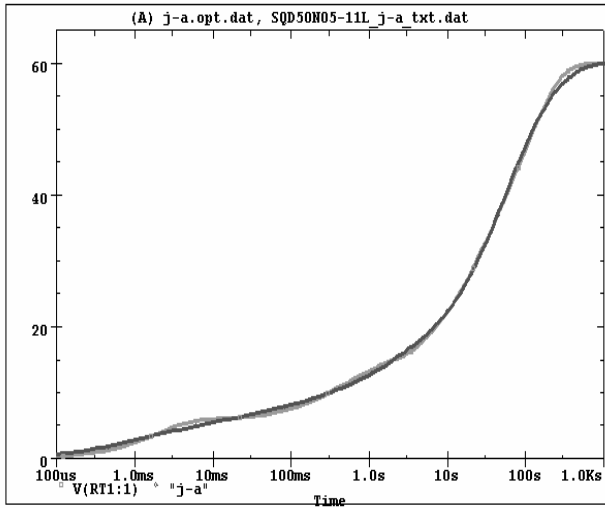
R-C VALUES FOR FILTER CONFIGURATION			
THERMAL RESISTANCE (°C/W)			
Junction to	Ambient	Case	Foot
RF1	6.0172	408.5582m	N/A
RF2	7.5439	336.2543m	N/A
RF3	25.1585	228.0875m	N/A
RF4	21.2804	1.0271	N/A
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient	Case	Foot
CF1	329.9530u	1.7620m	N/A
CF2	53.6982m	1.7350m	N/A
CF3	816.0090m	19.2791m	N/A
CF4	4.3915	18.1869m	N/A

Note

N/A indicates not applicable

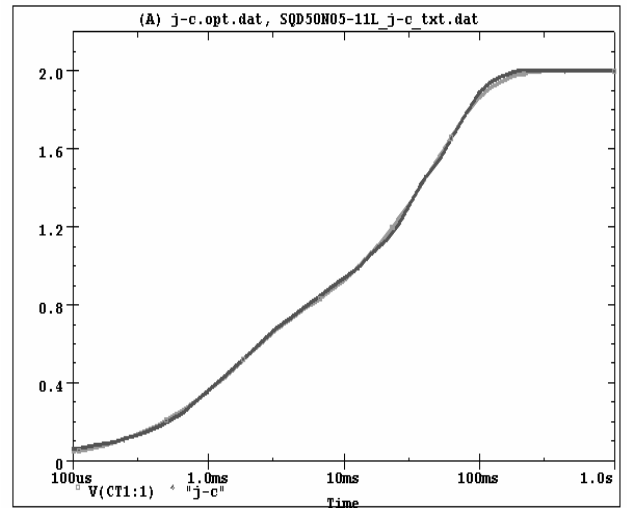


SQD50N05-11L Tank j-a Temperature: 27.0



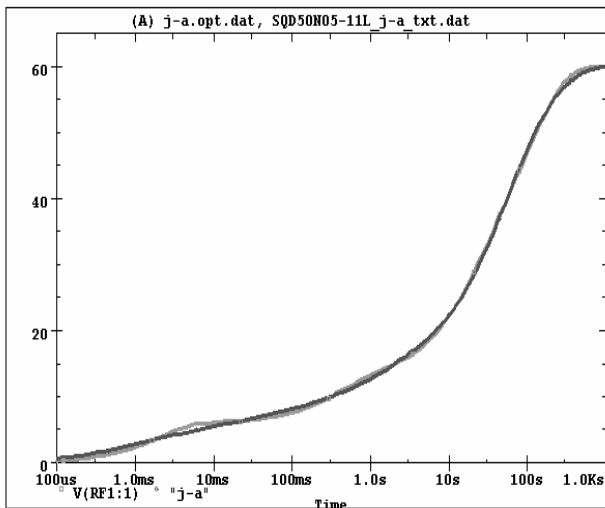
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SQD50N05-11L Tank j-c Temperature: 27.0



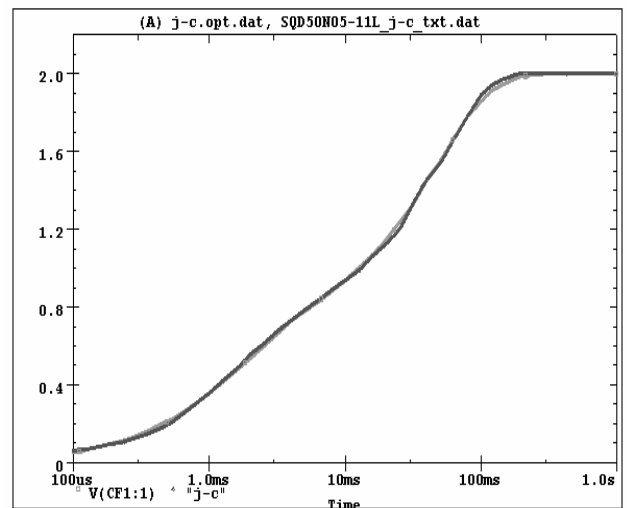
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SQD50N05-11L Filter j-a Temperature: 27.0



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SQD50N05-11L Filter j-c Temperature: 27.0



Date: January 10, 2011 Page 1 Time: 12:08:55