

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

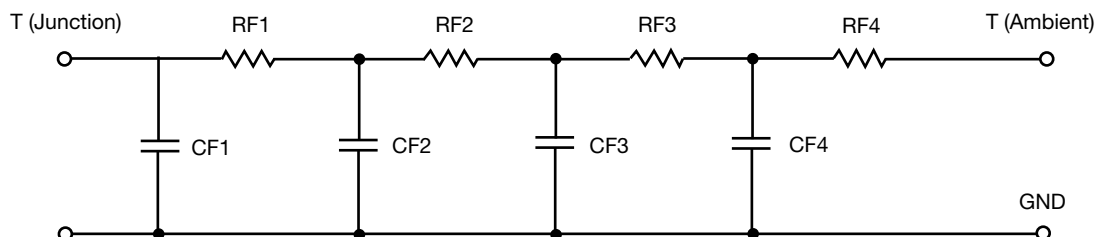


R-C VALUES FOR TANK CONFIGURATION						
THERMAL RESISTANCE (°C/W)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
RT1	52.7927	52.7927	N/A	N/A	105.3654	105.3654
RT2	45.3910	45.3910	N/A	N/A	45.4576	45.4576
RT3	220.8845	220.8845	N/A	N/A	70.8205	70.8205
RT4	166.9318	166.9318	N/A	N/A	148.3565	148.3565
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CT1	1.3249	1.3249	N/A	N/A	104.7961u	104.7961u
CT2	50.9924u	50.9914u	N/A	N/A	9.5922u	9.5922u
CT3	7.9634m	7.9687m	N/A	N/A	5.8157m	5.8157m
CT4	982.1122u	981.0019u	N/A	N/A	509.3556u	509.3556u

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	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
RF1	46.9373	46.9373	N/A	N/A	56.5691	56.5691
RF2	160.5603	160.5603	N/A	N/A	142.9961	142.9961
RF3	220.1523	220.1523	N/A	N/A	126.6223	126.6223
RF4	58.3501	58.3501	N/A	N/A	43.8125	43.8125
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CF1	45.5965u	45.6261u	N/A	N/A	8.0321u	8.0321u
CF2	656.8697u	656.8597u	N/A	N/A	85.0412u	85.0412u
CF3	4.9765m	4.9764m	N/A	N/A	514.5537u	514.5537u
CF4	910.8792m	910.7545m	N/A	N/A	8.7738m	8.7738m

Note

N/A indicates not applicable

