

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

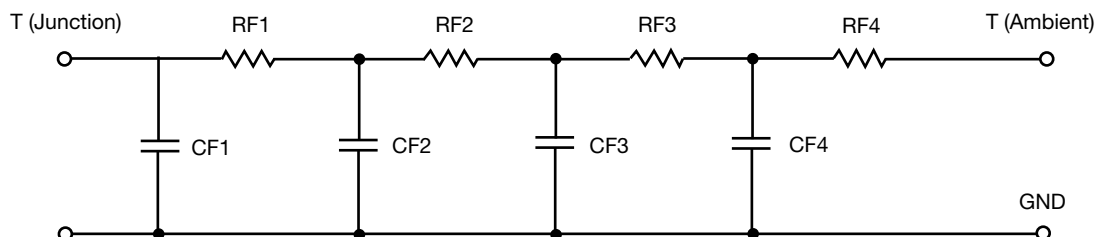


R-C VALUES FOR TANK CONFIGURATION						
THERMAL RESISTANCE (°C/W)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
RT1	8.6344	4.6344	491.3236m	114.3448m	N/A	N/A
RT2	13.1755	11.2724	994.0403m	946.9164m	N/A	N/A
RT3	16.3188	14.8877	717.7417m	1.0304	N/A	N/A
RT4	28.8713	33.5202	2.3717	501.1014m	N/A	N/A
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CT1	2.6472m	4.8706m	170.8814u	39.9912u	N/A	N/A
CT2	38.2585m	44.8277m	1.2721m	5.8771m	N/A	N/A
CT3	1.0464	869.2930m	32.5177m	16.2515m	N/A	N/A
CT4	3.5889	2.6318	2.4784m	381.8702u	N/A	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	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
RF1	11.7228	9.3690	1.2121	675.7318m	N/A	N/A
RF2	14.2441	11.4701	1.6784	1.5517	N/A	N/A
RF3	22.1937	25.7402	1.6723	366.2500m	N/A	N/A
RF4	18.8394	17.9247	9.5341m	1.3778m	N/A	N/A
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CF1	2.9313m	7.3650m	221.8867u	226.8765u	N/A	N/A
CF2	64.2804m	104.5210m	1.0745m	4.2084m	N/A	N/A
CF3	1.0008	826.1647m	3.8771m	38.0899m	N/A	N/A
CF4	3.7496	4.1186	315.4536u	44.1252u	N/A	N/A

Note

N/A indicates not applicable

