

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

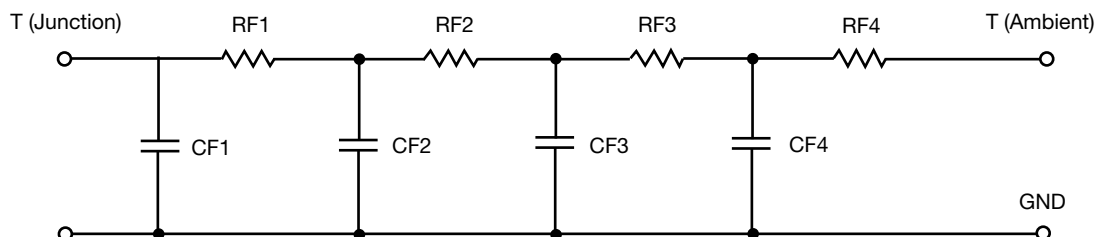


R-C VALUES FOR TANK CONFIGURATION						
THERMAL RESISTANCE (°C/W)						
Junction to	Ambient		Case		Foot	
	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2
RT1	12.9909	12.1267	955.8677m	387.0255m	N/A	N/A
RT2	4.4807	3.4721	581.6009m	375.2479m	N/A	N/A
RT3	10.5602	9.4471	660.3267m	364.3876m	N/A	N/A
RT4	32.9835	29.3924	400.8920m	135.4602m	N/A	N/A
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2
CT1	655.5580m	1.1695	2.0037m	211.8863u	N/A	N/A
CT2	1.8927m	6.9574m	332.2039u	5.5956m	N/A	N/A
CT3	31.6790m	68.9392m	10.3459m	20.3846m	N/A	N/A
CT4	2.6503	2.9000	7.2253m	16.2233m	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	
	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2
RF1	5.5712	2.6468	878.7969m	466.2754m	N/A	N/A
RF2	11.0661	10.0943	1.4973	697.0763m	N/A	N/A
RF3	17.8545	18.7999	165.9769m	60.3063m	N/A	N/A
RF4	26.4840	22.7654	3.2619m	34.4292m	N/A	N/A
THERMAL CAPACITANCE (Joules/°C)						
Junction to	Ambient		Case		Foot	
	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2	NCh-Channel 1	PCh-Channel 2
CF1	2.0531m	3.5025m	246.1462u	223.4524u	N/A	N/A
CF2	33.0795m	38.6261m	1.5870m	4.1925m	N/A	N/A
CF3	520.1712m	626.0063m	93.8589u	267.8013u	N/A	N/A
CF4	2.5731	2.7637	1.5264	1.5310	N/A	N/A

Note

N/A indicates not applicable

