

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 Full Copper	Case	Ambient MinimumCopper
RT1	20.4233	N/A	53.5448
RT2	15.9803	N/A	51.0048
RT3	32.1453	N/A	33.9452
RT4	30.8502	N/A	51.5052
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient Full Copper	Case	Ambient MinimumCopper
CT1	261.1441u	N/A	2.7788m
CT2	15.3700m	N/A	16.4391m
CT3	941.7499u	N/A	853.8860u
CT4	913.5979m	N/A	362.3960m

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 Full Copper	Case	Ambient MinimumCopper
RF1	20.5554	N/A	42.2220
RF2	37.2825	N/A	81.3292
RF3	11.6568	N/A	50.8547
RF4	29.9038	N/A	16.0036
THERMAL CAPACITANCE (Joules/°C)			
Junction to	Ambient Full Copper	Case	Ambient MinimumCopper
CF1	152.9755u	N/A	506.0148u
CF2	557.4849u	N/A	2.1583m
CF3	29.0393m	N/A	118.6626m
CF4	911.1634m	N/A	3.1115

Note

N/A indicates not applicable

