

# Heatsink mounted MMIC: Test of the time-step decoupling technique

## thermaltest

*Form:*

**thermaltest:**`<instance name> n1 n2 <parameter list>`

*n<sub>1</sub>* and *n<sub>2</sub>* are the element nodes.

*Parameters:*

Parameter	Type	Default value	Required?
ntimesteps: Number of time steps in transient simulation	INTEGER	0	no
dt: Length of thermal timestep (s)	DOUBLE	0	no
tambient: Constant heatsink mount temperature (K)	DOUBLE	300	no
time_d: Flag, if true, calculate in the time domain.	BOOLEAN	false	no
l: Die x-dimension in meters.	DOUBLE	0.0004	no
w: Die y-dimension in meters	DOUBLE	0.0004	no
d: Die z-dimension in meters.	DOUBLE	0.0004	no
xl: x-coordinate of left edge of heating element	DOUBLE	0.00022	no
xr: x-coordinate of right edge of heating element	DOUBLE	0.00018	no
yu: y-coordinate of upper edge of heating element	DOUBLE	0.00022	no
yd: y-coordinate of lower edge of heating element	DOUBLE	0.00018	no
ks: Thermal conductivity ( <i>W/m.K</i> )	DOUBLE	46	no
rho: Density ( <i>kg.m<sup>-3</sup></i> )	DOUBLE	5320	no
c: Specific heat ( <i>J/kg.K</i> )	DOUBLE	350	no
nfingers: Number of power transistor fingers	INTEGER	1	no
b: Exponent in power law temperature dependence of thermal conductivity	DOUBLE	1.22	no

*Example:*

```
thermaltest: test1 1 10 ntimesteps=nsteps dt=deltat tambient=temp time_d=1 l = 0.05
w = 0.05 d = 0.0016 xl = 0.04 xr = 0.01 yu = 0.04 yd = 0.01 ks = 0.294 rho = 1900
c = 1150 nfingers = 5
```

*Notes:*

There is no equivalent SPICE element.

*Version:*

2000.09.01

*Credits:*

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Links



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