Thermal Simulation Report

Date: Oct 7, 2011
Request # TMASA00255D

Device: 9S08PT16

Package: 32 7x7 LQFP
Pitch: 0.8 mm
Case Outline Number: 98ASH70029A
Leadframe Drawing: 17ASL00222A605
Die Size: 2.368x1.938 mm
Flag Size: 3.81x3.81 mm
Flag Style: Solid Flag

Table of Thermal Resistance Data

Rating			Value	Unit	Notes
Junction to Ambient Natural Convection	Single Layer board (1s)	$R_{\theta JA}$	88	°C/W	1,2
Junction to Ambient Natural Convection	Four layer board (2s2p)	$R_{\theta JA}$	59	°C/W	1,3
Junction to Ambient (@200 ft/min)	Single layer board (1s)	$R_{\theta JMA}$	74	°C/W	1,3
Junction to Ambient (@200 ft/min)	Four layer board (2s2p)	$R_{\theta JMA}$	52	°C/W	1,3
Junction to Board		$R_{\theta JB}$	35	°C/W	4
Junction to Case		$R_{\theta JC}$	26	°C/W	5
Junction to Package Top	Natural Convection	Ψ_{JT}	8	°C/W	6

Notes:

1. Junction temperature is a function of die size, on-chip power dissipation, package thermal resistance, mounting site (board) temperature, ambient temperature, air flow, power dissipation of other components on the board, and board thermal resistance.
2. Per JEDEC JESD51-2 with the single layer board (JESD51-3) horizontal.
3. Per JEDEC JESD51-6 with the board (JESD51-7) horizontal.
4. Thermal resistance between the die and the printed circuit board per JEDEC JESD51-8. Board temperature is measured on the top surface of the board near the package.
5. Thermal resistance between the die and the case top surface as measured by the cold plate method (MIL SPEC-883 Method 1012.1).
6. Thermal characterization parameter indicating the temperature difference between package top and the junction temperature per JEDEC JESD51-2. When Greek letters are not available, the thermal characterization parameter is written as Psi-JT.

Simulation Details
The 1/8 symmetry model included the following package parameters:
Leadframe material: Copper C7025
Leadframe overall thickness: 0.152 mm
Lead width: 0.35 mm
Flag to bond finger gap: 0.31 mm, Angle 0 degrees
Die Attach: 0.025 mm silver epoxy die attach CRM 1064MB, k = 1.5 W/m K
Mold Compound, CEL9200HF10M, k = 1.05 W/m K