Application Note

IMX6 Solid Run Products Thermal Analysis

Document rev 1.0

Documentation Revision History

Date	Owner	Approved	Revision	Notes
16-December-2014	Ohad Barany	Kossay Omary	1.0	Initial release

Introduction

This Application Note notes the thermal grades of SolidRun IMX6 products.

uSOM

Grade	Solid Run p/n	IMX6 CPU	DDR3	Ethernet PHY	Crystal	PWR Mngmnt	WiFi
Commercial	uSOM-i1 (solo Core)	C	C	I	I	I	C
	uSOM-i2 (dual- lite Core)	C	C	I	I	I	C
	usom-i2eX (dual core)	E	C	I	I	I	C
	usom-i4 (quad core)	E	C	I	I	I	C
Extended	uSOM-i1 (solo Core)	E	I	I	I	I	C
	uSOM-i2 (dual- lite Core)	E	I	I	I	I	C
	usom-i2eX (dual core)	E	I	I	I	I	C
	usom-i4 (quad core)	E	I	I	I	I	C
Industrial	uSOM-i1 (solo Core)	I	I	I	I	I	C
	uSOM-i2 (dual- lite Core)	I	I	I	I	I	C
	usom-i2eX (dual core)	I	I	I	I	I	C
	usom-i4 (quad core)	I	I	I	I	I	C
AutoMotive	uSOM-i1 (solo Core)	A	I	I	I	I	C
	uSOM-i2 (dual- lite Core)	A	I	I	I	I	C
	usom-i2eX (dual core)	A	I	I	I	I	C
	usom-i4 (quad core)	A	I	I	I	I	C

Legend:
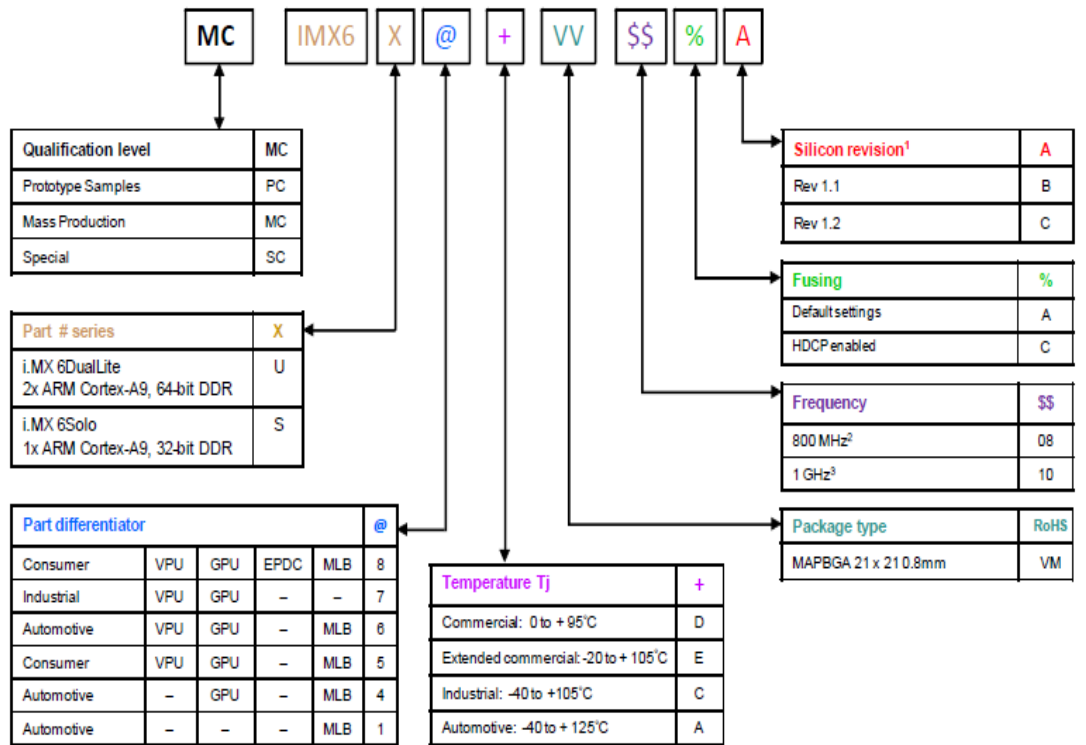
C= Commercial

E= Extended
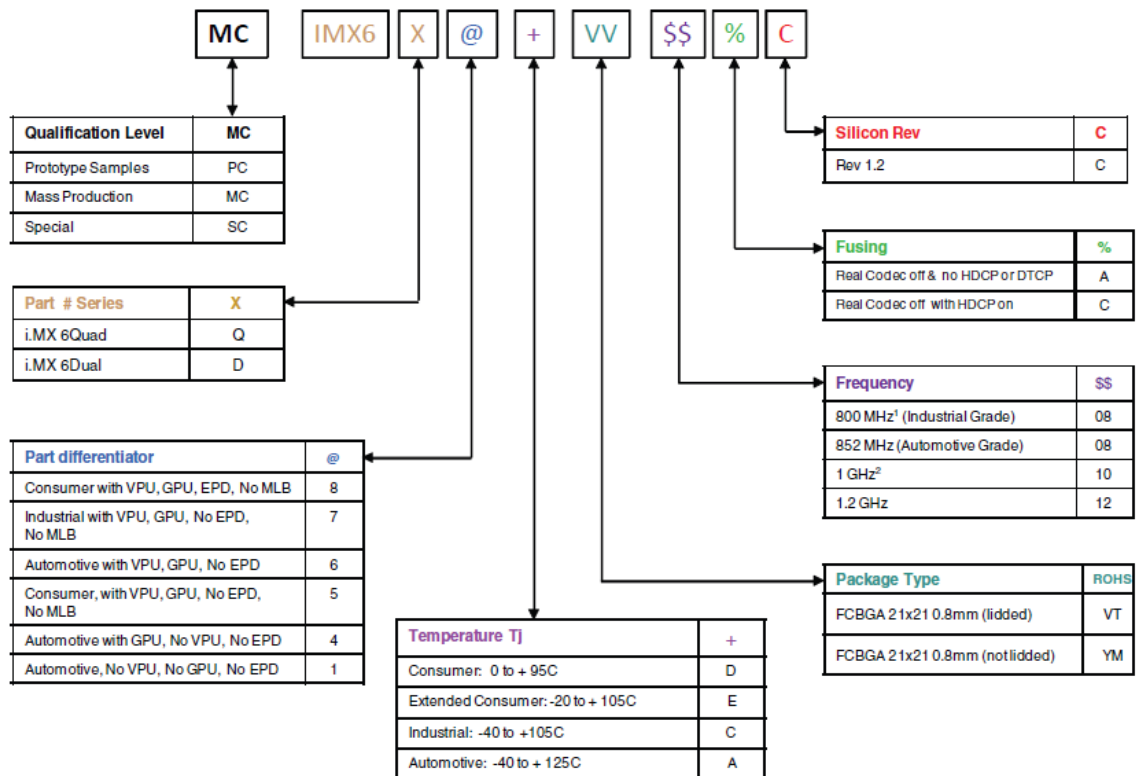
I= Industrial

A= Automotive

Comments:

1. The temperatures of the components (out of the CPU) are Operating Ta (ambient): Commercial: 0C-70C; Industrial: -40C-85C
2. The temperatures of the CPU are Operating Tj (Junction): Commercial: 0C-95C; Extended: -20C-105C; Industrial: -40C-105C; Automotive: -40C-125C.
3. All the uSOMs come with heatsink and thermal pad.

4. Please select the IMX6 CPU according to the below:

Dual Light & Solo

| MC | IMX6 | X | @ | + | VV | $$ | % | A |

Qualification level	MC
Prototype Samples	PC
Mass Production	MC
Special	SC

Part # series	X
i.MX 6DualLite 2x ARM Cortex-A9, 64-bit DDR	U
i.MX 6Solo 1x ARM Cortex-A9, 32-bit DDR	S

Part differentiator					@
Consumer	VPU	GPU	EPDC	MLB	8
Industrial	VPU	GPU	–	–	7
Automotive	VPU	GPU	–	MLB	6
Consumer	VPU	GPU	–	MLB	5
Automotive	–	GPU	–	MLB	4
Automotive	–	–	–	MLB	1

Temperature Tj	+
Commercial: 0 to + 95°C	D
Extended commercial: -20 to + 105°C	E
Industrial: -40 to +105°C	C
Automotive: -40 to + 125°C	A

Silicon revision[1]	A
Rev 1.1	B
Rev 1.2	C

Fusing	%
Default settings	A
HDCP enabled	C

Frequency	$$
800 MHz[2]	08
1 GHz[3]	10

Package type	RoHS
MAPBGA 21 x 21 0.8mm	VM

Quad & Dual

| MC | IMX6 | X | @ | + | VV | $$ | % | C |

Qualification Level

Qualification Level	MC
Prototype Samples	PC
Mass Production	MC
Special	SC

Part # Series	X
i.MX 6Quad	Q
i.MX 6Dual	D

Part differentiator	@
Consumer with VPU, GPU, EPD, No MLB	8
Industrial with VPU, GPU, No EPD, No MLB	7
Automotive with VPU, GPU, No EPD	6
Consumer, with VPU, GPU, No EPD, No MLB	5
Automotive with GPU, No VPU, No EPD	4
Automotive, No VPU, No GPU, No EPD	1

Temperature Tj	+
Consumer: 0 to + 95C	D
Extended Consumer: -20 to + 105C	E
Industrial: -40 to +105C	C
Automotive: -40 to + 125C	A

Silicon Rev	C
Rev 1.2	C

Fusing	%
Real Codec off & no HDCP or DTCP	A
Real Codec off with HDCP on	C

Frequency	$$
800 MHz[1] (Industrial Grade)	08
852 MHz (Automotive Grade)	08
1 GHz[2]	10
1.2 GHz	12

Package Type	ROHS
FCBGA 21x21 0.8mm (lidded)	VT
FCBGA 21x21 0.8mm (not lidded)	YM

HummingBoard

Grade	SolidRun p/n	USB HUB	Analog Audio	RTC
Commercial	HummingBoard- Basis	C	-	-
	HummingBoard- Pro	C	C	C
Industrial	HummingBoard- Basis	I	-	-
	HummingBoard- Pro	I	I	I

Legend:

C= Commercial

I= Industrial

Comments:

1. The temperatures of the components are Operating Ta (ambient):
   Commercial: 0C-70C; Industrial: -40C-85C

CuBOX-i

The ambient temperatures that the CuBOX-I supports are 0C-40C.