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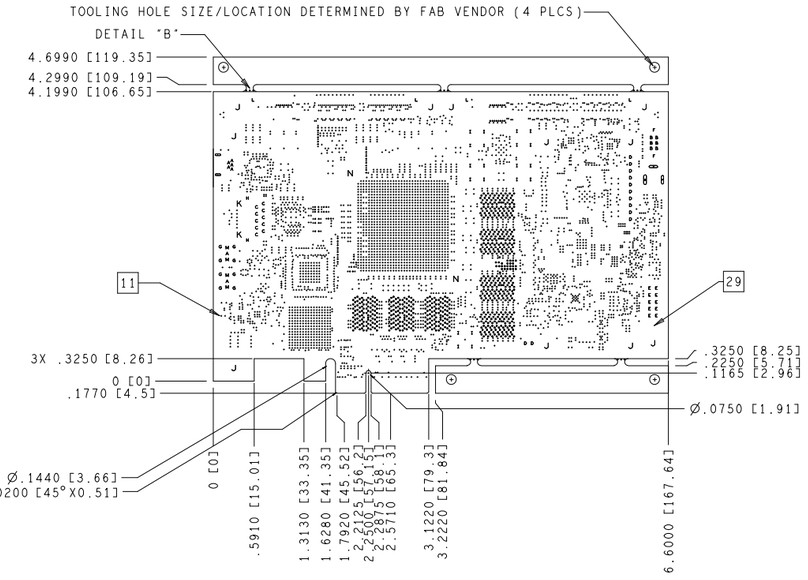
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

NOTES UNLESS OTHERWISE SPECIFIED:

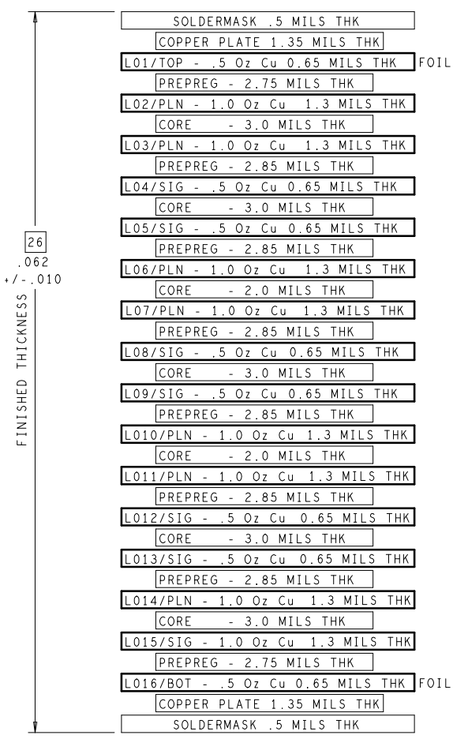
1. PCB VENDOR MUST NOTIFY RESPONSIBLE ALTERA PCB CONTACT OF ANY DISCREPANCIES FOUND BETWEEN FABRICATION DATA AND FABRICATION DRAWING NOTES.
2. THIS DRAWING IS VIEWED FROM THE PRIMARY OR TOP SIDE OF THE PCB.
3. FABRICATION OF THIS PCB SHALL BE IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS: IPC-6012 CLASS 2 (LATEST REVISION).
4. FABRICATION OF THIS PCB TO BE ACCEPTABLE TO IPC-A-600 CLASS 2 (LATEST REVISION).
5. ALL MATERIALS USED MUST BE RoHS COMPLIANT.
6. ALL DIMENSIONAL LIMITS APPLY AFTER PLATING OR PROCESSING.
7. TOLERANCES OF DATUM HOLE TO: BOARD EDGE LOCATIONS +/- 0.010
8. MATERIALS TO BE ISOLA 370HR. MIN. Tg OF 210 DEGREES C.
9. FLAME CLASS: UL 94V-0 & MUST MEET REQUIREMENTS OF UL796.
10. MANUFACTURER MUST BE UL RECOGNIZED TO PRODUCE THIS PRODUCT SUCH THAT IT MEETS 170 DEGREES CELSIUS MAXIMUM OPERATING TEMPERATURE (MOT).
11. THE FOLLOWING MUST BE MARKED OR ETCHED ON SECONDARY SIDE OF PCB IN AREA SHOWN:
    a) DATE CODE.
    b) UL RECOGNIZED VENDOR ID, UL TYPE DESIGNATION AND/OR MARKINGS WHICH REFLECT THE SPECIFIED FLAME CLASS AND MAXIMUM OPERATING TEMPERATURE RATINGS.
12. PCB VENDOR TO ENSURE ALL UNCONNECTED (NON-FUNCTIONAL) INTERNAL SIGNAL LAYER PADS AND VIAS ARE REMOVED.
13. HOLE/SLOT PLATING = 0.001 MIN. AVERAGE / 0.0008 ABSOLUTE MIN. UNLESS OTHERWISE SPECIFIED, ALL DRILL TABLE DIAMETERS ARE FINISHED HOLE SIZE.
14. A. THESE HOLES MUST BE FILLED USING NON-CONDUCTIVE EPOXY, CAPPED AND PLANARIZED.
15. AFTER REVIEWING FABRICATION DATA, PCB VENDOR MUST DISCUSS WHETHER COPPER THIEVING IS NECESSARY WITH THE RESPONSIBLE ALTERA PCB CONTACT. WHEN DETERMINED NECESSARY, A SPACING OF 100 MILS FROM ANY OTHER COPPER FEATURE ON THE BOARD MUST BE MAINTAINED.
16. SMEAR REMOVAL SHALL NOT ETCHBACK GREATER THAN 0.001.
17. FINISHED CONDUCTOR WIDTH NOT TO BE REDUCED MORE THAN 20% OF MINIMUM WIDTH FROM ARTWORK SUPPLIED. FINISHED CONDUCTOR SPACING NOT TO BE REDUCED MORE THAN 20% OF MINIMUM SPACING FROM ARTWORK SUPPLIED.
18. CONTACT FINGERS SHALL BE GOLD PLATED 30 MICRO INCHES OVER 200 MICRO INCHES NICKEL. EDGES AT CONTACT FINGERS ARE TO BE BEVELED BOTH SIDES 20 X .071.
19. SOLDER MASK IS LIQUID PHOTO IMAGEABLE AND IN ACCORDANCE WITH IPC-SM-840C CLASS T. FINISH MUST BE GREEN AND GLOSSY. REGISTRATION TO BE WITHIN +/- 0.003 OF ITS RESPECTIVE OUTER CIRCUIT LAYERS. VENDOR MAY ADJUST SOLDERMASK WHEREVER SOLDERMASK PADS ARE THE SAME SIZE (1:1) TO PROVIDE UP TO .003 MAXIMUM CLEARANCE FROM MASK TO PAD PROVIDED NO ADJACENT COPPER IS EXPOSED. NO "VIA TENTING/PLUGGING IS ALLOWED WITHOUT PRIOR CONSENT OF ALTERA.
20. PCB VENDOR TO ENSURE ALL VIAS ARE COMPLETELY FREE OF SOLDERMASK ON BOTTOM SIDE OF PCB WITH THE EXCEPTION OF VIAS UNDER COMPONENTS ON BOTTOM SIDE.
21. PCB FINISH BOTH SIDES TO BE ELECTROLESS NICKEL (Ni) FOLLOWED BY IMMERSION GOLD (AU) (ENIG) ACCEPTABLE TO IPC-4552.
22. REMOVE ALL SHARP EDGES AND BURRS 0.003" MAXIMUM.
23. SILKSCREEN USING WHITE NONCONDUCTIVE INK. NO INK TO APPEAR ON EXPOSED COPPER SUCH AS PLATED THROUGH HOLE PADS AND SURFACE MOUNT LANDS. INK ON SOLDER MASK COVERED PADS IS PERMISSIBLE. CLIPPING OF SILKSCREEN 0.008 MAX. FROM PADS IS PERMITTED.
24. BOW & TWIST SHALL BE DETERMINED BY PHYSICAL MEASUREMENT AND PERCENTAGE CALCULATION IN ACCORDANCE WITH IPC-TM-650, METHOD 2.4.22. BOW AND TWIST MAY NOT EXCEED 0.7%
25. 100% CONTINUITY AND ISOLATION ELECTRICAL TESTING PER CURRENT IPC TEST MAY NOT EXCEED 0.7%.
    METHODS REQUIRED FOR EVERY PCB. FINAL PCB TEST DATA MUST BE CROSS-REFERENCED TO IPC-D-356 FILE, NEUTRAL FILE OR NETLIST PROVIDED.
26. CONTROLLED IMPEDANCE TRACES ARE AS FOLLOWS. DESIGNATED WIDTHS ARE DEFINED FOR ALL LAYERS, BUT MAY NOT ACTUALLY EXIST ON STATED LAYERS.
    a) TOLERANCE ON ALL LINES, UNLESS OTHERWISE SPECIFIED +/- 10%
    b) SINGLE ENDED TRACES (.0043) -LYRS 1 & 16 TO BE 50 OHMS,
    c) SINGLE ENDED TRACES (.0042) -LYRS 1 & 16 TO BE 75 OHMS.
    d) SINGLE ENDED TRACES (.004) -LYRS 4 THRU 13 TO BE 50 OHMS.
    e) EDGE COUPLED TRACES (.004 -.016 CENTERS), LYR 1 & 16 TO BE 100 OHMS.
    f) EDGE COUPLED TRACES (.005 -.011 CENTERS), LYR 1 & 16 TO BE 85 OHMS.
    g) EDGE COUPLED TRACES (.004 -.015 CENTERS), LYR 4 THRU 13 TO BE 100 OHMS,
27. PCB VENDOR TO PROVIDE ONE TEST COUPON AND ONE CROSS SECTION PER LOT WITH SHIPMENT.
28. PCB VENDOR TO PROVIDE 2 SOLDER SAMPLES WITH FIRST SHIPMENT. SOLDER SAMPLE MARKINGS OR STICKERS CAN NOT BE ON PCB. A HANG TAG IS ACCEPTABLE.
29. VENDOR TO KEEP QUALITY CONTROL INK STAMPINGS AND VENDOR ETCH/SILK LOGOS ON BOTTOM OF PCB IN AREA SPECIFIED.
30. DETAILS NOT SPECIFIED ARE AT MANUFACTURER'S OPTION, HOWEVER FINAL APPROVAL MUST BE OBTAINED FROM ALTERA.

DRILL CHART: TOP to BOTTOM
ALL UNITS ARE IN MILS

	FIGURE	SIZE	TOLERANCE	PLATED	QTY
14-A	·	8.0	+3.0/-3.0	PLATED	4459
14-A	·	10.0	+3.0/-3.0	PLATED	696
	A	28.0	+3.0/-3.0	PLATED	7
	B	31.0	+3.0/-3.0	PLATED	6
	C	35.0	+3.0/-3.0	PLATED	10
	D	40.0	+3.0/-3.0	PLATED	12
	E	45.0	+3.0/-3.0	PLATED	10
	F	47.0	+3.0/-3.0	PLATED	2
	G	52.0	+3.0/-3.0	PLATED	8
	H	62.0	+3.0/-3.0	PLATED	2
	I	72.0	+3.0/-3.0	PLATED	20
	J	125.0	+3.0/-3.0	PLATED	11
	K	128.0	+3.0/-3.0	PLATED	2
	L	40.0	+3.0/-3.0	NON-PLATED	4
	M	75.0	+3.0/-3.0	NON-PLATED	4
	N	138.0	+3.0/-3.0	NON-PLATED	2
	O	74.8x27.56	+3.0/-3.0	PLATED	2
	OO	120.0x30.0	+3.0/-3.0	PLATED	1
	P	120.0x30.0	+3.0/-3.0	PLATED	1
	Q	140.0x40.0	+3.0/-3.0	PLATED	1

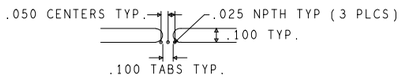


PRIMARY SIDE SHOWN



DETAIL A
SCALE: NONE
(CROSS SECTION)

DETAIL B
SCALE: NONE



			MATL 8	DWN Contractor26-FEB-13
			SPEC 3	CHKR
.	XX-XXX-XXXX			DSGN ENGR K. Swanson
DASH	NEXT ASSY	USED ON	FNSH 19 21 23	RELEASE
APPLICATION				
THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES IN ACCORDANCE WITH ANSI Y14.5. DRILL TOLERANCES ARE PER 10387		TOLERANCES: DEC .X ± / DEC .XX ± .01 / DEC .XXX ± .005 / DEC .XXXX ± .002 / FRACTIONS ± / ANGLES ± 1°	CONTRACT NO. XXXXXXXX

ALTERA
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9330 SCRANTON RD. #400
SAN DIEGO, CA 92121

TITLE: PCB FABRICATION CYCLONE V GT DEVELOPMENT KIT

SIZE	CAGE CODE	DWG NO.	REV
D	N/A	140-0321004-B1	B

SCALE: 1/1 SHEET 1 OF 1

REV DWG NO. B 140-0321004-B1