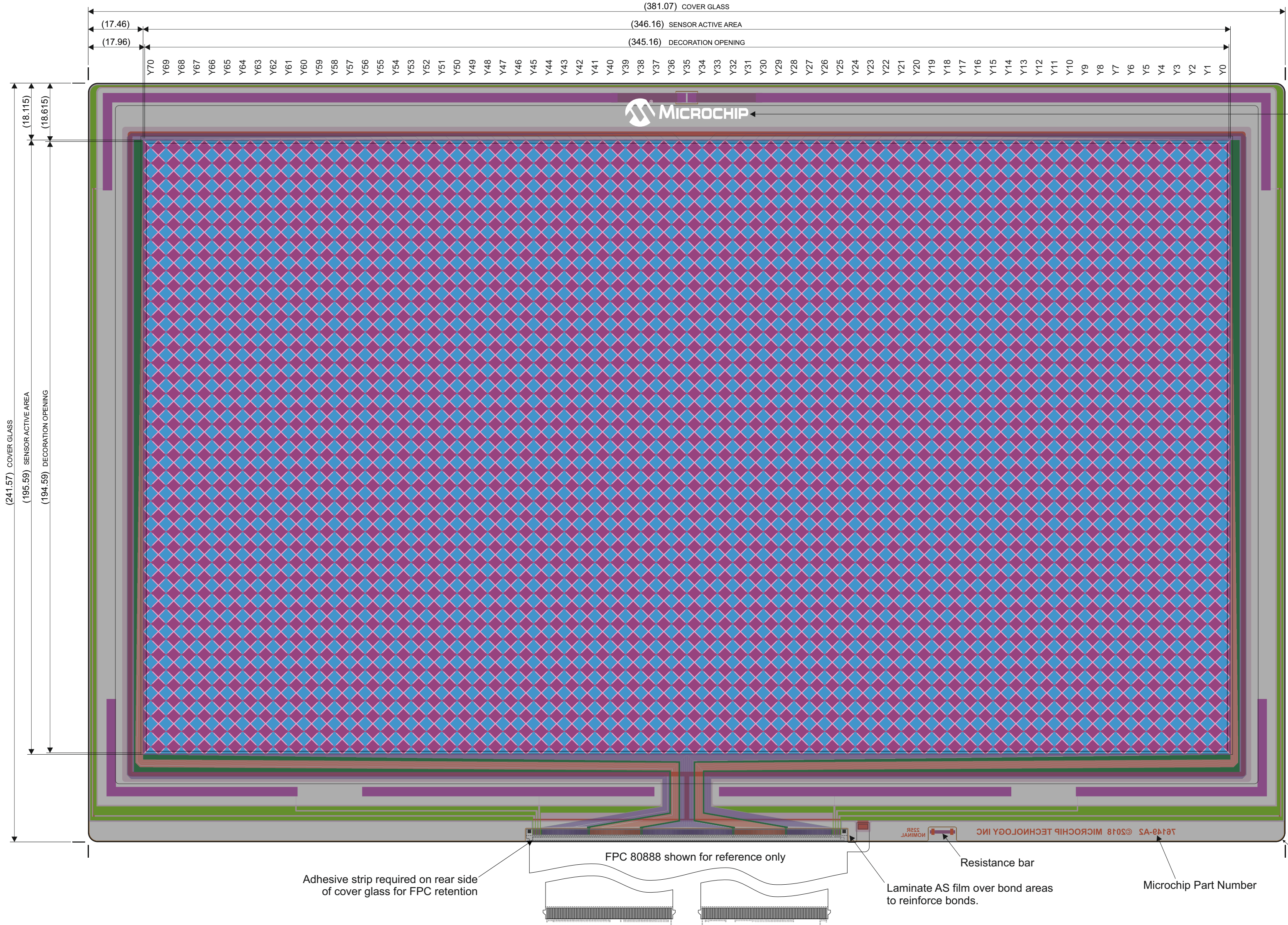


STRICTLY CONFIDENTIAL

SUBJECT TO NON-DISCLOSURE AGREEMENT
THIS DRAWING IS FOR SAMPLES & PROTOTYPES ONLY
TO BE ISSUED TO MICROCHIP APPROVED MANUFACTURERS ONLY



Microchip Logo to be solid white
White ink printed behind ITO block

Artwork drawn as viewed from Touch Side

Edges of cover glass to be polished
with no sharp corners

All dimensions are in millimeters.
If In Doubt Please Ask.

Layers (top to bottom)

- Cover glass
- ITO Pattern 55 ohm/sq
- Insulator
- Metal crossovers 0.4 ohm/sq
- Metal tracks 0.4 ohm/sq
- Protection layer
- OCA
- PET Film
- ITO Shield 75 ohm/sq
- Silver track 0.15 ohm/sq
- Anti-splinter film

Crossover Detail
insulator thickness = 1.25um
under track width = 70um
ITO resistance = 55±10 Ohm/sq
crossover track width = 12um
crossover metal track resistance = 0.4 Ohm/sq
crossover track resistive length = 200 um

Adhesive strip required on rear side
of cover glass for FPC retention

FPC 80888 shown for reference only

Laminate AS film over bond areas
to reinforce bonds.

Resistance bar

Microchip Part Number

Corner radius 3.00
4 positions

Touchscreen Build Stack

Material		Thickness (mm)
Cover Glass	Dragontrail glass	1.10
Decoration	Decoration print	0.02
ITO (X & Y)	ITO 55±10 Ohm/sq	-
Metal	Metal tracking 0.4 Ohm/sq	-
Insulator	Insulator	-
Metal Crossover	Metal Crossover 0.4 Ohm/sq	-
Protection Layer	Insulator	0.003
OCA	OCA	0.25
PET	PET film	0.125
Shield ITO	ITO 75±15 Ohm/sq	-
Silver	Silver tracking 0.15 Ohm/sq	-
ASF	Anti-splinter film	0.079
Touchscreen Thickness		1.577
Air gap	Air	0.3
Display Module	Display module	-
Hot Bar Bond Heatseal / ACF	Hot Bar Bond Heatseal / ACF	0.005
FPC Tail	FPC Tail	0.09

Preliminary Drawing
Not for Manufacture

All components and materials used must be RoHS compliant as described in European Parliament Directive 2002/95/EC

Title: 15.6" ITO on Glass TS Single Diamond G2 40X 71Y		Project: mXT2912TDAT
Number: 76149	CAD Check: Engr Check:	
Filename: 76149.cdr	Approved:	
Sheet 1 of 2	Drawn: P Cassidy	

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A2	Tracking errors corrected, centre Y block Y54 - Y61	N/A	PFC	7th Sept 2018
A1	Minor changes to metal tracking & ITO shield layers	N/A	PFC	6th Aug 2018
A0	First Issue	N/A	PFC	23rd July 2018
Iss	Notes	ECN	Drm	Date

	Material	Thickness	Specification	design rules
Main ITO	ITO	0.03um	55 Ohms/sq ± 10 Ohms	Minimum track / gap = 30um ± 10%
Insulator	Insulator	1.25um ± 0.25um	Er = 3.60	
Metal crossovers	Metal	0.3um	0.4 Ohms/sq ± 10%	Minimum track width 12um
Metal tracks	Metal	0.3um	0.4 Ohms/sq ± 10%	Minimum track / gap = 30um ± 10%
Protection Layer	Insulator	3um ± 0.25um	Er = 3.60	
OCA	Optically clear adhesive	0.25mm ± 10%	Er = 4.60	
PET	PET film	0.125mm ± 10%	Er = 3.00	
Shield ITO	ITO	0.03um	75 Ohms/sq ± 15 Ohms	
Silver tracks	Silver	8um ± 10%	0.15 Ohms/sq ± 10%	Minimum track width 500um
Anti-splinter film	PET/OCA	0.079mm ± 10%	Er = 3.00	
FPC interconnect	ACF / ACP / ACA	<20um	Pad contact resistance <1 Ohm, Peel strength >5N/cm	Pads 0.20 x 1.8mm on 0.4mm pitch
	Alignment Tolerances			
	Layer to Layer Alignment	± 15um		
	Print to Edge of Glass	± 200um		
	Metal to ITO	± 15um		
Assumptions				
Cover Glass	Dragontrail Glass or similar	1.10mm ± 10%	Er = 7.37	
Decoration	Black Pantone EC non-conductive ink Logo white non-conductive ink	20um ± 5um	Er = 3	
Airgap to display	Air	0.30mm ± 10%	Er = 1.01	
	Performance Calculations			
	Charge Time	2.73us		
	Worst case touch separation in X	10.96mm		
	Worst case touch separation in Y	9.70mm		
	Touch separation difference	1.27mm		

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