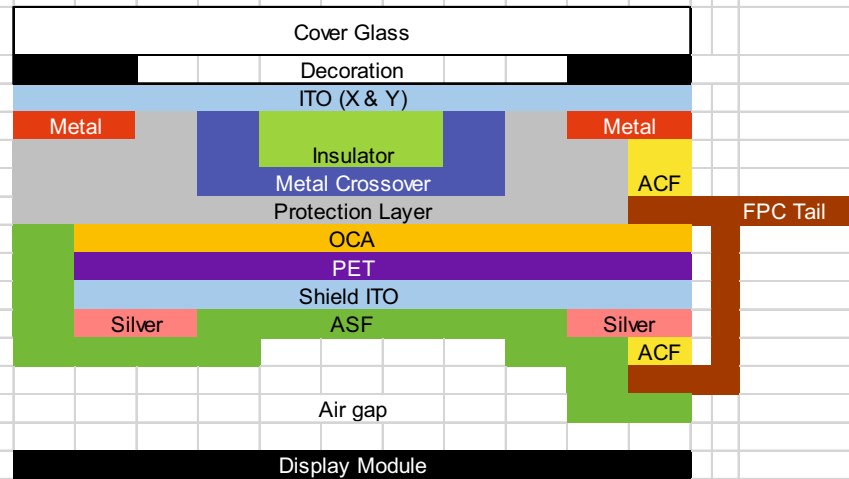


Touchscreen Build Stack		
		
Material	Thickness (mm)	
Dragontrail glass	1.10	
Decoration print	0.02	
ITO 55±10 Ohm/sq	-	
Metal tracking 0.4 Ohm/sq	-	
Insulator	-	
Metal Crossover 0.4 Ohm/sq	-	
Insulator	0.003	
OCA	0.25	
PET film	0.125	
ITO 75±15 Ohm/sq	-	
Silver tracking 0.15 Ohm/sq	-	
Anti-splinter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

Material Specifications				
	Material	Thickness	Specification	design rules
Main ITO	ITO	0.03um	55 Ohms/sq ± 15 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%	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		± 400um		
Metal to ITO		± 15um		
Assumptions				
Cover Glass	Gorilla Glass or similar	1.10mm ± 10%	Er = 7.37	
Decoration	Black Pantone EC non-conductive ink	20um ± 5um	Er = 3	
Gap to display	Air or OCA	0.30mm ± 10%	Er = 1.01 for air or ~3 for OCA	
Performance Calculations				
Max charge time @ 99.3% charge		1.82us		
Worst case touch separation in X		11.69mm		
Worst case touch separation in Y		9.63mm		

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 Ohm/sq ±10%

Crossover track width = 12um

Crossover metal track resistance = 0.4 Ohm/sq

Crossover track resistive length = 200 um

2	ITO shield layers added	N/A	PFC	18th Oct 2018
1	First Issue	N/A	YT	5th Sep 2018
Iss	Notes	ECN	Drn	Date

Title: 5" ITO on Glass TS Single Diamond G2 24Y 12X		Project: mXT288UD	
Number: 76200		CAD Check:	Engr Check:
Filename: 76200.cdr		Approved:	
Sheet 1 of 1	Drawn: Yona Tsai		

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