

## Quarterly Reliability Monitoring Results

Quarters: Q1/2020 to Q4/2020

Based on structural similarity

Supplier	User Part Number					
Nexperia B.V.	IP3319CX6					
Name of Laboratory	Part Description					
Assembly reliability labs	NXP ICN8 WLCSP package Protection INDI					
Test	Test Conditions	Duration	# Lots	# Quantity	# Rejects	
# 1	<b>TEST</b> Pre- and Post-Stress Electrical Test Tamb = 25 °C	N/A	see below	all parts	see below	
# 5	<b>HTRB</b> High Temperature Reverse Bias MIL-STD-750-1 M1038 Method A Tj = Tjmax, Vr = 100% of max. datasheet reverse voltage	1000 hours	48	3840	0	
# 7	<b>TC</b> Temperature Cycling JESD22-A104 -40 °C to 125°C	1000 cycles	20	1600	0	
# 8	<b>AC</b> Autoclave JESD22-A102 Tamb = 121 °C, RH = 100 % Pressure = 205 kPa (29.7 psia)	96 hours	n.a.	n.a.	n.a.	
# 9	<b>HAST</b> Highly Accelerated Stress Test JESD22-A110 Tamb = 130 °C, RH = 85%, VR > 80 % of rated reverse voltage	1000 hours	20	1600	0	
# 10	<b>IOL</b> Intermittent Operating Life MIL-STD-750 Method 1037 ton = toff, devices powered to insure ΔTj = 100 °C for 15000 cycles	1000 hours	n.a.	n.a.	n.a.	
# 20	<b>RSH</b> Resistance to Solder Heat JESD22-A111 260 °C ± 5 °C	10 s	n.a.	n.a.	n.a.	
# 21	<b>SD</b> Solderability J-STD-002 Test method B and D		n.a.	n.a.	n.a.	

### Calculation of FIT and MTTF

Test considered for FIT calculation: High Temperature Reverse Bias (HTRB, Test # 5)

Confidence level 60%, derated to 55 °C, activation energy 0.7 eV, test time 168 to 1000 hours

Wafer Fab	Technology	Quantity	Rejects	Failure Rate (FIT)	MTTF (hrs)
NXP ICN8	Protection INDI	3840	0	1,1	9,04E+08

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