

[illegible]

B99 - SS Transistor

WSTS Semiconductor Forecast

B99 - SS Transistor

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[illegible]

IGBT PwrTr

2020	
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21	2022	2023
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MOSFET PwrTr	
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2020	
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2021	2022	2023
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Rectifier

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Other Discrete	
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2020	
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2021	2022	2023
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S3 - Discrete Total

WSTS Semiconductor Forecast

S3 - Discrete Total

Discrete Total Code S3	2018 Total	2019 Total	2020					2020 Total	2021					2021 Total	2022 Total	2023 Total
			Q1	Q2	Q3	Q4			Q1	Q2	Q3	Q4				
Amer - \$M	2260.8	2381.6	544.6	474.5	531.8	521.9	2072.8	532.1	549.9	575.2	558.4	2215.6	2293.9	2358.2		
3/3 % \$	22.7	5.3	-0.3	-12.9	12.1	-1.9	-13.0	2.0	3.3	4.6	-2.9	6.9	3.5	2.8		
% of World	9.4	10.0	9.5	8.5	8.6	8.5	8.8	8.7	8.7	8.8	8.8	8.8	8.8	8.7		
Europe - \$M	4303.8	4315.9	1039.7	789.5	992.8	983.1	3805.1	1033.2	1064.5	1076.5	1041.4	4215.6	4392.4	4534.9		
3/3 % \$	14.5	0.3	6.9	-24.1	25.8	-1.0	-11.8	5.1	3.0	1.1	-3.3	10.8	4.2	3.2		
% of World	17.9	18.1	18.2	14.1	16.1	16.1	16.1	16.8	16.8	16.5	16.4	16.7	16.8	16.8		
Japan - \$M	3410.4	3498.9	895.2	826.3	838.4	840.4	3400.3	845.6	868.0	884.2	872.4	3470.2	3597.8	3712.9		
3/3 % \$	7.4	2.6	-0.2	-7.7	1.5	0.2	-2.8	0.6	2.7	1.9	-1.3	2.1	3.7	3.2		
% of World	14.1	14.7	15.6	14.8	13.6	13.8	14.4	13.8	13.7	13.6	13.8	13.7	13.7	13.7		
JPN - ¥100M	3764.7	3810.4	976.8	889.3	890.1	892.2	3648.4	897.7	921.5	938.7	926.2	3684.1	3819.5	3941.8		
3/3 % ¥	5.7	1.2	0.1	-9.0	0.1	0.2	-4.3	0.6	2.7	1.9	-1.3	1.0	3.7	3.2		
Asia Pac - \$M	14126.8	13684.2	3241.8	3498.4	3814.9	3760.2	14315.3	3721.5	3835.5	3975.2	3858.7	15390.9	15884.4	16429.4		
3/3 % \$	9.7	-3.1	-5.5	7.9	9.0	-1.4	4.6	-1.0	3.1	3.6	-2.9	7.5	3.2	3.4		
% of World	58.6	57.3	56.7	62.6	61.8	61.6	60.7	60.7	60.7	61.1	61.0	60.9	60.7	60.8		
World - \$M	24101.8	23880.6	5721.2	5588.6	6178.0	6105.6	23593.4	6132.5	6317.8	6511.1	6330.8	25292.3	26168.5	27035.4		
3/3 % \$	11.3	-0.9	-2.1	-2.3	10.5	-1.2	-1.2	0.4	3.0	3.1	-2.8	7.2	3.5	3.3		
A99 - Diode	3146.5	2794.5	664.6	625.2	698.5	689.2	2677.5	684.8	704.0	738.5	716.4	2843.6	2919.8	2984.9		
3/3 % \$	6.8	-11.2	-3.7	-5.9	11.7	-1.3	-4.2	-0.6	2.8	4.9	-3.0	6.2	2.7	2.2		
B99 - SS Transistor	2113.1	1967.5	480.6	443.8	496.5	495.7	1916.6	496.1	508.6	527.5	514.4	2046.7	2077.7	2123.0		
3/3 % \$	7.5	-6.9	-1.9	-7.6	11.9	-0.2	-2.6	0.1	2.5	3.7	-2.5	6.8	1.5	2.2		
C99 - Pwr Transist	14445.4	15108.8	3579.8	3536.7	3918.6	3868.8	14904.0	3899.2	4022.6	4132.6	4013.3	16067.8	16719.6	17377.4		
3/3 % \$	14.4	4.6	-2.4	-1.2	10.8	-1.3	-1.4	0.8	3.2	2.7	-2.9	7.8	4.1	3.9		
D99 - Rectifier	3463.1	3208.7	814.5	769.1	842.9	837.7	3264.2	841.4	862.2	889.2	868.5	3461.4	3551.9	3631.3		
3/3 % \$	6.2	-7.3	0.7	-5.6	9.6	-0.6	1.7	0.4	2.5	3.1	-2.3	6.0	2.6	2.2		
E99 - Thyristor	779.0	660.7	139.2	168.5	176.2	168.2	652.1	165.9	173.7	174.8	169.2	683.6	703.5	716.7		
3/3 % \$	8.4	-15.2	-5.6	21.0	4.5	-4.5	-1.3	-1.3	4.7	0.6	-3.2	4.8	2.9	1.9		
G99 - Other Discrete	154.8	140.3	42.5	45.4	45.3	45.9	179.1	45.0	46.7	48.5	49.0	189.2	196.0	202.1		
3/3 % \$	18.6	-9.3	6.8	6.7	-0.2	1.4	27.6	-2.0	3.7	4.0	1.0	5.6	3.6	3.1		
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F99 - Optoelectronics

WSTS Semiconductor Forecast

F99 - Optoelectronics

Optoelectronics Code F99	2018 Total	2019 Total	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2020 Total	2021 Q1	2021 Q2	2021 Q3	2021 Q4	2021 Total	2022 Total	2023 Total
Amer - \$M	6099.7	6170.8	1492.2	1394.1	1953.1	1985.9	6825.3	1666.7	1792.8	2022.1	1991.2	7472.8	7867.6	8273.6
3/3 % \$	-2.1	1.2	-19.1	-6.6	40.1	1.7	10.6	-16.1	7.6	12.8	-1.5	9.5	5.3	5.2
% of World	16.0	14.8	15.3	15.9	18.1	17.8	16.9	15.8	16.5	17.4	17.2	16.7	16.7	16.7
Europe - \$M	3088.5	3344.6	877.7	689.8	798.4	820.6	3186.6	840.0	848.5	879.9	871.7	3440.0	3615.3	3767.4
3/3 % \$	7.3	8.3	6.0	-21.4	15.8	2.8	-4.7	2.4	1.0	3.7	-0.9	8.0	5.1	4.2
% of World	8.1	8.0	9.0	7.9	7.4	7.4	7.9	8.0	7.8	7.6	7.5	7.7	7.7	7.6
Japan - \$M	5474.4	5085.6	1185.6	1120.3	1023.0	1061.3	4390.2	1098.4	1101.3	1165.0	1159.5	4524.3	4673.4	4866.3
3/3 % \$	-4.6	-7.1	-5.8	-5.5	-8.7	3.7	-13.7	3.5	0.3	5.8	-0.5	3.1	3.3	4.1
% of World	14.4	12.2	12.2	12.8	9.5	9.5	10.8	10.4	10.2	10.0	10.0	10.1	9.9	9.8
JPN - ¥100M	6043.7	5539.2	1293.6	1205.8	1086.0	1126.7	4712.2	1166.1	1169.2	1236.8	1231.0	4803.1	4961.4	5166.2
3/3 % ¥	-6.1	-8.3	-5.6	-6.8	-9.9	3.7	-14.9	3.5	0.3	5.8	-0.5	1.9	3.3	4.1
Asia Pac - \$M	23369.8	26960.0	6200.3	5576.1	7014.1	7288.1	26078.6	6957.6	7093.0	7576.2	7564.4	29191.2	30980.4	32752.0
3/3 % \$	17.0	15.4	-17.4	-10.1	25.8	3.9	-3.3	-4.5	1.9	6.8	-0.2	11.9	6.1	5.7
% of World	61.4	64.9	63.6	63.5	65.0	65.3	64.4	65.9	65.5	65.1	65.3	65.4	65.7	66.0
World - \$M	38032.3	41561.0	9755.9	8780.3	10788.6	11156.0	40480.7	10562.7	10835.7	11643.2	11586.8	44628.3	47136.7	49659.2
3/3 % \$	9.2	9.3	-14.7	-10.0	22.9	3.4	-2.6	-5.3	2.6	7.5	-0.5	10.2	5.6	5.4
F1 - Display	324.9	347.3	87.2	65.9	66.5	67.5	287.2	70.1	69.9	71.3	71.4	282.6	283.4	281.8
3/3 % \$	-2.8	6.9	-3.8	-24.5	1.0	1.5	-17.3	3.8	-0.4	2.1	0.1	-1.6	0.3	-0.6
F10 - LIGHT SENSOR	1118.9	1985.8	387.7	251.4	409.7	491.2	1540.0	418.2	425.8	515.5	525.7	1885.2	2123.9	2354.5
3/3 % \$	41.8	77.5	-37.2	-35.1	63.0	19.9	-22.4	-14.9	1.8	21.1	2.0	22.4	12.7	10.9
F2 - Lamp	13193.7	12539.8	2864.7	2760.4	2869.7	2936.1	11430.9	2945.1	3018.4	3045.3	3017.5	12026.4	12326.4	12617.6
3/3 % \$	11.2	-5.0	-9.0	-3.6	4.0	2.3	-8.8	0.3	2.5	0.9	-0.9	5.2	2.5	2.4
F3 - Coupler	1646.3	1517.0	377.4	347.3	408.3	394.9	1527.8	397.8	408.4	418.8	406.2	1631.2	1666.4	1689.6
3/3 % \$	7.7	-7.9	0.4	-8.0	17.6	-3.3	0.7	0.7	2.7	2.6	-3.0	6.8	2.2	1.4
F5 - Image_Sensor	15477.2	19323.0	4574.3	3935.8	5515.8	5774.2	19800.0	5211.7	5364.8	6003.9	6006.9	22587.3	24333.4	26128.9
3/3 % \$	11.6	24.8	-20.4	-14.0	40.1	4.7	2.5	-9.7	2.9	11.9	0.0	14.1	7.7	7.4
F6 - Oth_Opto	3112.2	2415.2	549.4	563.3	599.3	594.1	2306.1	588.8	600.8	600.1	602.8	2392.5	2413.2	2422.9
3/3 % \$	-13.7	-22.4	-7.1	2.5	6.4	-0.9	-4.5	-0.9	2.0	-0.1	0.5	3.7	0.9	0.4
F7 - Infrared	1107.0	1045.5	251.1	218.7	230.4	230.4	930.6	234.5	244.9	250.8	246.0	976.2	1009.6	1039.4
3/3 % \$	28.2	-5.6	-2.1	-12.9	5.4	0.0	-11.0	1.8	4.5	2.4	-1.9	4.9	3.4	3.0
F8 - Lsr_Pickup	341.6	499.2	141.3	149.1	162.9	154.2	607.5	157.3	163.6	168.9	159.8	649.6	675.4	701.9
3/3 % \$	-10.2	46.2	5.0	5.6	9.2	-5.3	21.7	2.0	4.0	3.2	-5.4	6.9	4.0	3.9
F9 - Lsr_Transmitter	1710.4	1888.1	522.8	488.3	526.0	513.3	2050.4	539.2	539.0	568.5	550.5	2197.1	2305.0	2422.5
3/3 % \$	8.0	10.4	9.8	-6.6	7.7	-2.4	8.6	5.0	0.0	5.5	-3.2	7.2	4.9	5.1
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H99 - Sensors

WSTS Semiconductor Forecast

H99 - Sensors

Sensors Code H99	2018 Total	2019 Total	2020				2020 Total	2021				2021 Total	2022 Total	2023 Total
			Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4			
Amer - \$M	1250.1	1222.3	306.8	242.6	327.6	318.3	1195.3	332.8	315.8	325.7	314.8	1289.1	1342.7	1386.1
3/3 % \$	19.0	-2.2	10.0	-20.9	35.1	-2.8	-2.2	4.6	-5.1	3.1	-3.3	7.8	4.2	3.2
% of World	9.4	9.0	9.0	7.2	8.4	8.3	8.2	8.8	8.1	8.0	8.1	8.2	8.2	8.1
Europe - \$M	2387.4	2642.6	789.7	502.0	504.0	538.0	2333.7	604.9	612.4	588.7	549.3	2355.3	2447.8	2547.4
3/3 % \$	4.1	10.7	11.3	-36.4	0.4	6.7	-11.7	12.4	1.2	-3.9	-6.7	0.9	3.9	4.1
% of World	17.9	19.6	23.2	14.8	12.9	14.0	16.1	16.0	15.7	14.5	14.1	15.1	15.0	14.9
Japan - \$M	2217.6	2538.7	635.1	579.2	534.0	561.6	2310.0	560.8	559.8	580.2	546.9	2247.7	2348.3	2447.6
3/3 % \$	14.7	14.5	4.6	-8.8	-7.8	5.2	-9.0	-0.1	-0.2	3.6	-5.7	-2.7	4.5	4.2
% of World	16.6	18.8	18.7	17.1	13.7	14.7	15.9	14.8	14.4	14.3	14.0	14.4	14.3	14.3
JPN - ¥100M	2450.6	2765.5	693.0	623.4	566.9	596.2	2479.6	595.4	594.3	615.9	580.6	2386.3	2493.0	2598.4
3/3 % ¥	13.0	12.8	4.9	-10.0	-9.1	5.2	-10.3	-0.1	-0.2	3.6	-5.7	-3.8	4.5	4.2
Asia Pac - \$M	7500.9	7107.6	1671.2	2057.7	2535.6	2411.1	8675.6	2286.6	2404.1	2561.6	2497.6	9749.9	10231.3	10685.6
3/3 % \$	2.8	-5.2	-5.2	23.1	23.2	-4.9	22.1	-5.2	5.1	6.6	-2.5	12.4	4.9	4.4
% of World	56.2	52.6	49.1	60.9	65.0	63.0	59.8	60.4	61.8	63.2	63.9	62.3	62.5	62.6
World - \$M	13356.0	13511.0	3402.8	3381.6	3901.3	3829.0	14514.6	3785.1	3892.1	4056.2	3908.6	15642.0	16370.1	17066.7
3/3 % \$	6.2	1.2	1.3	-0.6	15.4	-1.9	7.4	-1.1	2.8	4.2	-3.6	7.8	4.7	4.3
H1 - Temperature & I	1570.4	1616.7	559.7	523.2	431.0	428.7	1942.6	468.8	486.2	506.4	500.0	1961.4	2120.8	2228.0
3/3 % \$	24.1	2.9	41.1	-6.5	-17.6	-0.5	20.2	9.4	3.7	4.2	-1.3	1.0	8.1	5.1
H2 - Pressure	2358.1	2540.7	595.1	528.6	711.8	711.3	2546.7	685.2	687.7	743.0	708.5	2824.4	2951.8	3074.7
3/3 % \$	13.0	7.7	-10.3	-11.2	34.7	-0.1	0.2	-3.7	0.4	8.0	-4.7	10.9	4.5	4.2
H3 - Acceleration	2964.6	2961.7	658.7	548.4	787.4	791.9	2786.4	751.0	755.0	798.5	781.2	3085.7	3183.4	3274.0
3/3 % \$	3.1	-0.1	-10.8	-16.8	43.6	0.6	-5.9	-5.2	0.5	5.8	-2.2	10.7	3.2	2.8
H4 - Magnetic	1837.6	1822.1	500.2	410.4	404.8	417.9	1733.3	435.1	443.1	449.8	445.4	1773.4	1827.5	1882.2
3/3 % \$	3.8	-0.8	11.0	-18.0	-1.4	3.2	-4.9	4.1	1.8	1.5	-1.0	2.3	3.1	3.0
H6 - Actuator	4625.3	4569.8	1089.1	1371.0	1566.2	1479.2	5505.6	1444.9	1520.1	1558.4	1473.6	5997.0	6286.7	6607.8
3/3 % \$	1.1	-1.2	-1.8	25.9	14.2	-5.6	20.5	-2.3	5.2	2.5	-5.4	8.9	4.8	5.1
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J99 - Analog

J99 - Analog

GP Analog

2020	
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2022	
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App Spec Analog Code JA	
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Q4	2020 Total	Q1	Q2
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2021 Total	2022 Total	2023 Total
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Communic Analog Code JD
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	2020
Q4	Total

2021	2022	2023
Total	Total	Total

Communic Analog Code JD	2018 Total	2019 Total	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2020 Total	2021 Q1	2021 Q2	2021 Q3	2021 Q4	2021 Total	2022 Total	2023 Total
Amer - \$M	2417.2	2078.4	621.2	729.4	880.7	877.5	3108.9	836.7	815.9	889.8	886.3	3428.7	3521.4	3568.3
3/3 % \$	-17.2	-14.0	9.4	17.4	20.7	-0.4	49.6	-4.7	-2.5	9.1	-0.4	10.3	2.7	1.3
% of World	13.7	13.6	16.7	20.3	20.9	20.2	19.6	19.7	19.9	20.1	19.4	19.8	19.5	19.2
Europe - \$M	1779.2	1378.4	227.0	164.1	198.2	208.7	797.9	206.3	195.9	204.0	216.5	822.8	850.0	865.4
3/3 % \$	44.9	-22.5	-27.6	-27.7	20.8	5.3	-42.1	-1.2	-5.0	4.1	6.1	3.1	3.3	1.8
% of World	10.1	9.0	6.1	4.6	4.7	4.8	5.0	4.9	4.8	4.6	4.7	4.7	4.7	4.7
Japan - \$M	1189.6	981.0	215.5	152.3	172.1	177.9	717.8	177.2	170.3	181.0	187.2	715.8	738.4	751.5
3/3 % \$	51.1	-17.5	-13.2	-29.4	13.0	3.4	-26.8	-0.4	-3.9	6.2	3.5	-0.3	3.2	1.8
% of World	6.8	6.4	5.8	4.2	4.1	4.1	4.5	4.2	4.2	4.1	4.1	4.1	4.1	4.0
JPN - ¥100M	1313.1	1068.4	235.2	163.9	182.7	188.9	770.6	188.2	180.8	192.1	198.8	759.9	783.9	797.9
3/3 % ¥	48.7	-18.6	-13.0	-30.3	11.5	3.4	-27.9	-0.4	-3.9	6.2	3.5	-1.4	3.2	1.8
Asia Pac - \$M	12232.2	10838.8	2662.0	2554.7	2968.6	3071.2	11256.6	3021.8	2912.2	3161.3	3275.8	12371.1	12977.5	13375.4
3/3 % \$	15.5	-11.4	-2.5	-4.0	16.2	3.5	3.9	-1.6	-3.6	8.6	3.6	9.9	4.9	3.1
% of World	69.4	71.0	71.4	71.0	70.4	70.8	70.9	71.2	71.1	71.3	71.7	71.4	71.7	72.1
World - \$M	17618.2	15276.7	3725.7	3600.5	4219.6	4335.4	15881.2	4242.0	4094.4	4436.0	4565.9	17338.4	18087.3	18560.6
3/3 % \$	13.5	-13.3	-3.5	-3.4	17.2	2.7	4.0	-2.2	-3.5	8.3	2.9	9.2	4.3	2.6
JDa - Cell Phone	12317.2	9639.8	2425.4	2117.8	2463.8	2560.7	9567.7	2525.1	2371.0	2579.2	2677.8	10153.2	10475.3	10606.4
3/3 % \$	17.5	-21.7	-1.7	-12.7	16.3	3.9	-0.7	-1.4	-6.1	8.8	3.8	6.1	3.2	1.3
JDb - Infrastructure	958.9	1166.0	297.9	289.2	371.5	374.2	1332.7	391.5	391.6	413.2	423.5	1619.9	1763.9	1891.8
3/3 % \$	19.1	21.6	1.0	-2.9	28.5	0.7	14.3	4.6	0.0	5.5	2.5	21.5	8.9	7.3
JDc - Short Range	2142.9	2210.9	512.3	522.5	699.1	708.7	2442.6	648.0	657.6	736.3	746.0	2787.9	2951.7	3065.3
3/3 % \$	-0.5	3.2	-13.7	2.0	33.8	1.4	10.5	-8.6	1.5	12.0	1.3	14.1	5.9	3.9
JDd - Oth Wireless	606.9	875.0	156.8	253.7	241.8	243.0	895.2	241.3	253.5	270.4	270.7			

Automotive Analog	2
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2020	
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2021	2022	2023
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[illegible]

Industry Analog	
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2020	
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2021	2022	2023
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[illegible]

MOS Micro
Code P99

2020			
Q4	Total	Q1	Q2

2021	2022	2023
Total	Total	Total

[illegible]

P1 - MOS MPU

WSTS Semiconductor Forecast

P1 - MOS MPU

[illegible]

[illegible]

[illegible]

L99 - MOS Logic

WSTS Semiconductor Forecast

L99 - MOS Logic

[illegible]

MOS Std Logic	2018	2019	2020				2020	2021				2021	2022	2023
Code LS	Total	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Total	Total
Amer - \$M	4072.3	4193.9	1000.0	914.9	963.3	972.1	3850.3	981.5	990.6	1034.0	1032.3	4038.5	4141.5	4289.7
3/3 % \$	23.5	3.0	12.0	-8.5	5.3	0.9	-8.2	1.0	0.9	4.4	-0.2	4.9	2.6	3.6
% of World	17.9	17.4	16.8	16.1	14.8	15.1	15.7	15.3	15.2	15.2	15.1	15.2	15.1	15.0
Europe - \$M	2966.9	2584.8	571.7	462.1	528.5	522.5	2084.8	534.4	540.3	553.2	559.3	2187.2	2213.1	2281.7
3/3 % \$	30.7	-12.9	15.3	-19.2	14.4	-1.1	-19.3	2.3	1.1	2.4	1.1	4.9	1.2	3.1
% of World	13.0	10.7	9.6	8.2	8.1	8.1	8.5	8.3	8.3	8.1	8.2	8.2	8.1	8.0
Japan - \$M	2305.5	2073.1	486.1	522.2	489.7	487.6	1985.6	487.3	501.1	523.1	523.7	2035.2	2095.9	2157.8
3/3 % \$	-1.4	-10.1	-3.4	7.4	-6.2	-0.4	-4.2	-0.1	2.8	4.4	0.1	2.5	3.0	3.0
% of World	10.1	8.6	8.2	9.2	7.5	7.6	8.1	7.6	7.7	7.7	7.7	7.7	7.7	7.5
JPN - ¥100M	2546.1	2259.8	530.4	562.0	519.9	517.6	2130.0	517.4	532.0	555.3	556.0	2160.7	2225.1	2290.8
3/3 % ¥	-3.0	-11.2	-3.2	6.0	-7.5	-0.4	-5.7	-0.1	2.8	4.4	0.1	1.4	3.0	3.0
Asia Pac - \$M	13406.6	15295.3	3876.9	3768.2	4529.2	4475.6	16649.9	4415.0	4465.3	4691.2	4715.3	18286.8	18939.6	19893.1
3/3 % \$	-3.0	14.1	-5.0	-2.8	20.2	-1.2	8.9	-1.4	1.1	5.1	0.5	9.8	3.6	5.0
% of World	58.9	63.3	65.3	66.5	69.6	69.3	67.8	68.8	68.7	69.0	69.0	68.9	69.1	69.5
World - \$M	22751.3	24147.1	5934.7	5667.4	6510.6	6457.8	24570.5	6418.3	6497.4	6801.5	6830.6	26547.7	27390.2	28622.3
3/3 % \$	4.7	6.1	-0.6	-4.5	14.9	-0.8	1.8	-0.6	1.2	4.7	0.4	8.0	3.2	4.5
L1 - Bipolar Digital	59.1	51.1	13.1	17.2	15.6	14.4	60.3	14.1	15.1	14.6	14.1	58.0	54.9	53.7
3/3 % \$	6.9	-13.5	5.3	30.6	-9.2	-7.5	18.0	-1.9	6.5	-3.0	-3.2	-3.9	-5.3	-2.2
L2a - MOS GP Logic	1447.4	1204.9	288.6	303.8	309.6	297.0	1199.1	285.7	303.7	315.1	300.5	1205.0	1186.6	1185.3
3/3 % \$	-12.8	-16.8	-4.5	5.3	1.9	-4.1	-0.5	-3.8	6.3	3.8	-4.6	0.5	-1.5	-0.1
L2b - MOS Gate Arra	75.3	67.0	17.3	23.5	22.5	20.9	84.2	20.1	22.0	20.7	19.6	82.4	76.9	75.3
3/3 % \$	-13.4	-10.9	-7.3	35.6	-4.1	-7.5	25.6	-3.7	9.8	-6.2	-5.4	-2.2	-6.6	-2.0
L2c - MOS Std Cell, f	12099.1	13509.9	3211.7	3205.8	3324.0	3337.5	13079.0	3397.5	3445.8	3584.3	3586.8	14014.5	14412.9	14991.6
3/3 % \$	12.1	11.7	-7.7	-0.2	3.7	0.4	-3.2	1.8	1.4	4.0	0.1	7.2	2.8	4.0
L3 - MOS Display Dri	5821.5	6261.6	1632.7	1349.3	1949.8	1916.4	6848.2	1858.4	1862.5	1996.8	2026.5	7744.2	8120.3	8711.2
3/3 % \$	-1.4	7.6	17.7	-17.4	44.5	-1.7	9.4	-3.0	0.2	7.2	1.5	13.1	4.9	7.3
L4 - MOS Touch Scrn	3249.0	3052.6	771.3	767.8	889.0	871.5	3299.7	842.4	848.2	870.0	883.0	3443.6	3538.6	3605.2
3/3 % \$	0.8	-6.0	-0											

MOS Std Logic	2018	2019	2020				2020	2021				2021	2022	2023
Code LS	Total	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Total	Total
Amer - \$M	4072.3	4193.9	1000.0	914.9	963.3	972.1	3850.3	981.5	990.6	1034.0	1032.3	4038.5	4141.5	4289.7
3/3 % \$	23.5	3.0	12.0	-8.5	5.3	0.9	-8.2	1.0	0.9	4.4	-0.2	4.9	2.6	3.6
% of World	17.9	17.4	16.8	16.1	14.8	15.1	15.7	15.3	15.2	15.2	15.1	15.2	15.1	15.0
Europe - \$M	2966.9	2584.8	571.7	462.1	528.5	522.5	2084.8	534.4	540.3	553.2	559.3	2187.2	2213.1	2281.7
3/3 % \$	30.7	-12.9	15.3	-19.2	14.4	-1.1	-19.3	2.3	1.1	2.4	1.1	4.9	1.2	3.1
% of World	13.0	10.7	9.6	8.2	8.1	8.1	8.5	8.3	8.3	8.1	8.2	8.2	8.1	8.0
Japan - \$M	2305.5	2073.1	486.1	522.2	489.7	487.6	1985.6	487.3	501.1	523.1	523.7	2035.2	2095.9	2157.8
3/3 % \$	-1.4	-10.1	-3.4	7.4	-6.2	-0.4	-4.2	-0.1	2.8	4.4	0.1	2.5	3.0	3.0
% of World	10.1	8.6	8.2	9.2	7.5	7.6	8.1	7.6	7.7	7.7	7.7	7.7	7.7	7.5
JPN - ¥100M	2546.1	2259.8	530.4	562.0	519.9	517.6	2130.0	517.4	532.0	555.3	556.0	2160.7	2225.1	2290.8
3/3 % ¥	-3.0	-11.2	-3.2	6.0	-7.5	-0.4	-5.7	-0.1	2.8	4.4	0.1	1.4	3.0	3.0
Asia Pac - \$M	13406.6	15295.3	3876.9	3768.2	4529.2	4475.6	16649.9	4415.0	4465.3	4691.2	4715.3	18286.8	18939.6	19893.1
3/3 % \$	-3.0	14.1	-5.0	-2.8	20.2	-1.2	8.9	-1.4	1.1	5.1	0.5	9.8	3.6	5.0
% of World	58.9	63.3	65.3	66.5	69.6	69.3	67.8	68.8	68.7	69.0	69.0	68.9	69.1	69.5
World - \$M	22751.3	24147.1	5934.7	5667.4	6510.6	6457.8	24570.5	6418.3	6497.4	6801.5	6830.6	26547.7	27390.2	28622.3
3/3 % \$	4.7	6.1	-0.6	-4.5	14.9	-0.8	1.8	-0.6	1.2	4.7	0.4	8.0	3.2	4.5
L1 - Bipolar Digital	59.1	51.1	13.1	17.2	15.6	14.4	60.3	14.1	15.1	14.6	14.1	58.0	54.9	53.7
3/3 % \$	6.9	-13.5	5.3	30.6	-9.2	-7.5	18.0	-1.9	6.5	-3.0	-3.2	-3.9	-5.3	-2.2
L2a - MOS GP Logic	1447.4	1204.9	288.6	303.8	309.6	297.0	1199.1	285.7	303.7	315.1	300.5	1205.0	1186.6	1185.3
3/3 % \$	-12.8	-16.8	-4.5	5.3	1.9	-4.1	-0.5	-3.8	6.3	3.8	-4.6	0.5	-1.5	-0.1
L2b - MOS Gate Arra	75.3	67.0	17.3	23.5	22.5	20.9	84.2	20.1	22.0	20.7	19.6	82.4	76.9	75.3
3/3 % \$	-13.4	-10.9	-7.3	35.6	-4.1	-7.5	25.6	-3.7	9.8	-6.2	-5.4	-2.2	-6.6	-2.0
L2c - MOS Std Cell, f	12099.1	13509.9	3211.7	3205.8	3324.0	3337.5	13079.0	3397.5	3445.8	3584.3	3586.8	14014.5	14412.9	14991.6
3/3 % \$	12.1	11.7	-7.7	-0.2	3.7	0.4	-3.2	1.8	1.4	4.0	0.1	7.2	2.8	4.0
L3 - MOS Display Dri	5821.5	6261.6	1632.7	1349.3	1949.8	1916.4	6848.2	1858.4	1862.5	1996.8	2026.5	7744.2	8120.3	8711.2
3/3 % \$	-1.4	7.6	17.7	-17.4	44.5	-1.7	9.4	-3.0	0.2	7.2	1.5	13.1	4.9	7.3
L4 - MOS Touch Scrn	3249.0	3052.6	771.3	767.8	889.0	871.5	3299.7	842.4	848.2	870.0	883.0	3443.6	3538.6	3605.2
3/3 % \$	0.8	-6.0	-0											

MOS Std Logic	2018	2019	2020				2020	2021				2021	2022	2023
Code LS	Total	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Total	Total
Amer - \$M	4072.3	4193.9	1000.0	914.9	963.3	972.1	3850.3	981.5	990.6	1034.0	1032.3	4038.5	4141.5	4289.7
3/3 % \$	23.5	3.0	12.0	-8.5	5.3	0.9	-8.2	1.0	0.9	4.4	-0.2	4.9	2.6	3.6
% of World	17.9	17.4	16.8	16.1	14.8	15.1	15.7	15.3	15.2	15.2	15.1	15.2	15.1	15.0
Europe - \$M	2966.9	2584.8	571.7	462.1	528.5	522.5	2084.8	534.4	540.3	553.2	559.3	2187.2	2213.1	2281.7
3/3 % \$	30.7	-12.9	15.3	-19.2	14.4	-1.1	-19.3	2.3	1.1	2.4	1.1	4.9	1.2	3.1
% of World	13.0	10.7	9.6	8.2	8.1	8.1	8.5	8.3	8.3	8.1	8.2	8.2	8.1	8.0
Japan - \$M	2305.5	2073.1	486.1	522.2	489.7	487.6	1985.6	487.3	501.1	523.1	523.7	2035.2	2095.9	2157.8
3/3 % \$	-1.4	-10.1	-3.4	7.4	-6.2	-0.4	-4.2	-0.1	2.8	4.4	0.1	2.5	3.0	3.0
% of World	10.1	8.6	8.2	9.2	7.5	7.6	8.1	7.6	7.7	7.7	7.7	7.7	7.7	7.5
JPN - ¥100M	2546.1	2259.8	530.4	562.0	519.9	517.6	2130.0	517.4	532.0	555.3	556.0	2160.7	2225.1	2290.8
3/3 % ¥	-3.0	-11.2	-3.2	6.0	-7.5	-0.4	-5.7	-0.1	2.8	4.4	0.1	1.4	3.0	3.0
Asia Pac - \$M	13406.6	15295.3	3876.9	3768.2	4529.2	4475.6	16649.9	4415.0	4465.3	4691.2	4715.3	18286.8	18939.6	19893.1
3/3 % \$	-3.0	14.1	-5.0	-2.8	20.2	-1.2	8.9	-1.4	1.1	5.1	0.5	9.8	3.6	5.0
% of World	58.9	63.3	65.3	66.5	69.6	69.3	67.8	68.8	68.7	69.0	69.0	68.9	69.1	69.5
World - \$M	22751.3	24147.1	5934.7	5667.4	6510.6	6457.8	24570.5	6418.3	6497.4	6801.5	6830.6	26547.7	27390.2	28622.3
3/3 % \$	4.7	6.1	-0.6	-4.5	14.9	-0.8	1.8	-0.6	1.2	4.7	0.4	8.0	3.2	4.5
L1 - Bipolar Digital	59.1	51.1	13.1	17.2	15.6	14.4	60.3	14.1	15.1	14.6	14.1	58.0	54.9	53.7
3/3 % \$	6.9	-13.5	5.3	30.6	-9.2	-7.5	18.0	-1.9	6.5	-3.0	-3.2	-3.9	-5.3	-2.2
L2a - MOS GP Logic	1447.4	1204.9	288.6	303.8	309.6	297.0	1199.1	285.7	303.7	315.1	300.5	1205.0	1186.6	1185.3
3/3 % \$	-12.8	-16.8	-4.5	5.3	1.9	-4.1	-0.5	-3.8	6.3	3.8	-4.6	0.5	-1.5	-0.1
L2b - MOS Gate Arra	75.3	67.0	17.3	23.5	22.5	20.9	84.2	20.1	22.0	20.7	19.6	82.4	76.9	75.3
3/3 % \$	-13.4	-10.9	-7.3	35.6	-4.1	-7.5	25.6	-3.7	9.8	-6.2	-5.4	-2.2	-6.6	-2.0
L2c - MOS Std Cell, f	12099.1	13509.9	3211.7	3205.8	3324.0	3337.5	13079.0	3397.5	3445.8	3584.3	3586.8	14014.5	14412.9	14991.6
3/3 % \$	12.1	11.7	-7.7	-0.2	3.7	0.4	-3.2	1.8	1.4	4.0	0.1	7.2	2.8	4.0
L3 - MOS Display Dri	5821.5	6261.6	1632.7	1349.3	1949.8	1916.4	6848.2	1858.4	1862.5	1996.8	2026.5	7744.2	8120.3	8711.2
3/3 % \$	-1.4	7.6	17.7	-17.4	44.5	-1.7	9.4	-3.0	0.2	7.2	1.5	13.1	4.9	7.3
L4 - MOS Touch Scrn	3249.0	3052.6	771.3	767.8	889.0	871.5	3299.7	842.4	848.2	870.0	883.0	3443.6	3538.6	3605.2
3/3 % \$	0.8	-6.0	-0											

L1 - Bipolar Digital

WSTS Semiconductor Forecast

L1 - Bipolar Digital

[illegible]

MOS GP Logic

2020	
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2021	2022	2023
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[illegible]

MOS Gate Arrays Code L2b

	2020
Q4	Total

2021	2022	2023
Total	Total	Total

[illegible]

[illegible][illegible][illegible]

L3 - MOS Display Driver

WSTS Semiconductor Forecast

L3 - MOS Display Driver

[illegible]

L4 - MOS Touch Screen Controllers

WSTS Semiconductor Forecast

L4 - MOS Touch Screen Controlers

[illegible]

[illegible]

Consumer SP Logic

2020	
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2021	2022
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[illegible]

Computer SP Logic
Code L6

Q4	2020 Total	Q1	Q2
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2021	2022
Total	Total

[illegible]

Communication SP I	2018	2019	2020		2020	2021		2021	2022	2023				
Code L7	Total	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Total	Total
Amer - \$M	9723.6	9763.8	2546.3	2424.6	2846.0	3220.0	11037.0	2795.6	2768.3	2984.9	3307.7	11856.6	12374.9	12585.5
3/3 % \$	1.3	0.4	-28.0	-4.8	17.4	13.1	13.0	-13.2	-1.0	7.8	10.8	7.4	4.4	1.7
% of World	22.0	24.0	25.1	26.7	23.9	26.4	25.5	25.6	25.0	25.3	26.6	25.6	25.4	25.4
Europe - \$M	1381.6	1505.6	371.6	335.3	396.3	395.2	1498.4	354.6	360.2	388.7	397.2	1500.7	1554.8	1569.0
3/3 % \$	1.6	9.0	2.0	-9.8	18.2	-0.3	-0.5	-10.3	1.6	7.9	2.2	0.2	3.6	0.9
% of World	3.1	3.7	3.7	3.7	3.3	3.2	3.5	3.2	3.2	3.3	3.2	3.2	3.2	3.2
Japan - \$M	2566.7	2083.7	459.5	501.4	604.3	586.6	2151.7	522.0	533.5	575.4	591.9	2222.8	2305.4	2325.6
3/3 % \$	11.7	-18.8	-7.0	9.1	20.5	-2.9	3.3	-11.0	2.2	7.8	2.9	3.3	3.7	0.9
% of World	5.8	5.1	4.5	5.5	5.1	4.8	5.0	4.8	4.8	4.9	4.8	4.8	4.7	4.7
JPN - ¥100M	2835.1	2264.6	501.4	539.7	641.5	622.7	2305.2	554.2	566.4	610.8	628.4	2359.8	2447.5	2468.9
3/3 % ¥	10.0	-20.1	-6.7	7.6	18.9	-2.9	1.8	-11.0	2.2	7.8	2.9	2.4	3.7	0.9
Asia Pac - \$M	30459.3	27323.2	6778.1	5814.7	8058.9	7996.9	28648.5	7268.2	7425.6	7855.5	8128.8	30678.1	32513.7	33075.0
3/3 % \$	-0.6	-10.3	-1.3	-14.2	38.6	-0.8	4.9	-9.1	2.2	5.8	3.5	7.1	6.0	1.7
% of World	69.0	67.2	66.7	64.1	67.7	65.6	66.1	66.4	67.0	66.5	65.4	66.3	66.7	66.7
World - \$M	44131.3	40676.3	10155.5	9076.0	11905.5	12198.7	43335.7	10940.3	11087.7	11804.5	12425.7	46258.2	48748.9	49555.1
3/3 % \$	0.5	-7.8	-9.8	-10.6	31.2	2.5	6.5	-10.3	1.3	6.5	5.3	6.7	5.4	1.7
L7a - Cell Phone	3020.7	3157.1	906.2	792.6	827.0	822.1	3347.9	787.0	796.5	839.5	860.7	3283.7	3541.6	3618.4
3/3 % \$	5.0	4.5	11.9	-12.5	4.3	-0.6	6.0	-4.3	1.2	5.4	2.5	-1.9	7.9	2.2
L7b - Infrastructure	142.1	0.0	-	-	-	-	0.0	-	-	-	-	0.0	0.0	0.0
3/3 % \$	-8.7	-100.0	-	-	-	-	0.0	-	-	-	-	0.0	0.0	0.0
L7c - Short Range	9016.7	7573.8	1906.5	1947.3	2072.4	2121.2	8047.4	1958.2	2037.8	2220.7	2285.8	8502.5	8842.0	9049.2
3/3 % \$	10.8	-16.0	-8.2	2.1	6.4	2.4	6.3	-7.7	4.1	9.0	2.9	5.7	4.0	2.3
L7d - Other Wireless	209.8	372.4	108.8	125.2	178.4	181.3	593.7	175.5	180.3	190.3	199.8	746.0	834.1	863.6
3/3 % \$	12.6	77.5	7.9	15.0	42.4	1.6	59.4	-3.2	2.7	5.6	5.0	25.7	11.8	3.5
L7e - Wired Comm	8213.9	8127.3	2048.4	2169.3	2347.1	2343.9	8908.7	2169.7	2236.8	2342.9	2394.1	9143.5	9477.0	9655.9
3/3 % \$	5.2	-1.1	-1.9	5.9	8.2	-0.1	9.6	-7.4	3.1	4.7	2.2	2.6	3.6	1.9
L7f - Application Pro	23528.1	21445.8	5185.6	4041.6	6480.6	6730.2	22438.1	5850.0	5836.2	6211.1	6685.2	24582.5	26054.2	26367.9
3/3 % \$	-4.9	-8.9	-16.2	-22.1	60.3									

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L7 - Communication SP Logic

Automotive SP Logic
Code L8

	2020		
Q4	Total	Q1	Q2

	2021	2022	2023
04 Total	Total	Total	Total

[illegible]

L9 - Multipurpose SP Logic

WSTS Semiconductor Forecast

L9 - Multipurpose SP Logic

[illegible]

M99 - MOS Memory

WSTS Semiconductor Forecast

M99 - MOS Memory

MOS Memory Code M99	2018 Total	2019 Total	2020				2020 Total	2021				2021 Total	2022 Total	2023 Total
			Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4			
Amer - \$M	51591.6	28425.6	9037.2	10634.8	10134.5	9706.1	39512.7	9966.4	10657.6	12097.7	12411.0	45132.7	50137.0	52657.9
3/3 % \$	25.2	-44.9	9.1	17.7	-4.7	-4.2	39.0	2.7	6.9	13.5	2.6	14.2	11.1	5.0
% of World	32.7	26.7	31.9	35.5	32.5	32.4	33.1	33.3	33.4	33.3	33.4	33.4	33.7	33.9
Europe - \$M	7987.0	5786.3	1737.8	1596.8	1484.6	1412.4	6231.6	1426.0	1524.0	1729.2	1763.1	6442.3	6959.5	7178.1
3/3 % \$	24.1	-27.6	14.3	-8.1	-7.0	-4.9	7.7	1.0	6.9	13.5	2.0	3.4	8.0	3.1
% of World	5.1	5.4	6.1	5.3	4.8	4.7	5.2	4.8	4.8	4.8	4.7	4.8	4.7	4.6
Japan - \$M	7117.3	5241.1	1221.9	1372.9	2083.5	1997.6	6675.9	1777.7	1809.5	2249.4	2142.1	7978.7	8652.8	8937.2
3/3 % \$	13.9	-26.4	-3.1	12.4	51.8	-4.1	27.4	-11.0	1.8	24.3	-4.8	19.5	8.4	3.3
% of World	4.5	4.9	4.3	4.6	6.7	6.7	5.6	5.9	5.7	6.2	5.8	5.9	5.8	5.7
JPN - ¥100M	7858.4	5702.2	1333.2	1477.7	2211.9	2120.7	7143.5	1887.3	1921.0	2388.0	2274.1	8470.4	9186.1	9488.0
3/3 % ¥	12.1	-27.4	-2.8	10.8	49.7	-4.1	25.3	-11.0	1.8	24.3	-4.8	18.6	8.4	3.3
Asia Pac - \$M	91270.9	66986.9	16368.7	16374.7	17448.4	16827.6	67019.4	16723.9	17885.9	20307.0	20840.3	75757.1	82822.8	86710.0
3/3 % \$	30.2	-26.6	0.7	0.0	6.6	-3.6	0.0	-0.6	6.9	13.5	2.6	13.0	9.3	4.7
% of World	57.8	62.9	57.7	54.6	56.0	56.2	56.1	55.9	56.1	55.8	56.1	56.0	55.7	55.8
World - \$M	157966.7	106440.0	28365.6	29979.4	31151.1	29943.7	119439.7	29894.1	31876.9	36383.2	37156.5	135310.7	148572.2	155483.2
3/3 % \$	27.4	-32.6	3.8	5.7	3.9	-3.9	12.2	-0.2	6.6	14.1	2.1	13.3	9.8	4.7
M1 - MOS DRAM	99308.4	62474.7	14666.6	16869.3	17254.8	16523.8	65314.4	15939.4	17235.0	19847.0	20499.1	73520.6	75643.9	78280.6
3/3 % \$	36.4	-37.1	-2.1	15.0	2.3	-4.2	4.5	-3.5	8.1	15.2	3.3	12.6	2.9	3.5
M2 - TOTAL MOS SR	405.5	303.6	67.4	82.1	91.6	89.4	330.6	78.0	78.6	78.9	77.8	313.4	298.3	285.4
3/3 % \$	1.5	-25.1	-3.5	21.7	11.6	-2.4	8.9	-12.7	0.7	0.4	-1.4	-5.2	-4.8	-4.3
M6 - Other Memory	1301.2	1098.1	219.1	232.4	240.8	248.2	940.5	235.6	245.7	252.0	240.6	973.8	831.1	772.2
3/3 % \$	6.5	-15.6	-17.7	6.1	3.6	3.1	-14.3	-5.1	4.3	2.6	-4.5	3.5	-14.7	-7.1
M7A - NOR Flash	2169.4	1760.5	427.9	451.7	437.6	448.2	1765.3	441.8	438.2	481.9	432.5	1794.4	1736.4	1720.8
3/3 % \$	11.3	-18.9	-1.7	5.6	-3.1	2.4	0.3	-1.4	-0.8	10.0	-10.3	1.6	-3.2	-0.9
M7B - NANDFlash	54227.0	40180.0	12820.0	12188.1	12909.3	12410.2	50327.6	13011.5	13779.1	15399.7	15733.7	57924.0	69294.1	73664.1
3/3 % \$	14.8	-25.9	12.5	-4.9	5.9	-3.9	25.3	4.8	5.9	11.8	2.2	15.1	19.6	6.3
M8 - ROM & EPROM	555.2	623.0	164.6	155.8	216.9	223.9	761.2	187.7	100.4	323.6	172.8	784.6	768.2	760.0
3/3 % \$	48.6	12.2	1.4	-5.3	39.2	3.2	22.2	-16.2	-46.5	222.4	-46.6	3.1	-2.1	-1.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

MOS DRAM

2020	
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2021	2022	2023
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TOTAL MOS SRAM Code M2	2018 Total
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2020			
Q4	Total	Q1	Q2

2021	2022	2023
Total	Total	Total

[illegible]

[illegible]

[illegible]

ROM & EPROM	
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2020	
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2021	2022	2023
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[illegible]

Other Memory	
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2020	
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2021	2022	2023
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[illegible]

[illegible]

Tot Semicon
Code T99

2020			
Q4	Total	Q1	Q2

2021	2022	2023
Total	Total	Total

[illegible]

[illegible]