

A99 - Diode

WSTS Semiconductor Forecast

A99 - Diode

[illegible]

SS Transistor
Code B99

2018		2017	
Q4	Total	Q1	Q2

2019	2020	2021
Total	Total	Total

[illegible]

Pwr Transist Code C99
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2018		2017	
Q4	Total	Q1	Q2

2019	2020	2021
Total	Total	Total

[illegible]

Bipolar PwrTr Code CA
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2018		2019	
Q4	Total	Q1	Q2

2019	2020	2021
Total	Total	Total

[illegible]

MOSFET PwrTr
Code CC

2018		2017	
Q4	Total	Q1	Q2

2019	2020	2021
Total	Total	Total

[illegible]

E99 - Thyristor

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E99 - Thyristor

[illegible]

G99 - Other Discrete

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G99 - Other Discrete

[illegible]

S3 - Discrete Total

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S3 - Discrete Total

Discrete Total Code S3	2016 Total	2017 Total	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2018 Total	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2019 Total	2020 Total	2021 Total
Amer - \$M	1705.0	1842.4	523.6	550.7	597.9	585.3	2257.4	578.7	595.4	609.5	593.6	2377.2	2466.8	2572.7
3/3 % \$	0.1	8.1	8.2	5.2	8.6	-2.1	22.5	-1.1	2.9	2.4	-2.6	5.3	3.8	4.3
% of World	8.8	8.5	9.1	9.1	9.5	9.7	9.3	9.5	9.4	9.5	9.4	9.5	9.5	9.5
Europe - \$M	3358.8	3757.4	1107.5	1093.1	1082.6	1043.6	4326.8	1072.9	1102.7	1124.4	1099.0	4399.1	4502.8	4678.8
3/3 % \$	5.9	11.9	15.2	-1.3	-1.0	-3.6	15.2	2.8	2.8	2.0	-2.3	1.7	2.4	3.9
% of World	17.3	17.4	19.2	18.0	17.3	17.2	17.9	17.6	17.5	17.4	17.5	17.5	17.3	17.3
Japan - \$M	2929.8	3175.9	857.3	862.3	853.5	823.7	3396.7	839.9	863.9	884.7	860.9	3449.4	3516.9	3615.9
3/3 % \$	12.1	8.4	3.1	0.6	-1.0	-3.5	7.0	2.0	2.9	2.4	-2.7	1.6	2.0	2.8
% of World	15.1	14.7	14.8	14.2	13.6	13.6	14.0	13.7	13.7	13.7	13.7	13.7	13.6	13.4
JPN - ¥100M	3179.7	3561.9	928.9	940.4	951.3	918.1	3738.7	936.1	962.9	986.1	959.5	3844.7	3919.9	4030.2
3/3 % ¥	0.6	12.0	-1.1	1.2	1.2	-3.5	5.0	2.0	2.9	2.4	-2.7	2.8	2.0	2.8
Asia Pac - \$M	11424.8	12875.7	3293.1	3578.8	3739.1	3602.0	14213.0	3617.2	3740.5	3826.6	3733.6	14918.0	15467.3	16175.7
3/3 % \$	2.7	12.7	0.0	8.7	4.5	-3.7	10.4	0.4	3.4	2.3	-2.4	5.0	3.7	4.6
% of World	58.8	59.5	57.0	58.8	59.6	59.5	58.7	59.2	59.3	59.4	59.4	59.3	59.6	59.8
World - \$M	19418.3	21651.3	5781.5	6084.9	6273.1	6054.5	24194.0	6108.8	6302.5	6445.3	6287.1	25143.7	25953.8	27043.1
3/3 % \$	4.3	11.5	3.8	5.2	3.1	-3.5	11.7	0.9	3.2	2.3	-2.5	3.9	3.2	4.2
A99 - Diode	2530.9	2946.3	753.3	796.8	827.3	798.2	3175.6	794.9	820.2	842.6	820.8	3278.5	3361.0	3478.7
3/3 % \$	8.7	16.4	0.1	5.8	3.8	-3.5	7.8	-0.4	3.2	2.7	-2.6	3.2	2.5	3.5
B99 - SS Transistor	1861.5	1965.6	504.9	533.3	547.5	531.1	2116.7	530.2	546.0	558.9	553.6	2188.7	2259.5	2347.3
3/3 % \$	7.3	5.6	3.1	5.6	2.7	-3.0	7.7	-0.2	3.0	2.4	-0.9	3.4	3.2	3.9
C99 - Pwr Transist	11503.2	12628.4	3426.1	3622.8	3768.3	3625.1	14442.4	3675.4	3789.9	3877.8	3754.3	15097.4	15614.1	16316.3
3/3 % \$	4.5	9.8	4.8	5.7	4.0	-3.8	14.4	1.4	3.1	2.3	-3.2	4.5	3.4	4.5
D99 - Rectifier	2758.7	3262.2	865.7	891.6	886.7	860.2	3504.2	866.4	898.9	912.2	903.5	3580.9	3683.4	3814.7
3/3 % \$	1.1	18.3	3.4	3.0	-0.6	-3.0	7.4	0.7	3.7	1.5	-1.0	2.2	2.9	3.6
E99 - Thyristor	650.2	718.4	193.8	201.1	203.6	199.7	798.1	203.1	208.4	213.4	213.8	838.7	871.0	914.3
3/3 % \$	-7.9	10.5	4.3	3.7	1.3	-1.9	11.1	1.7	2.6	2.4	0.2	5.1	3.8	5.0
G99 - Other Discrete	113.9	130.5	37.7	39.3	39.8	40.2	157.1	38.8	39.2	40.4	41.2	159.5	164.9	171.8
3/3 % \$	1.8	14.6	1.8	4.3	1.3	1.0	20.4	-3.7	1.2	3.0	1.9	1.5	3.3	4.2
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F99 - Optoelectronics

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F99 - Optoelectronics

Optoelectronics Code F99	2016 Total	2017 Total	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2018 Total	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2019 Total	2020 Total	2021 Total
Amer - \$M	4496.7	6232.3	1185.9	1415.1	1876.4	1899.1	6376.5	1555.6	1598.2	1855.4	1922.8	6932.0	7960.5	8476.6
3/3 % \$	-0.8	38.6	-41.5	19.3	32.6	1.2	2.3	-18.1	2.7	16.1	3.6	8.7	14.8	6.5
% of World	14.1	17.9	13.7	15.1	18.3	18.3	16.5	16.1	15.9	17.3	17.6	16.8	18.2	18.2
Europe - \$M	2510.6	2877.8	773.5	787.1	786.4	795.9	3142.9	777.7	816.0	852.1	866.4	3312.2	3415.7	3620.3
3/3 % \$	-2.5	14.6	6.9	1.8	-0.1	1.2	9.2	-2.3	4.9	4.4	1.7	5.4	3.1	6.0
% of World	7.8	8.3	9.0	8.4	7.7	7.7	8.1	8.1	8.1	8.0	7.9	8.0	7.8	7.8
Japan - \$M	5750.2	5736.1	1365.9	1382.5	1369.3	1385.8	5503.5	1360.9	1427.9	1491.0	1516.1	5795.8	5991.7	6350.8
3/3 % \$	-19.4	-0.2	0.1	1.2	-1.0	1.2	-4.1	-1.8	4.9	4.4	1.7	5.3	3.4	6.0
% of World	18.0	16.5	15.8	14.7	13.3	13.3	14.2	14.1	14.2	13.9	13.9	14.0	13.7	13.6
JPN - ¥100M	6278.8	6435.8	1480.1	1507.8	1526.2	1544.6	6058.7	1516.8	1591.5	1661.9	1689.8	6459.9	6678.3	7078.5
3/3 % ¥	-27.3	2.5	-3.9	1.9	1.2	1.2	-5.9	-1.8	4.9	4.4	1.7	6.6	3.4	6.0
Asia Pac - \$M	19237.0	19966.7	5311.3	5816.2	6244.3	6319.8	23691.6	5943.8	6236.4	6512.4	6621.6	25314.2	26490.6	28208.2
3/3 % \$	1.2	3.8	0.0	9.5	7.4	1.2	18.7	-6.0	4.9	4.4	1.7	6.8	4.6	6.5
% of World	60.1	57.4	61.5	61.9	60.8	60.8	61.2	61.7	61.9	60.8	60.6	61.2	60.4	60.5
World - \$M	31994.4	34812.8	8636.5	9400.8	10276.5	10400.7	38714.5	9637.9	10078.4	10710.9	10926.8	41354.1	43858.5	46655.9
3/3 % \$	-3.8	8.8	-8.4	8.9	9.3	1.2	11.2	-7.3	4.6	6.3	2.0	6.8	6.1	6.4
F1 - Display	408.6	334.4	77.2	82.1	85.0	84.2	328.6	81.2	82.7	84.3	83.2	331.4	337.8	347.0
3/3 % \$	-26.6	-18.2	-11.7	6.4	3.5	-0.9	-1.7	-3.7	1.9	1.9	-1.3	0.9	1.9	2.7
F10 - LIGHT SENSOR	533.1	788.9	215.7	166.7	311.7	347.2	1041.3	295.5	275.7	365.9	404.9	1341.9	1563.1	1785.3
3/3 % \$		48.0	-34.1	-22.7	87.0	11.4	32.0	-14.9	-6.7	32.7	10.7	28.9	16.5	14.2
F2 - Lamp	11820.5	11864.1	3159.5	3376.3	3435.4	3414.7	13385.8	3489.3	3553.0	3617.6	3718.6	14378.6	15170.5	15955.3
3/3 % \$	-8.1	0.4	5.6	6.9	1.8	-0.6	12.8	2.2	1.8	1.8	2.8	7.4	5.5	5.2
F3 - Coupler	1379.4	1528.2	419.1	425.1	418.6	414.3	1677.0	425.2	438.5	442.4	440.8	1747.0	1836.9	1949.7
3/3 % \$	-6.5	10.8	5.5	1.4	-1.5	-1.0	9.7	2.6	3.1	0.9	-0.4	4.2	5.1	6.1
F5 - Image_Sensor	11934.0	13863.0	3025.7	3768.7	4508.7	4605.6	15908.6	3772.0	4176.8	4623.0	4659.5	17231.3	18367.5	19708.6
3/3 % \$	5.7	16.2	-21.3	24.6	19.6	2.1	14.8	-18.1	10.7	10.7	0.8	8.3	6.6	7.3
F6 - Oth_Opto	3303.7	3606.1	971.7	794.5	677.7	688.9	3132.7	728.9	691.3	687.2	715.8	2823.2	2877.9	2961.4
3/3 % \$	-22.3	9.2	-9.1	-18.2	-14.7	1.7	-13.1	5.8	-5.2	-0.6	4.2	-9.9	1.9	2.9
F7 - Infrared	786.3	863.4	252.0	290.7	298.0	299.1	1139.9	296.1	310.5	318.6	321.1	1246.3	1320.6	1417.6
3/3 % \$	-19.6	9.8	20.2	15.3	2.5	0.4	32.0	-1.0	4.9	2.6	0.8	9.3	6.0	7.3
F8 - Lsr_Pickup	464.2	380.5	84.6	87.5	89.3	86.1	347.5	85.1	85.8	87.2	85.5	343.6	341.3	342.5
3/3 % \$	-11.3	-18.0	-2.9	3.4	2.0	-3.5	-8.7	-1.2	0.8	1.6	-1.9	-1.1	-0.7	0.4
F9 - Lsr_Transmitter	1364.6	1584.2	431.0	409.3	452.2	460.5	1753.1	464.7	464.2	484.7	497.4	1910.9	2042.9	2188.6
3/3 % \$	3.6	16.1	4.8	-5.0	10.5	1.8	10.7	0.9	-0.1	4.4	2.6	9.0	6.9	7.1
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Sensors
Code H99

	2018		
Q4	Total	Q1	Q2

2020	2021
Total	Total

[illegible]

J99 - Analog

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J99 - Analog

[illegible]

J0 - GP Analog

WSTS Semiconductor Forecast

J0 - GP Analog

[illegible]

JA - App Spec Analog

WSTS Semiconductor Forecast

JA - App Spec Analog

[illegible]

Consumer Analog Code JB
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	2018
Q4	Total

2019 Total	2020 Total	2021 Total
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[illegible]

JC - Computer Analog

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JC - Computer Analog

[illegible]

JD - Communic Analog

WSTS Semiconductor Forecast

JD - Communic Analog

Communic Analog Code JD	2016	2017	2018				2018	2019				2019	2020	2021
	Total	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Total	Total
Amer - \$M	3200.9	2919.7	623.3	597.2	591.6	583.6	2395.7	608.6	601.2	643.0	648.2	2500.9	2604.0	2690.0
3/3 % \$	-7.3	-8.8	-15.9	-4.2	-0.9	-1.3	-17.9	4.3	-1.2	7.0	0.8	4.4	4.1	3.3
% of World	22.8	18.8	13.9	14.0	13.6	13.6	13.8	13.6	13.9	14.3	14.2	14.0	14.2	14.2
Europe - \$M	960.0	1227.8	462.5	439.6	422.7	426.0	1750.8	441.7	429.4	443.4	452.6	1767.2	1819.1	1878.1
3/3 % \$	1.0	27.9	27.6	-5.0	-3.8	0.8	42.6	3.7	-2.8	3.3	2.1	0.9	2.9	3.2
% of World	6.8	7.9	10.3	10.3	9.7	9.9	10.1	9.9	9.9	9.8	9.9	9.9	9.9	9.9
Japan - \$M	670.6	787.2	308.0	293.8	299.3	290.8	1191.9	295.5	283.0	316.1	316.1	1210.8	1234.6	1261.7
3/3 % \$	-3.9	17.4	30.1	-4.6	1.9	-2.9	51.4	1.6	-4.2	11.7	0.0	1.6	2.0	2.2
% of World	4.8	5.1	6.9	6.9	6.9	6.8	6.8	6.6	6.5	7.0	6.9	6.8	6.7	6.7
JPN - ¥100M	729.7	883.2	333.8	320.4	333.6	324.1	1311.9	329.4	315.4	352.3	352.4	1349.5	1376.0	1406.3
3/3 % ¥	-13.6	21.0	24.9	-4.0	4.1	-2.9	48.5	1.6	-4.2	11.7	0.0	2.9	2.0	2.2
Asia Pac - \$M	9228.5	10590.8	3090.0	2942.8	3033.1	2997.8	12063.6	3131.9	3011.3	3108.5	3139.1	12390.8	12739.7	13137.2
3/3 % \$	4.8	14.8	5.2	-4.8	3.1	-1.2	13.9	4.5	-3.8	3.2	1.0	2.7	2.8	3.1
% of World	65.6	68.2	68.9	68.9	69.8	69.7	69.3	69.9	69.6	68.9	68.9	69.3	69.2	69.3
World - \$M	14060.0	15525.4	4483.9	4273.3	4346.6	4298.2	17402.0	4477.7	4324.8	4511.1	4556.0	17869.7	18397.4	18967.1
3/3 % \$	1.1	10.4	4.8	-4.7	1.7	-1.1	12.1	4.2	-3.4	4.3	1.0	2.7	3.0	3.1
JDa - Cell Phone	9590.1	10484.6	3247.1	2975.3	3028.4	2972.4	12223.1	3149.7	2983.2	3144.5	3165.7	12443.1	12766.7	13108.1
3/3 % \$	0.5	9.3	9.6	-8.4	1.8	-1.8	16.6	6.0	-5.3	5.4	0.7	1.8	2.6	2.7
JDb - Infrastructure	682.2	805.4	228.9	240.8	242.9	239.8	952.3	244.5	252.2	257.4	262.0	1016.1	1063.0	1110.0
3/3 % \$	25.1	18.1	11.8	5.2	0.8	-1.3	18.2	2.0	3.1	2.1	1.8	6.7	4.6	4.4
JDc - Short Range	1794.8	2154.0	498.3	515.6	545.9	560.2	2120.0	551.7	552.0	568.7	583.3	2255.6	2332.0	2432.4
3/3 % \$	6.0	20.0	-17.3	3.5	5.9	2.6	-1.6	-1.5	0.1	3.0	2.6	6.4	3.4	4.3
JDd - Oth Wireless	468.8	492.0	131.6	159.1	123.2	124.8	538.7	125.8	127.3	125.6	128.2	506.9	518.5	532.6
3/3 % \$	7.4	4.9	5.1	20.9	-22.5	1.3	9.5	0.8	1.2	-1.3	2.1	-5.9	2.3	2.7
JDe - Wired Comm &	1524.1	1589.5	378.0	382.6	406.3	401.1	1568.0	406.0	410.1	414.9	416.8	1647.9	1717.1	1784.1
3/3 % \$	-10.0	4.3	-1.0	1.2	6.2	-1.3	-1.4	1.2	1.0	1.2	0.5	5.1	4.2	3.9
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JE - Automotive Analog

WSTS Semiconductor Forecast

JE - Automotive Analog

[illegible]

Industry Analog Code JF

	2018
Q4	Total

2019	2020	2021
Total	Total	Total

[illegible]

P99 - MOS Micro

WSTS Semiconductor Forecast

P99 - MOS Micro

[illegible]

P1 - MOS MPU

WSTS Semiconductor Forecast

P1 - MOS MPU

[illegible]

MOS MCU Code P2

	2018
Q4	Total

2020 Total	2021 Total
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[illegible]

MOS DSP

2018	
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2020	2021
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MOS DSP	2016	2017	2018				2018	2019				2019	2020	2021
Code P4	Total	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Total	Total
Amer - \$M	452.8	538.5	158.7	183.5	160.6	162.5	665.2	165.6	167.2	169.6	168.1	670.5	670.4	679.4
3/3 % \$	30.6	18.9	1.3	15.6	-12.5	1.2	23.5	1.9	1.0	1.4	-0.9	0.8	0.0	1.3
% of World	15.8	16.4	18.5	21.6	19.6	19.6	19.8	19.8	19.8	19.8	19.8	19.8	19.7	19.6
Europe - \$M	920.9	1162.4	298.6	272.1	267.0	270.2	1107.8	273.8	276.5	280.4	277.9	1108.7	1108.2	1129.6
3/3 % \$	16.8	26.2	1.8	-8.9	-1.9	1.2	-4.7	1.3	1.0	1.4	-0.9	0.1	0.0	1.9
% of World	32.1	35.4	34.8	32.0	32.7	32.7	33.1	32.8	32.8	32.8	32.8	32.8	32.6	32.7
Japan - \$M	256.2	247.4	55.9	54.0	51.8	52.4	214.0	53.1	53.6	54.4	53.9	214.9	214.8	219.0
3/3 % \$	8.2	-3.4	-14.7	-3.4	-4.2	1.2	-13.5	1.3	1.0	1.4	-0.9	0.4	0.0	1.9
% of World	8.9	7.5	6.5	6.4	6.3	6.3	6.4	6.4	6.4	6.4	6.4	6.4	6.3	6.3
JPN - ¥100M	277.9	277.5	60.6	58.9	57.7	58.4	235.5	59.2	59.8	60.6	60.0	239.6	239.5	244.1
3/3 % ¥	-3.1	-0.1	-18.2	-2.7	-2.1	1.2	-15.1	1.3	1.0	1.4	-0.9	1.7	0.0	1.9
Asia Pac - \$M	1239.4	1337.4	343.8	340.6	338.1	342.2	1364.7	343.5	346.9	351.7	348.6	1390.7	1403.5	1430.7
3/3 % \$	5.1	7.9	6.2	-1.0	-0.7	1.2	2.0	0.4	1.0	1.4	-0.9	1.9	0.9	1.9
% of World	43.2	40.7	40.1	40.1	41.4	41.4	40.7	41.1	41.1	41.1	41.1	41.1	41.3	41.4
World - \$M	2869.1	3285.8	856.9	850.2	817.4	827.3	3351.8	836.0	844.3	856.1	848.4	3384.8	3396.9	3458.8
3/3 % \$	12.5	14.5	2.1	-0.8	-3.9	1.2	2.0	1.1	1.0	1.4	-0.9	1.0	0.4	1.8
P4a - Consumer	664.8	760.5	164.6	130.8	103.2	107.7	506.4	109.0	110.8	110.8	109.8	440.4	437.1	443.5
3/3 % \$	6.7	14.4	-7.4	-20.5	-21.1	4.4	-33.4	1.2	1.6	0.0	-0.9	-13.0	-0.7	1.5
P4b - Computer	14.4	9.6	2.7	2.4	1.9	1.9	8.9	1.9	1.9	1.9	1.9	7.7	7.7	7.8
3/3 % \$	-67.0	-33.3	14.2	-11.4	-21.1	1.5	-7.4	-0.4	0.6	0.7	-0.4	-13.6	-0.3	1.5
P4d - Infrastructure	229.1	246.4	47.9	51.8	83.9	81.4	265.0	80.3	80.4	80.6	80.0	321.4	318.4	323.6
3/3 % \$	-4.1	7.6	-19.6	8.3	61.9	-2.9	7.5	-1.4	0.2	0.2	-0.7	21.3	-0.9	1.6
P4g - Wired_Comm	31.3	18.9	4.1	5.2	8.0	7.6	24.9	7.4	7.4	7.4	7.4	29.5	29.3	29.8
3/3 % \$	-32.0	-39.6	-12.9	28.4	54.5	-5.9	31.8	-2.1	-0.7	0.5	-0.5	18.7	-0.9	1.7
P4h - Automotive	950.9	1185.5	347.4	362.2	338.6	345.7	1394.0	353.8	359.1	367.0	364.2	1444.1	1470.1	1502.5
3/3 % \$	29.5	24.7	4.4	4.2	-6.5	2.1	17.6	2.3	1.5	2.2	-0.8	3.6	1.8	2.2
P4i - Multipurpose	978.7	1064.9	290.3	297.8	281.7	282.9	1152.6	283.6	284.7	288.4	285.1	1141.7	1134.3	1151.7
3/3 % \$	13.2	8.8	10.7	2.6	-5.4	0.4	8.2	0.3	0.4	1.3	-1.1	-0.9	-0.6	1.5
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L99 - MOS Logic

WSTS Semiconductor Forecast

L99 - MOS Logic

[illegible]

LS - MOS Std Logic

WSTS Semiconductor Forecast

LS - MOS Std Logic

MOS Std Logic	2016	2017	2018				2018	2019				2019	2020	2021
Code LS	Total	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Total	Total
Amer - \$M	3113.0	3298.0	881.9	925.2	1078.1	1092.1	3977.3	1061.3	1083.3	1130.4	1156.7	4431.7	4680.0	4998.8
3/3 % \$	-1.7	5.9	0.0	4.9	16.5	1.3	20.6	-2.8	2.1	4.3	2.3	11.4	5.6	6.8
% of World	15.3	15.2	17.1	17.0	18.0	18.0	17.6	18.6	18.7	18.7	18.7	18.7	18.8	19.0
Europe - \$M	1935.3	2269.8	679.2	695.4	739.7	747.0	2861.3	739.0	753.7	782.3	798.0	3073.0	3238.4	3452.3
3/3 % \$	13.2	17.3	25.6	2.4	6.4	1.0	26.1	-1.1	2.0	3.8	2.0	7.4	5.4	6.6
% of World	9.5	10.4	13.2	12.7	12.4	12.3	12.6	12.9	13.0	12.9	12.9	12.9	13.0	13.1
Japan - \$M	2499.0	2338.7	567.0	572.1	570.0	575.3	2284.4	551.3	562.0	584.9	596.7	2294.9	2399.9	2548.9
3/3 % \$	-15.3	-6.4	1.7	0.9	-0.4	0.9	-2.3	-4.2	1.9	4.1	2.0	0.5	4.6	6.2
% of World	12.3	10.8	11.0	10.5	9.5	9.5	10.1	9.7	9.7	9.7	9.7	9.7	9.7	9.7
JPN - ¥100M	2718.4	2623.5	614.4	624.0	635.3	641.2	2514.8	614.4	626.4	652.0	665.1	2557.8	2674.9	2841.0
3/3 % ¥	-23.9	-3.5	-2.4	1.6	1.8	0.9	-4.1	-4.2	1.9	4.1	2.0	1.7	4.6	6.2
Asia Pac - \$M	12843.5	13815.3	3024.4	3261.9	3592.0	3648.4	13526.7	3360.3	3402.2	3558.1	3629.0	13949.7	14522.0	15378.8
3/3 % \$	0.7	7.6	-14.9	7.9	10.1	1.6	-2.1	-7.9	1.2	4.6	2.0	3.1	4.1	5.9
% of World	63.0	63.6	58.7	59.8	60.1	60.2	59.7	58.8	58.6	58.8	58.7	58.7	58.5	58.3
World - \$M	20390.8	21721.9	5152.5	5454.6	5979.8	6062.7	22649.7	5711.9	5801.1	6055.7	6180.5	23749.3	24840.3	26378.8
3/3 % \$	-0.9	6.5	-6.9	5.9	9.6	1.4	4.3	-5.8	1.6	4.4	2.1	4.9	4.6	6.2
L1 - Bipolar Digital	56.8	55.2	15.3	14.1	15.2	14.9	59.6	14.3	14.5	14.2	13.9	56.9	54.7	54.3
3/3 % \$	-5.5	-2.7	14.3	-8.0	7.5	-1.7	7.8	-4.3	1.7	-1.9	-2.5	-4.4	-3.9	-0.7
L2a - MOS GP Logic	1503.4	1660.1	382.7	393.1	344.4	342.1	1462.3	350.8	360.6	379.0	367.6	1458.0	1490.0	1548.1
3/3 % \$	-9.8	10.4	-8.1	2.7	-12.4	-0.7	-11.9	2.5	2.8	5.1	-3.0	-0.3	2.2	3.9
L2b - MOS Gate Arra	81.2	86.9	20.5	20.5	17.7	16.4	75.2	16.4	16.4	15.5	14.9	63.1	59.1	56.7
3/3 % \$	-12.4	7.0	-4.0	0.2	-13.7	-7.3	-13.5	-0.3	-0.1	-5.3	-4.0	-16.0	-6.5	-4.0
L2c - MOS Std Cell, f	10423.2	10791.7	2780.8	3025.9	3100.5	3140.9	12048.0	3086.1	3150.6	3273.1	3345.4	12855.3	13613.7	14553.1
3/3 % \$	3.5	3.5	2.5	8.8	2.5	1.3	11.6	-1.7	2.1	3.9	2.2	6.7	5.9	6.9
L3 - MOS Display Dri	5422.6	5905.6	1187.5	1192.7	1675.6	1706.5	5762.3	1434.3	1412.0	1495.4	1531.6	5873.3	5998.3	6277.0
3/3 % \$	-10.1	8.9	-23.0	0.4	40.5	1.8	-2.4	-15.9	-1.6	5.9	2.4	1.9	2.1	4.6
L4 - MOS Touch Scr	2903.5	3222.4	765.7	808.3	826.3	841.9	3242.3	809.9	847.1	878.5	907.1	3442.7	3624.5	3889.6
3/3 % \$	9.4	11.0	-7.5	5.6	2.2	1.9	0.6	-3.8	4.6	3.7	3.3	6.2	5.3	7.3
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L1 - Bipolar Digital

WSTS Semiconductor Forecast

L1 - Bipolar Digital

[illegible]

L2a - MOS GP Logic

WSTS Semiconductor Forecast

L2a - MOS GP Logic

[illegible]

L2b - MOS Gate Arrays

WSTS Semiconductor Forecast

L2b - MOS Gate Arrays

[illegible]

MOS Std Cell, FPLD Code L2c
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	2018
Q4	Total
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2	2
3	3
4	4
5	5
6	6
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	2019	2020	2021
4 Total	Total	Total	Total

Page 30 SCD18_Final_Fcst_21Nov18 Copyright 2018 by WSTS L2c - MOS Std Cell, FPLD

MOS Display Driver

2018

2019	2020
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[illegible]

MOS Touch Screen (
Code L4

	2018
Q4	Total

	2019	2020	2021
Q4 Total	Total	Total	Total

[illegible]

LA - MOS SP Logic

WSTS Semiconductor Forecast

LA - MOS SP Logic

[illegible]

L5 - Consumer SP Logic

WSTS Semiconductor Forecast

L5 - Consumer SP Logic

[illegible]

L6 - Computer SP Logic

WSTS Semiconductor Forecast

L6 - Computer SP Logic

[illegible]

L7 - Communication SP Logic

WSTS Semiconductor Forecast

L7 - Communication SP Logic

Communication SP I	2016	2017	2018		2018		2019				2019	2020	2021	
Code L7	Total	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Total	Total
Amer - \$M	9365.5	9597.6	2166.2	2051.7	2291.2	2597.5	9106.6	2160.9	2163.3	2299.5	2601.9	9225.7	9546.0	10008.4
3/3 % \$	7.6	2.5	-36.7	-5.3	11.7	13.4	-5.1	-16.8	0.1	6.3	13.1	1.3	3.5	4.8
% of World	23.0	21.9	20.5	19.0	20.5	22.1	20.6	20.4	20.0	20.3	21.6	20.6	20.6	20.7
Europe - \$M	1112.6	1360.3	342.7	344.6	349.2	361.3	1397.8	334.8	341.2	352.9	368.4	1397.3	1426.2	1482.0
3/3 % \$	47.2	22.3	-8.6	0.6	1.3	3.5	2.8	-7.3	1.9	3.4	4.4	0.0	2.1	3.9
% of World	2.7	3.1	3.2	3.2	3.1	3.1	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.1
Japan - \$M	1837.9	2298.0	596.8	650.7	666.1	697.2	2610.7	627.9	640.2	666.1	703.1	2637.2	2693.4	2774.7
3/3 % \$	35.0	25.0	-7.0	9.0	2.4	4.7	13.6	-9.9	2.0	4.1	5.6	1.0	2.1	3.0
% of World	4.5	5.2	5.6	6.0	6.0	5.9	5.9	5.9	5.9	5.9	5.8	5.9	5.8	5.7
JPN - ¥100M	1989.0	2577.0	646.7	709.7	742.4	777.0	2875.8	699.8	713.5	742.4	783.7	2939.4	3002.1	3092.6
3/3 % ¥	20.7	29.6	-10.7	9.7	4.6	4.7	11.6	-9.9	2.0	4.1	5.6	2.2	2.1	3.0
Asia Pac - \$M	28327.6	30651.0	7483.3	7742.7	7848.2	8091.6	31165.8	7492.3	7657.9	8014.0	8359.3	31523.5	32684.4	34172.6
3/3 % \$	-5.6	8.2	-5.9	3.5	1.4	3.1	1.7	-7.4	2.2	4.6	4.3	1.1	3.7	4.6
% of World	69.7	69.8	70.7	71.8	70.4	68.9	70.4	70.6	70.9	70.7	69.5	70.4	70.5	70.5
World - \$M	40643.5	43906.9	10589.1	10789.7	11154.6	11747.6	44281.0	10615.9	10802.6	11332.6	12032.7	44783.8	46350.1	48437.7
3/3 % \$	-0.4	8.0	-14.5	1.9	3.4	5.3	0.9	-9.6	1.8	4.9	6.2	1.1	3.5	4.5
L7a - Cell Phone	2608.2	2876.2	834.9	772.9	712.1	740.0	3059.9	698.8	711.4	738.6	767.1	2915.9	2996.0	3111.9
3/3 % \$	13.2	10.3	5.5	-7.4	-7.9	3.9	6.4	-5.6	1.8	3.8	3.9	-4.7	2.7	3.9
L7b - Infrastructure	147.2	155.6	43.9	34.5	38.9	40.6	157.8	39.3	40.1	41.8	43.4	164.6	170.8	180.4
3/3 % \$	8.5	5.7	1.3	-21.4	12.7	4.4	1.4	-3.1	2.0	4.1	3.9	4.3	3.8	5.6
L7c - Short Range	6386.3	8141.2	2191.5	2262.7	2364.2	2454.4	9272.8	2285.5	2333.6	2464.3	2569.7	9653.0	10048.5	10542.9
3/3 % \$	12.7	27.5	-5.8	3.3	4.5	3.8	13.9	-6.9	2.1	5.6	4.3	4.1	4.1	4.9
L7d - Other Wireless	114.5	186.3	52.9	48.9	48.9	51.5	202.3	48.8	49.7	52.2	54.8	205.5	215.0	226.5
3/3 % \$	7.9	62.8	-1.8	-7.6	0.0	5.3	8.6	-5.3	1.9	5.1	4.9	1.6	4.6	5.3
L7e - Wired Comm	7235.2	7804.2	1870.2	2075.8	2138.2	2210.9	8295.1	2027.4	2079.6	2167.0	2254.4	8528.5	8810.7	9206.3
3/3 % \$	-6.2	7.9	-7.3	11.0	3.0	3.4	6.3	-8.3	2.6	4.2	4.0	2.8	3.3	4.5
L7f - Application Pro	24152.2	24743.5	5595.6	5594.9	5852.3	6250.2	23293.0	5516.1	5588.3	5868.6	6343.3	23316.3	24109.0	25169.8
3/3														

L8 - Automotive SP Logic

WSTS Semiconductor Forecast

L8 - Automotive SP Logic

[illegible]

**Multipurpose SP Loç
Code L9**

	2018
Q4	Total

	2019	2020	2021
Q4	Total	Total	Total

[illegible]

M99 - MOS Memory

WSTS Semiconductor Forecast

M99 - MOS Memory

MOS Memory Code M99	2016 Total	2017 Total	2018		2018		2019				2019	2020	2021	
			Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Total	Total
Amer - \$M	22881.6	41208.5	12781.6	12971.9	14753.0	14574.4	55080.9	13741.6	13236.9	13631.5	14167.2	54777.2	55663.9	56697.7
3/3 % \$	-11.9	80.1	-2.3	1.5	13.7	-1.2	33.7	-5.7	-3.7	3.0	3.9	-0.6	1.6	1.9
% of World	29.8	33.2	33.8	32.2	34.0	33.4	33.4	33.1	33.1	33.4	33.6	33.3	33.4	33.4
Europe - \$M	3886.2	6436.4	1910.7	2070.5	2081.1	2151.1	8213.4	1976.2	1919.1	1942.5	2002.5	7840.3	7708.7	7780.3
3/3 % \$	-21.1	65.6	-2.0	8.4	0.5	3.4	27.6	-8.1	-2.9	1.2	3.1	-4.5	-1.7	0.9
% of World	5.1	5.2	5.1	5.1	4.8	4.9	5.0	4.8	4.8	4.8	4.7	4.8	4.6	4.6
Japan - \$M	4775.1	6250.6	1670.5	1822.2	1895.1	1888.6	7276.4	1722.6	1673.2	1821.1	1789.2	7006.1	6951.1	7015.9
3/3 % \$	-5.1	30.9	-9.9	9.1	4.0	-0.3	16.4	-8.8	-2.9	8.8	-1.8	-3.7	-0.8	0.9
% of World	6.2	5.0	4.4	4.5	4.4	4.3	4.4	4.2	4.2	4.5	4.2	4.3	4.2	4.1
JPN - ¥100M	5169.6	7007.7	1810.2	1987.2	2112.3	2105.0	8014.7	1920.0	1865.0	2029.8	1994.2	7808.9	7747.7	7819.8
3/3 % ¥	-15.1	35.6	-13.6	9.8	6.3	-0.3	14.4	-8.8	-2.9	8.8	-1.8	-2.6	-0.8	0.9
Asia Pac - \$M	45223.9	70078.3	21420.6	23460.9	24664.7	24992.7	94538.9	24018.3	23195.8	23476.4	24228.4	94919.0	96239.4	98224.0
3/3 % \$	9.5	55.0	6.9	9.5	5.1	1.3	34.9	-3.9	-3.4	1.2	3.2	0.4	1.4	2.1
% of World	58.9	56.5	56.7	58.2	56.8	57.3	57.3	57.9	58.0	57.4	57.4	57.7	57.8	57.9
World - \$M	76766.9	123973.7	37783.4	40325.4	43393.9	43606.8	165109.6	41458.7	40025.0	40871.6	42187.3	164542.6	166563.1	169717.9
3/3 % \$	-0.6	61.5	2.3	6.7	7.6	0.5	33.2	-4.9	-3.5	2.1	3.2	-0.3	1.2	1.9
M1 - MOS DRAM	41178.9	72802.5	23165.0	25216.4	27538.9	28915.3	104835.5	26759.5	25479.2	25497.9	26365.1	104101.7	102852.5	103161.0
3/3 % \$	-8.4	76.8	6.0	8.9	9.2	5.0	44.0	-7.5	-4.8	0.1	3.4	-0.7	-1.2	0.3
M2 - TOTAL MOS SR	430.7	399.4	104.8	103.7	100.7	92.0	401.2	90.2	90.7	91.3	88.5	360.7	345.8	336.0
3/3 % \$	-8.7	-7.3	4.8	-1.1	-2.9	-8.6	0.4	-2.0	0.6	0.6	-3.0	-10.1	-4.1	-2.8
M6 - Other Memory	1185.4	1221.7	299.3	321.1	328.7	315.7	1264.8	308.3	328.1	337.5	323.9	1297.8	1312.7	1342.6
3/3 % \$	-0.1	3.1	-1.4	7.3	2.4	-4.0	3.5	-2.3	6.4	2.9	-4.0	2.6	1.1	2.3
M7A - NOR Flash	1709.8	1949.5	519.8	568.3	568.5	564.6	2221.2	527.4	569.4	577.5	553.6	2227.9	2279.1	2347.5
3/3 % \$	11.0	14.0	-0.8	9.3	0.0	-0.7	13.9	-6.6	8.0	1.4	-4.1	0.3	2.3	3.0
M7B - NANDFlash	32023.1	47227.0	13600.4	14030.0	14669.7	13569.4	55869.6	13672.7	13461.9	14160.6	14742.0	56037.2	59231.3	62015.2
3/3 % \$	11.0	47.5	-2.9	3.2	4.6	-7.5	18.3	0.8	-1.5	5.2	4.1	0.3	5.7	4.7
M8 - ROM & EPROM	239.1	373.6	94.2	85.9	187.4	149.9	517.4	100.5	95.8	206.8	114.2	517.4	541.7	515.7
3/3 % \$	25.1	56.3	-21.7	-8.8	118.2	-20.0	38.5	-32.9	-4.7	116.0	-44.8	0.0	4.7	-4.8
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NANDFlash Code M7B

	2018		
Q4	Total	Q1	Q2

19	2020	2021
tal	Total	Total

[illegible]

M6 - Other Memory

WSTS Semiconductor Forecast

M6 - Other Memory

[illegible]

IC Total

2018	
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2020	2021
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[illegible]

T99 - Tot Semicon

WSTS Semiconductor Forecast

T99 - Tot Semicon

Tot Semicon Code T99	2016 Total	2017 Total	2018		2018		2019				2019	2020	2021	
			Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Total	Total
Amer - \$M	65537.5	88493.5	24270.1	25033.4	28450.2	28068.9	105822.6	26162.8	25936.2	27097.5	28146.5	107343.1	111092.7	114631.3
3/3 % \$	-4.7	35.0	-9.6	3.1	13.6	-1.3	19.6	-6.8	-0.9	4.5	3.9	1.4	3.5	3.2
% of World	19.3	21.5	21.8	21.2	22.9	22.5	22.1	22.0	21.6	21.8	22.2	21.9	22.0	21.9
Europe - \$M	32706.7	38311.5	10806.5	10997.9	10783.8	10798.5	43386.8	10764.0	10945.9	11209.5	11311.4	44230.8	45317.1	46897.8
3/3 % \$	-4.5	17.1	6.9	1.8	-1.9	0.1	13.2	-0.3	1.7	2.4	0.9	1.9	2.5	3.5
% of World	9.6	9.3	9.7	9.3	8.7	8.7	9.1	9.0	9.1	9.0	8.9	9.0	9.0	8.9
Japan - \$M	32292.0	36595.3	9634.5	10182.7	10086.6	10194.9	40098.7	9840.9	10087.6	10554.2	10625.3	41107.9	42122.2	43518.1
3/3 % \$	3.8	13.3	-0.9	5.7	-0.9	1.1	9.6	-3.5	2.5	4.6	0.7	2.5	2.5	3.3
% of World	9.5	8.9	8.7	8.6	8.1	8.2	8.4	8.3	8.4	8.5	8.4	8.4	8.3	8.3
JPN - ¥100M	35067.7	41041.4	10439.9	11105.1	11242.4	11363.1	44150.5	10968.6	11243.5	11763.5	11842.8	45818.4	46948.9	48504.7
3/3 % ¥	-6.9	17.0	-4.9	6.4	1.2	1.1	7.6	-3.5	2.5	4.6	0.7	3.8	2.5	3.3
Asia Pac - \$M	208394.7	248820.6	66596.4	71724.7	74858.8	75447.8	288627.6	72417.7	72939.1	75267.9	76835.6	297460.2	307235.6	319360.0
3/3 % \$	3.6	19.4	-1.0	7.7	4.4	0.8	16.0	-4.0	0.7	3.2	2.1	3.1	3.3	3.9
% of World	61.5	60.4	59.8	60.8	60.3	60.6	60.4	60.8	60.8	60.6	60.5	60.7	60.7	60.9
World - \$M	338930.9	412220.9	111307.4	117938.7	124179.4	124510.1	477935.7	119185.3	119908.9	124129.0	126918.8	490142.0	505767.7	524407.3
3/3 % \$	1.1	21.6	-2.3	6.0	5.3	0.3	15.9	-4.3	0.6	3.5	2.2	2.6	3.2	3.7
F99 - Optoelectronic	31994.4	34812.8	8636.5	9400.8	10276.5	10400.7	38714.5	9637.9	10078.4	10710.9	10926.8	41354.1	43858.5	46655.9
3/3 % \$	-3.8	8.8	-8.4	8.9	9.3	1.2	11.2	-7.3	4.6	6.3	2.0	6.8	6.1	6.4
H99 - Sensors	10820.6	12570.9	3203.8	3381.4	3424.8	3392.4	13402.4	3404.7	3520.3	3591.7	3574.0	14090.8	14714.1	15301.5
3/3 % \$	22.7	16.2	-1.6	5.5	1.3	-0.9	6.6	0.4	3.4	2.0	-0.5	5.1	4.4	4.0
S2 - IC Total	276697.6	343186.0	93685.7	99071.5	104205.0	104662.5	401624.7	100033.9	100007.6	103381.0	106130.8	409553.4	421241.3	435406.8
3/3 % \$	0.8	24.0	-2.1	5.7	5.2	0.4	17.0	-4.4	0.0	3.4	2.7	2.0	2.9	3.4
S3 - Discrete Total	19418.3	21651.3	5781.5	6084.9	6273.1	6054.5	24194.0	6108.8	6302.5	6445.3	6287.1	25143.7	25953.8	27043.1
3/3 % \$	4.3	11.5	3.8	5.2	3.1	-3.5	11.7	0.9	3.2	2.3	-2.5	3.9	3.2	4.2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-									

MOS MCU Code P2

	2018
Q4	Total

2020 Total	2021 Total
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