

RELAY REPORT



Timely, Accurate and Insightful Analysis of the Component Relay Market

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Q1 2022 **sales up 23%** and **bookings 12% higher** versus Q1 2021

Thank you in the Hot Topic

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Market Overview: Relay Market Starts 2022 With Q1 Up 12% From Q4

Total reported sales for all relay types in North America for the first quarter of 2022 were \$ 81.7 M up 12% compared to the \$73.3 M reported in the previous quarter and up 23% from the \$66.3 M observed in the same quarter of 2021. Sales units for Q1 2022 totaled 82.3 M up 2% from the 80.5 M units sold in Q4 and 14% more than the 71.8 M in Q1 of 2021.

The companies included in reported sales are American Zettler, CIT, Crydom, Hongfa, Omron, Panasonic Electric Works, Schneider, and TE Connectivity. The relay types they reported on are component electromechanical with a maximum rating of >30 amps and solid state relays with a maximum rating of 125A. Appendix "A" defines which relay families are included by type, category, and contributing subscriber.

Based on the reported sales total of \$ 81.7 M, the total market for the relay types covered in Q1 2022 is estimated to be \$ 103.8 M and 104.4 M units.

The total booking dollars reported for all relay types in North America for Q1 2022 equaled \$ 93.9 M, 3% more than the previous quarter's \$ 91.4 M, and up 12% from Q1 2021's total bookings of \$ 83.8 M. The first quarter's book-to-bill ratio for dollars was 1.149. Booking units in Q1 2022 equaled 97.8 M running 6% below the 104.3 M in Q4. The first quarter's book-to-bill ratio for units was 1.188.

In the first quarter of 2022 compared to the fourth, sales were up in dollars and units for EMR's and SSR's. ASP's were down for SSR's and up for EMR's. In total dollars were up 12%, units up 2%, and ASP 9% higher. When compared to the first quarter of last year EMR's were higher in dollars and units while SSR's showed the opposite. ASP's increased for EMR and SSR. In total dollars rose 23% and units 15% higher with an ASP 8% higher.

Sales Growth By Relay Type

	Q1 2022Versus Q4 CY 2021			Q1 2022 Versus Q1 2021		
Category	Dollars	Units	ASP	Dollars	Units	ASP
Electro-mechanical	11.1%	1.3%	9.7%	34.1%	15.8%	15.8%
Solid State	12.9%	16.4%	-3.0%	-1.9%	-2.6%	0.8%
Total	11.6%	2.1%	9.2%	23.2%	14.5%	7.6%

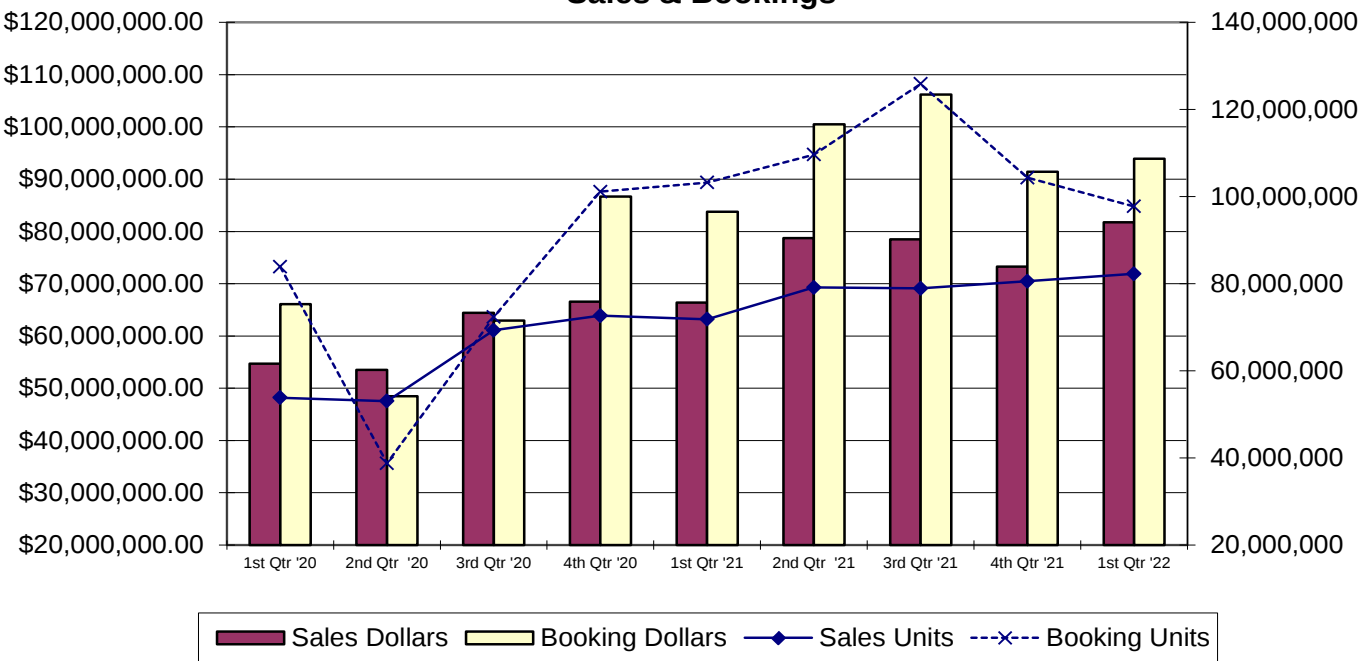
Booking dollars were higher for EMR's and SSR's in Q1 compared to Q4. Units fell for both. In total booking dollars increased 3%, units down 6%, while ABP rose 10%. The comparison to Q1 of 2021 shows dollars up for EMR's and SSR's with units down. All in, dollars rose by 12% with units 5% lower and the ABP up 18%.

Bookings Growth By Relay Type

	Q1 2022Versus Q4 CY 2021			Q1 2022 Versus Q1 2021		
Category	Dollars	Units	ABP	Dollars	Units	ABP
Electro-mechanical	2.2%	-5.9%	8.5%	5.9%	-3.2%	9.5%
Solid State	5.1%	-12.1%	19.5%	36.3%	-28.7%	91.1%
Total	2.8%	-6.3%	9.7%	12.1%	-5.3%	18.4%

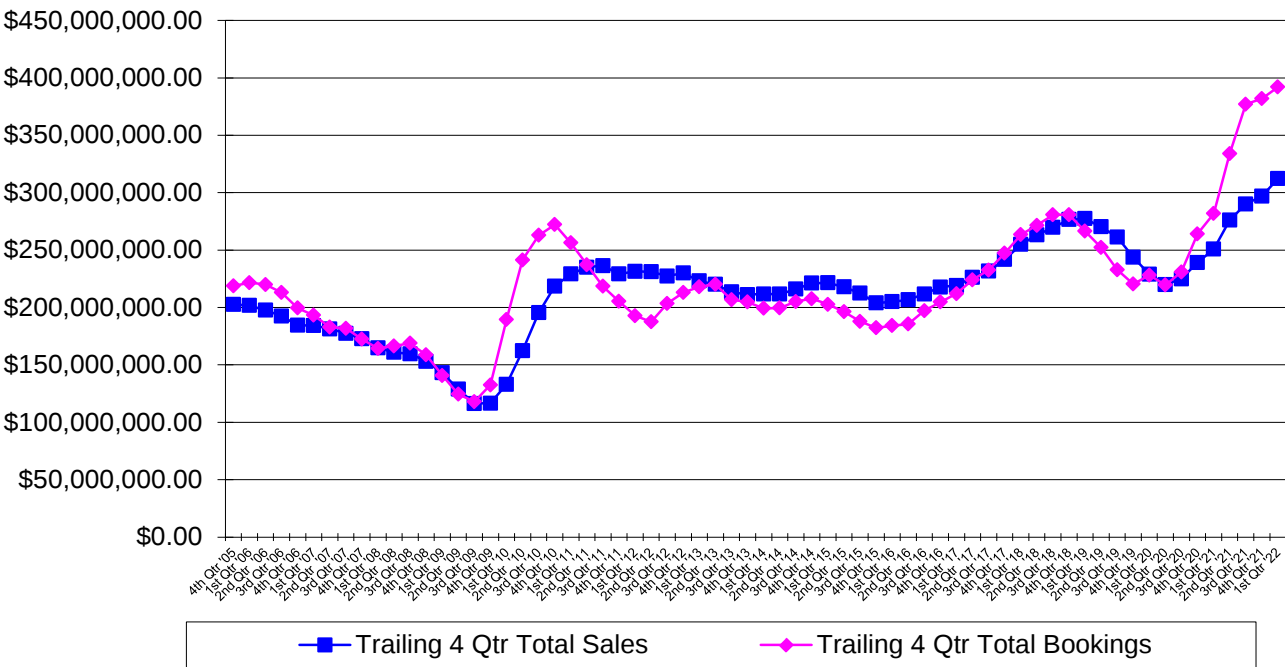
The graph below shows total quarterly sales and bookings in dollars and units for the reported data. In 2020 sales and bookings trended lower through the first half of 2020. All measures jumped higher in Q3 of 2020. Bookings jumped above sales in Q4 of 2020 and stayed there through 2021 and Q1 of 2022.

CY 2020/2022 Total Reported Electromechanical & Solid State Relay Sales & Bookings



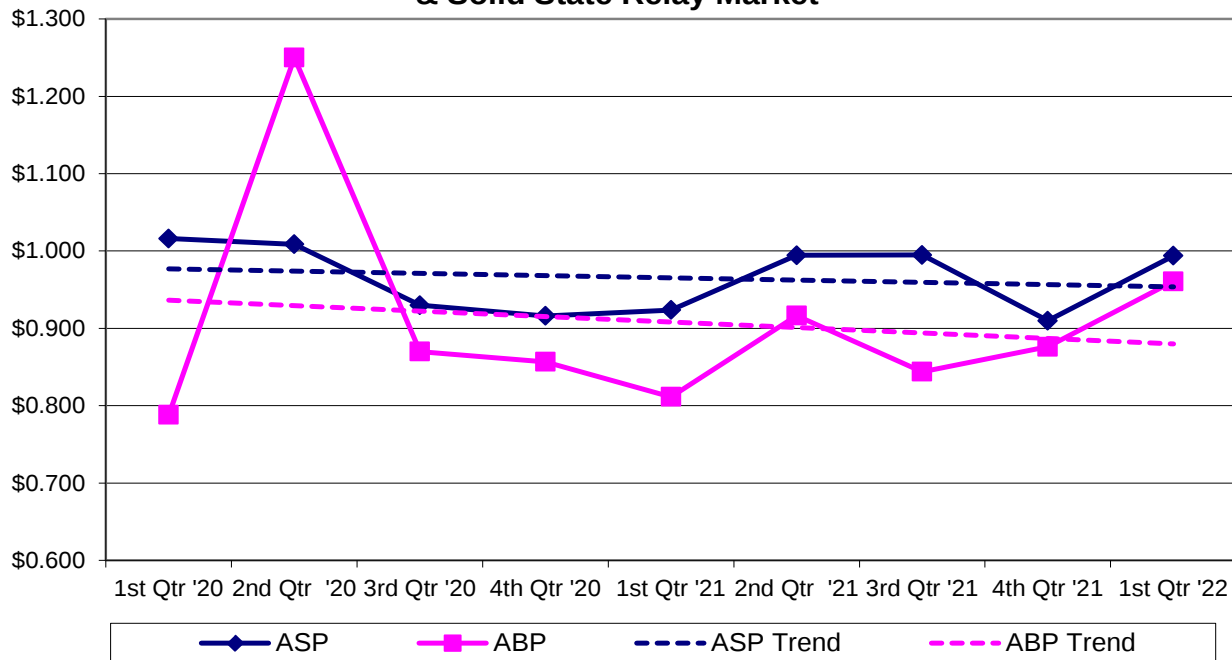
The graph of total sales and bookings for the trailing four quarters shows sales and bookings at all-time highs. Bookings for the trailing four quarters reached \$400 M.

Trailing 4 Quarters Relay Market Sales and Bookings



The overall selling prices have been trending lower over the last two years. Except for one quarter, the ABP has been below the ASP.

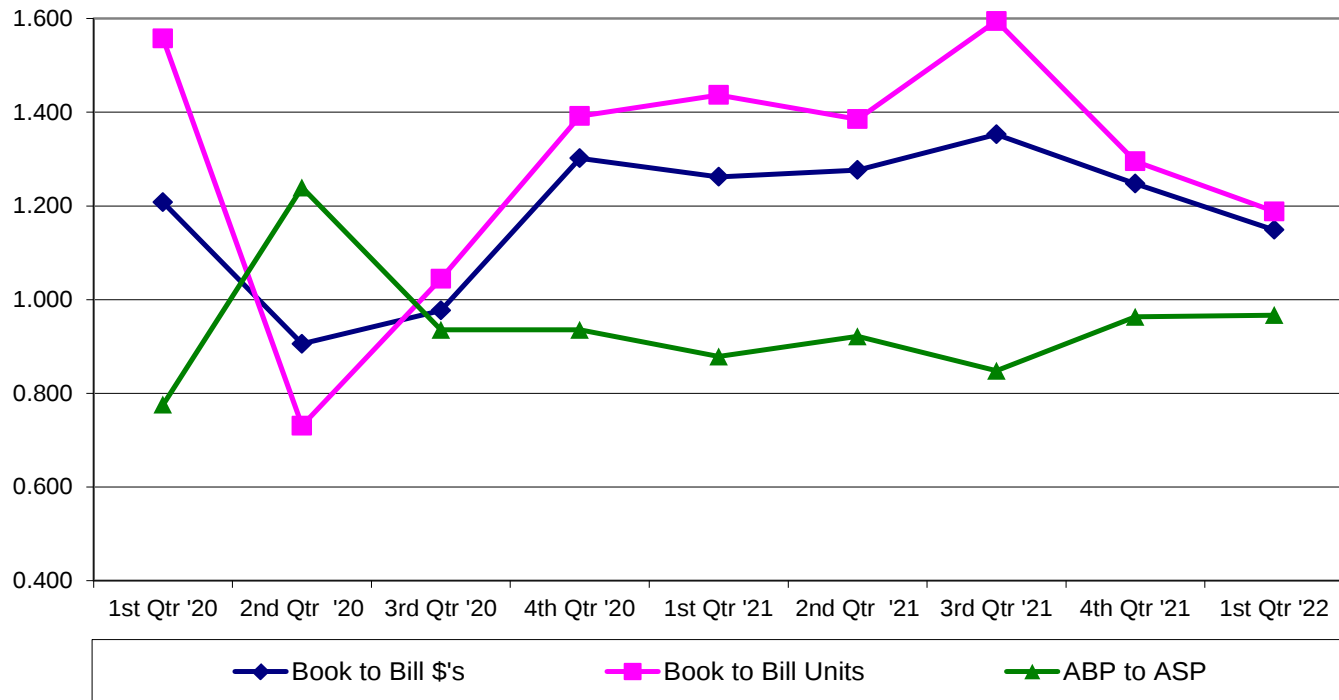
CY 2020/2022 Prices for Total Reported Electromechanical & Solid State Relay Market



Note the price graph above has trends included for the average selling and average booking prices. All of the price graphs will include either linear or polynomial regression analysis to show the trend of prices.

Book-to-bill dollars has trended higher until the last two quarters. Book-to bill units has been above 1.0 eight of nine quarters. The ratio of average booking to selling prices has been below 1.0 eight of the last nine quarters.

CY 2020/2022 Ratios for Total Reported Electromechanical & Solid State Relay Market



The two tables below show the breakdown of total reported sales and bookings by relay type.

Total Reported Q1 CY 2022 Sales by Type Versus Last and Same Qtr of CY 2021

Category	Q1 CY 2022			Q4 CY 2021			Q1 CY 2021		
	Dollars	Units	ASP	Dollars	Units	ASP	Dollars	Units	ASP
Electro-mechanical	\$62.1 M	77.3 M	\$0.803	\$55.8 M	76.3 M	\$0.732	\$46.3 M	66.8 M	\$0.693
Solid State	\$19.7 M	5.0 M	\$3.970	\$17.4 M	4.3 M	\$4.093	\$20.1 M	5.1 M	\$3.939
Total	\$81.7 M	82.3 M	\$0.994	\$73.3 M	80.5 M	\$0.910	\$66.3 M	71.8 M	\$0.924

Total Reported Q1 CY 2022 Bookings by Type Versus Last and Same Qtr of CY 2021

Category	Q1 CY 2022			Q4 CY 2021			Q1 CY 2021		
	Dollars	Units	ABP	Dollars	Units	ABP	Dollars	Units	ABP
Electro-mechanical	\$74.5 M	91.6 M	\$0.813	\$72.9 M	97.4 M	\$0.749	\$70.3 M	94.7 M	\$0.743
Solid State	\$19.4 M	6.1 M	\$3.178	\$18.5 M	7.0 M	\$2.659	\$14.3 M	8.6 M	\$1.663
Total	\$93.9 M	97.8 M	\$0.961	\$91.4 M	104.3 M	\$0.876	\$83.8 M	103.2 M	\$0.811

Electromechanical Relay Sales and Bookings for Q1 CY 2022

Total reported sales for Q1 CY 2022 for EMR's were \$62.1 M and 77.3 M units with an overall ASP of \$0.803 per relay. The companies included in reported sales were American Zettler, CIT, Hongfa, Omron, Panasonic Electric Works, Schneider, and TE Connectivity. Based on the sales of these manufacturers and estimates for those not yet reporting the total North American EMR market for Q1 CY 2022 is estimated at \$79.3 M and 98.8 M units. Total reported bookings for the same period were \$74.5 M and 91.6 M units with an overall ABP of \$0.813.

The two tables below show the breakdown of total reported sales and bookings for Q1 CY 2022 by category:

Sales by Category

Category	Dollars	% Of Total Dollars	Units	% Of Total Units	ASP
Signal $\leq$ 3A	\$ 17.6 M	28.3 %	25.2 M	32.6 %	\$ 0.697
PCB >3 – 20A	\$ 26.1 M	42.0 %	42.7 M	55.2 %	\$ 0.611
PCB >20 – 30A	\$ 7.7 M	12.4 %	6.2 M	8.0 %	\$ 1.258
PCB > 30A	\$ 1.2 M	1.9 %	0.5 M	0.6 %	\$ 2.578
Panel/Plug-in >3 – 20A	\$ 5.0 M	8.0 %	0.9 M	1.1 %	\$ 5.529
Panel/Plug-in >20 – 30A	\$ 3.8 M	6.1 %	1.6 M	2.1 %	\$ 2.389
Panel/Plug-in > 30A	\$ 0.5 M	1.3 %	0.1 M	0.4 %	\$ 3.312
Total	\$ 62.1 M	100 %	77.3 M	100 %	\$ 0.803

Bookings by Category

Category	Dollars	% Of Total Dollars	Units	% Of Total Units	ABP
Signal $\leq$ 3A	\$ 22.0 M	29.5 %	30.5 M	33.3 %	\$ 0.722
PCB >3 – 20A	\$ 32.9 M	44.2 %	52.7 M	57.5 %	\$ 0.625
PCB >20 – 30A	\$ 7.6 M	10.2 %	5.8 M	6.3 %	\$ 1.326
PCB > 30A	\$ 1.9 M	2.5 %	0.6 M	0.6 %	\$ 3.296
Panel/Plug-in >3 – 20A	\$ 5.0 M	6.7 %	0.9 M	1.0 %	\$ 5.644
Panel/Plug-in >20 – 30A	\$ 4.4 M	5.9 %	1.0 M	1.1 %	\$ 4.188
Panel/Plug-in >30A	\$ 0.6 M	1.0 %	0.2 M	0.2 %	\$ 3.630
Total	\$ 74.5 M	100 %	91.6 M	100 %	\$ 0.813

Compared to Q4, sales dollars decreased by 23% for high amp Panel/ Plug- In types but increased for each of the remaining categories of EMR's. Units were down nearly 4% for mid amp PCB types but up otherwise. ASP mirrored dollars with only high amp Panel/ Plug- In types decreasing, doing so by 39%. Overall, dollars were up 11%, units were up 1%, and ASP was up 10%.

Sales for Q1 CY 2022 Versus Q4 CY 2021

Category	Q1 CY 2022			Q4 CY 2021			% Change		
	Dollars	Units	ASP	Dollars	Units	ASP	Dollars	Units	ASP
Signal $\leq$ 3A	\$ 17.6 M	25.2 M	\$ 0.697	\$ 14.7 M	24.3 M	\$ 0.606	19.3%	3.8%	14.9%
PCB >3 – 20A	\$ 26.1 M	42.7 M	\$ 0.611	\$ 23.8 M	42.7 M	\$ 0.559	9.6%	0.2%	9.4%
PCB >20 – 30A	\$ 7.7 M	6.2 M	\$ 1.258	\$ 7.6 M	6.4 M	\$ 1.194	1.4%	-3.8%	5.4%
PCB > 30A	\$ 1.2 M	0.5 M	\$ 2.578	\$ 0.8 M	0.3 M	\$ 2.491	64.3%	58.8%	3.5%
Panel/Plug-in >3 – 20A	\$ 5.0 M	0.9 M	\$ 5.529	\$ 4.7 M	0.9 M	\$ 5.304	5.6%	1.3%	4.2%
Panel/Plug-in >20 – 30A	\$ 3.8 M	1.6 M	\$ 2.389	\$ 3.4 M	1.6 M	\$ 2.181	10.9%	1.3%	9.5%
Panel/Plug-in > 30A	\$ 0.5 M	0.1 M	\$ 3.312	\$ 0.6 M	0.1 M	\$ 5.442	-23.2%	26.1%	-39.1%
Total	\$ 62.1 M	77.3 M	\$ 0.803	\$ 55.8 M	76.3 M	\$ 0.732	11.1%	1.3%	9.7%

Contrasting Q1 with Q4, EMR booking dollars saw decreases for four of the seven categories of EMR. Units were opposite as four of the seven categories increased. ABP was down 7% and 1% for low and mid amp PCB types, respectively, while increasing for the other five categories. Overall, dollars were up 2%, units were down 6%, and ABP was up nearly 9%.

Bookings for Q1 CY 2022 Versus Q4 CY 2021

Category	Q1 CY 2022			Q4 CY 2021			% Change		
	Dollars	Units	ABP	Dollars	Units	ABP	Dollars	Units	ABP
Signal $\leq$ 3A	\$ 22.0 M	30.5 M	\$ 0.722	\$ 24.8 M	43.5 M	\$ 0.571	-11.4%	-29.9%	26.4%
PCB >3 – 20A	\$ 32.9 M	52.7 M	\$ 0.625	\$ 30.4 M	45.4 M	\$ 0.671	8.1%	16.2%	-7.0%
PCB >20 – 30A	\$ 7.6 M	5.8 M	\$ 1.326	\$ 7.6 M	5.7 M	\$ 1.332	-0.1%	0.4%	-0.5%
PCB > 30A	\$ 1.9 M	0.6 M	\$ 3.296	\$ 0.9 M	0.5 M	\$ 1.764	125%	20.3%	86.8%
Panel/Plug-in >3 – 20A	\$ 5.0 M	0.9 M	\$ 5.644	\$ 5.2 M	1.1 M	\$ 4.839	-2.7%	-16.6%	16.6%
Panel/Plug-in >20 – 30A	\$ 4.4 M	1.0 M	\$ 4.188	\$ 3.3 M	1.0 M	\$ 3.232	30.9%	1.0%	29.6%
Panel/Plug-in > 30A	\$ 0.6 M	0.2 M	\$ 3.630	\$ 0.6 M	0.2 M	\$ 3.602	-1.8%	-2.6%	0.8%
Total	\$ 74.5 M	91.6 M	\$ 0.813	\$ 72.9 M	97.4 M	\$ 0.749	2.2%	-5.9%	8.5%

Compared to Q1 CY 2021, Q1 CY 2022 sales dollars and units were up for all seven categories of EMR. ASP saw a decrease of 25% for high amp Panel/ Plug- In types but increases for each of the remaining six categories of EMR's. Overall, dollars were up 34%, units were up 16%, and ASP was up 16%.

Sales for Q1 CY 2022 Versus Q1 CY 2021

Category	Q1 CY 2022			Q1 CY 2021			% Change		
	Dollars	Units	ASP	Dollars	Units	ASP	Dollars	Units	ASP
Signal $\leq$ 3A	\$ 17.6 M	25.2 M	\$ 0.697	\$ 14.3 M	24.2 M	\$ 0.593	22.6%	4.3%	17.5%
PCB >3 – 20A	\$ 26.1 M	42.7 M	\$ 0.611	\$ 18.6 M	34.7 M	\$ 0.535	40.6%	23.1%	14.2%
PCB >20 – 30A	\$ 7.7 M	6.2 M	\$ 1.258	\$ 6.5 M	5.3 M	\$ 1.220	20.0%	16.4%	3.2%
PCB > 30A	\$ 1.2 M	0.5 M	\$ 2.578	\$ 0.4 M	0.2 M	\$ 2.169	243%	189%	18.9%
Panel/Plug-in >3 – 20A	\$ 5.0 M	0.9 M	\$ 5.529	\$ 4.0 M	0.8 M	\$ 5.098	25.8%	16.0%	8.5%
Panel/Plug-in >20 – 30A	\$ 3.8 M	1.6 M	\$ 2.389	\$ 2.2 M	1.5 M	\$ 1.462	71.1%	4.7%	63.5%
Panel/Plug-in > 30A	\$ 0.5 M	0.1 M	\$ 3.312	\$ 0.3 M	0.1 M	\$ 4.418	58.7%	111%	-25.0%
Total	\$ 62.1 M	77.3 M	\$ 0.803	\$ 46.3 M	66.8 M	\$ 0.693	34.1%	15.8%	15.8%

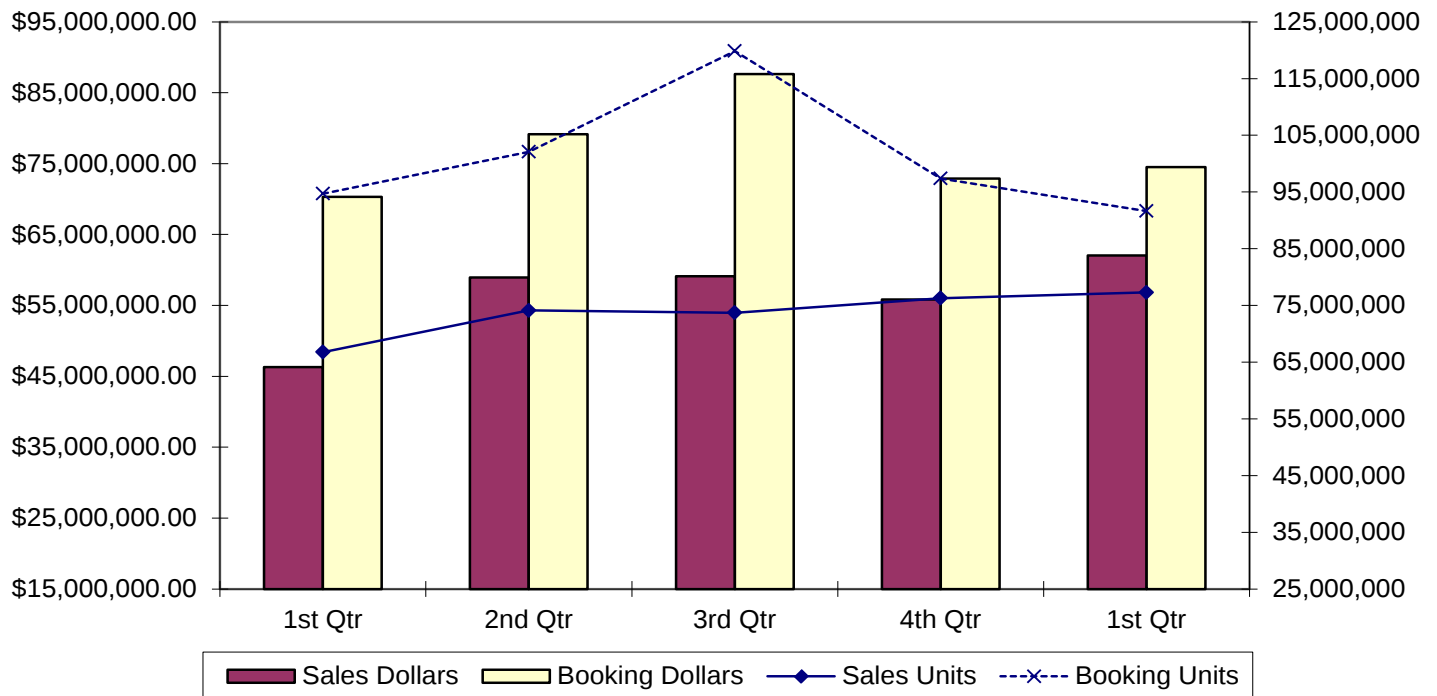
When total EMR bookings for Q1 CY 2022 are compared to Q1 CY 2021, booking dollars decreased for medium amp PCB types by 5%, while increasing otherwise. Units were mostly down as only three categories saw an increase. ABP increased for all seven categories of EMR. Overall, dollars were up 6%, units were down 3%, and ABP was up 10%.

Booking for Q1 CY 2022 Versus Q1 CY 2021

Category	Q1 CY 2022			Q1 CY 2021			% Change		
	Dollars	Units	ABP	Dollars	Units	ABP	Dollars	Units	ABP
Signal $\leq$ 3A	\$ 22.0 M	30.5 M	\$ 0.722	\$ 19.4 M	30.0 M	\$ 0.678	13.2%	1.5%	11.6%
PCB >3 – 20A	\$ 32.9 M	52.7 M	\$ 0.625	\$ 32.7 M	54.6 M	\$ 0.611	0.7%	-3.5%	4.4%
PCB >20 – 30A	\$ 7.6 M	5.8 M	\$ 1.326	\$ 8.0 M	7.2 M	\$ 1.491	-4.6%	-19.6%	18.6%
PCB > 30A	\$ 1.9 M	0.6 M	\$ 3.296	\$ 0.8 M	0.7 M	\$ 2.024	127%	-14.6%	166%
Panel/Plug-in >3 – 20A	\$ 5.0 M	0.9 M	\$ 5.644	\$ 4.7 M	0.9 M	\$ 5.078	6.2%	0.9%	5.3%
Panel/Plug-in >20 – 30A	\$ 4.4 M	1.0 M	\$ 4.188	\$ 4.2 M	1.1 M	\$ 4.040	4.1%	-7.2%	12.2%
Panel/Plug-in > 30A	\$ 0.6 M	0.2 M	\$ 3.630	\$ 0.4 M	0.1 M	\$ 2.218	47.6%	12.4%	31.3%
Total	\$ 74.5 M	91.6 M	\$ 0.813	\$ 70.3 M	94.7 M	\$ 0.775	5.9%	-3.2%	9.5%

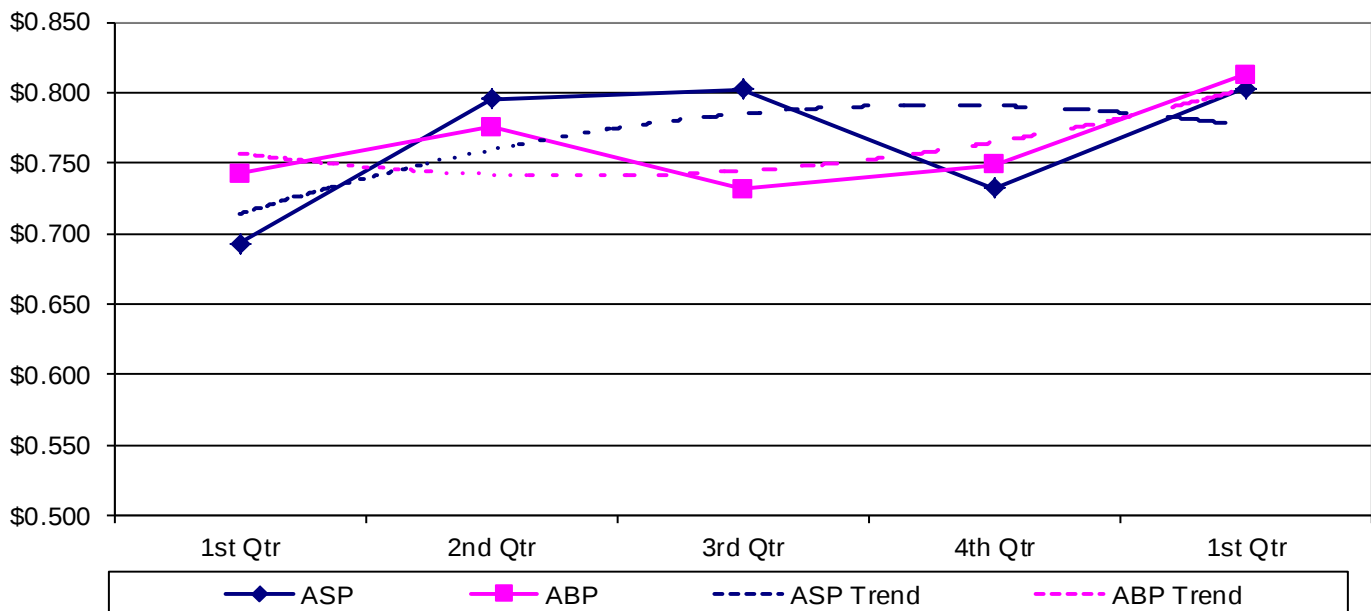
The chart below shows the sales and bookings in units and dollars for the reported total EMR market for the past five quarters. Sales metrics had positive results as both dollars and units reached new five quarter highs. Booking metrics had mixed results as dollars increased and units decreased for a second straight quarter.

CY 2021/2022 Total Electromechanical Relay Sales & Bookings



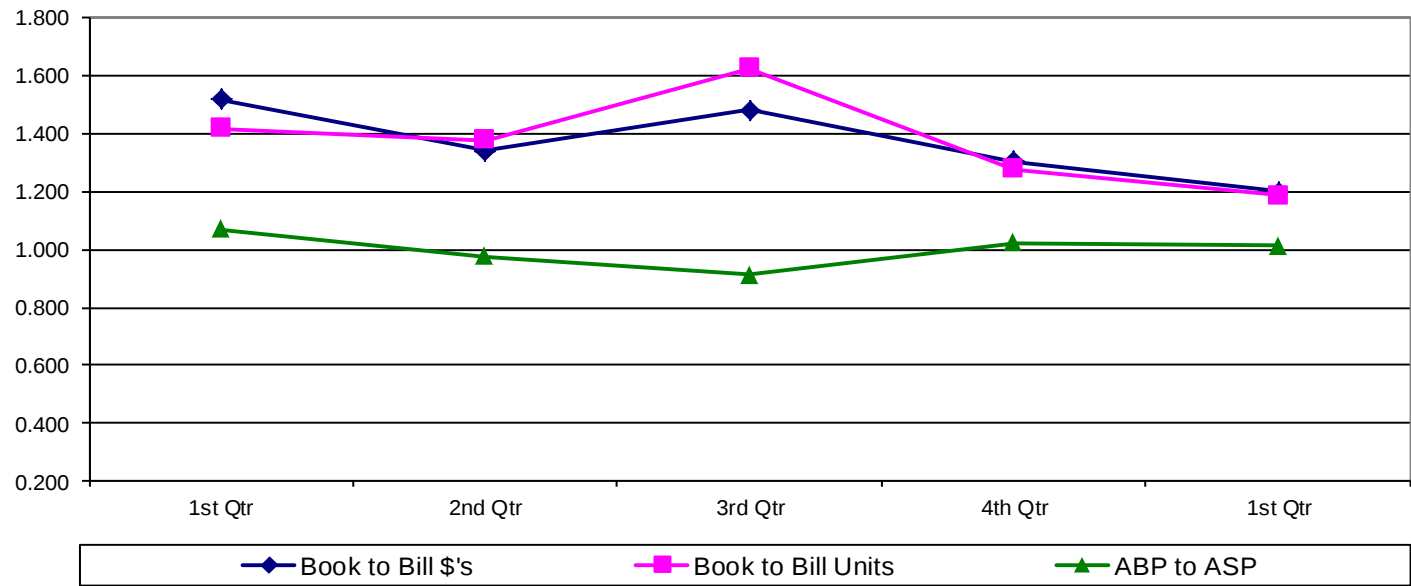
ASP and ABP both increased and did so at nearly the same rate, with both averages reaching above \$0.800. Factoring this quarter's movement, ASP is trending downward over the last five quarters while ABP has started to trend upward.

CY 2021/2022 Prices for Total Electromechanical Relay Market



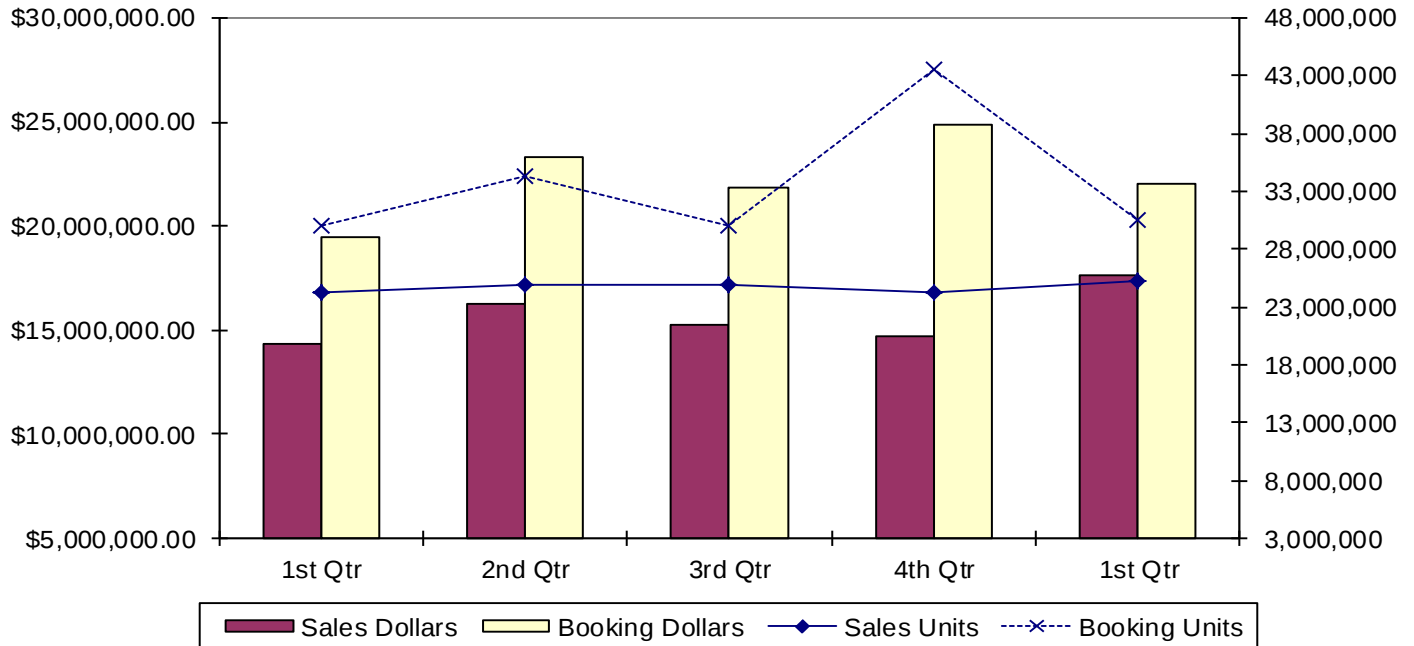
The book-to-bill dollars and units moved downward for a second straight quarter as both ratios settled at 1.200. ABP to ASP also decreased, but ever so slightly, remaining just above 1.000.

CY 2021/2022 Ratios for Total Electromechanical Relay Market

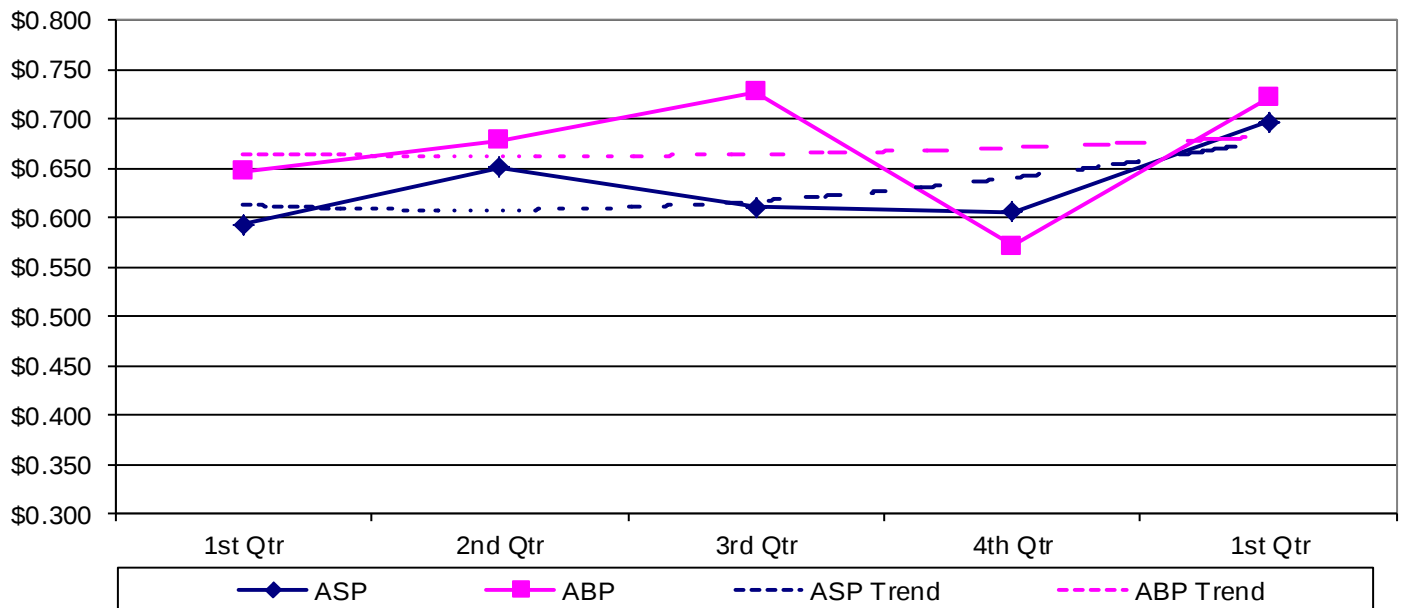


Low amp signal relays sales metrics saw dollars and units increase to new five quarter highs. Booking metrics both regressed from highs achieved last quarter. ASP and ABP both increased as ASP reached to \$0.700 while ABP climbed to about \$0.725.

CY 2021/2022 Total Signal, ≤ 3A, EM Relay Sales & Bookings

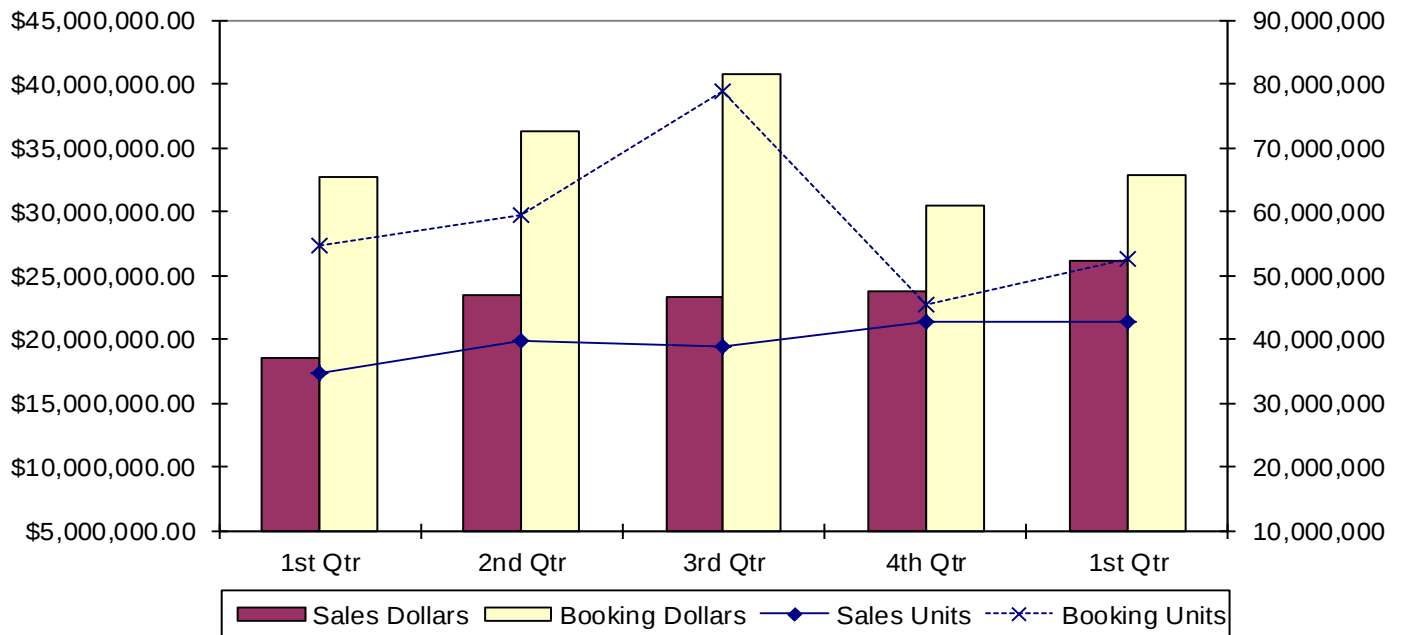


CY2021/2022 Signal, ≤ 3A, EM Relay Prices

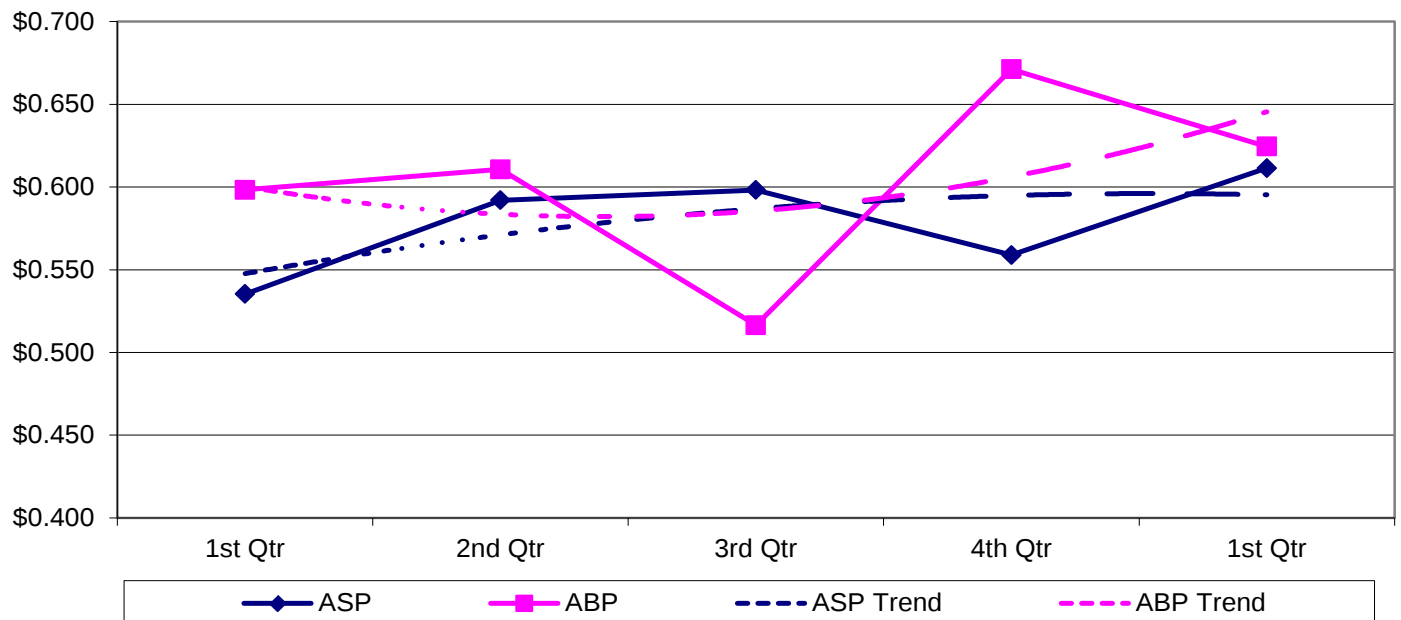


Low amp PCB's sales metrics saw dollars increase to a new five quarter high while units remained mostly unchanged. Booking metrics both increased after falling to lows last quarter. ASP and ABP moved in opposite directions as ASP increased and ABP decreased. Both averages settled around \$0.625.

CY 2021/2022 Total PCB Mount, $\geq 3 - 20A$, EM Relay Sales & Bookings

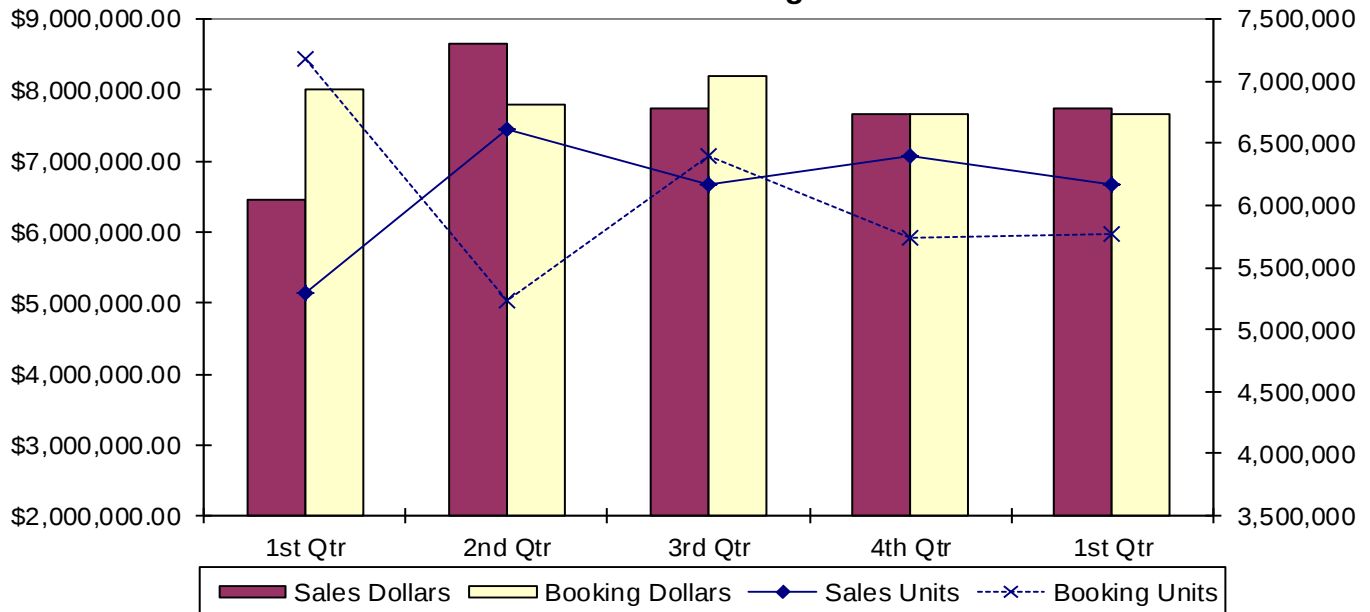


CY 2021/2022 PCB Mount, $>3 - 20A$, EM Relay Prices

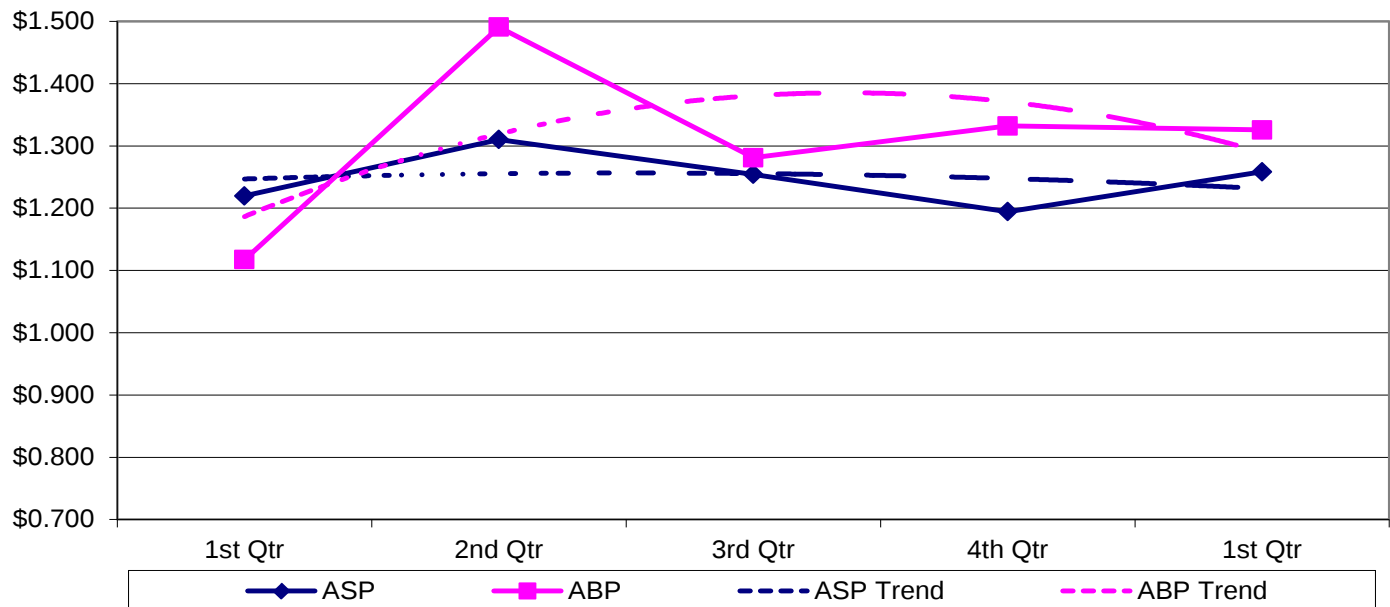


High amp PCB sales metrics had mixed results as dollars increased and units decreased. Booking metrics were also mixed but with dollars decreasing and units increasing. ASP increased for the first time since Q2 CY2021, climbing to about \$1.250. ABP decreased ever so slightly but remains above \$1.300.

CY 2021/2022 Total PCB Mount, >20 - 30A, EM Relay Sales & Bookings

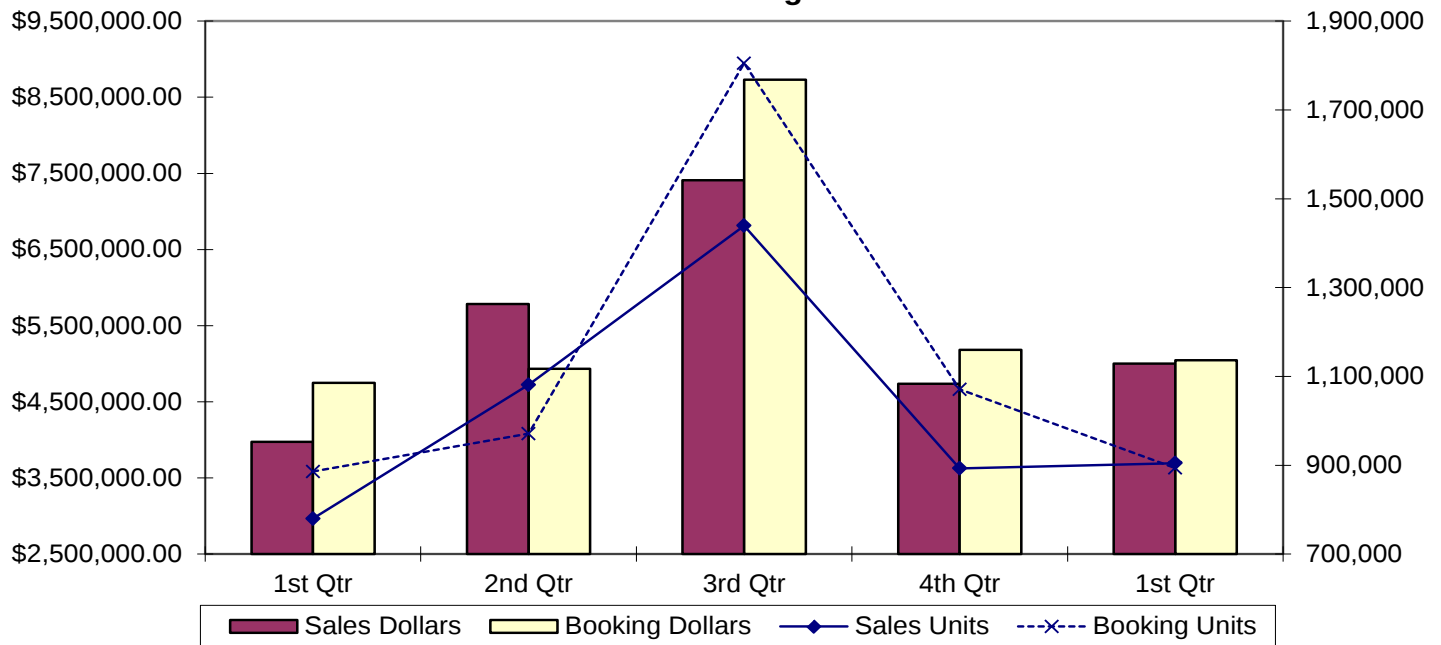


CY 2021/2022 PCB Mount, >20 - 30A, EM Relay Prices

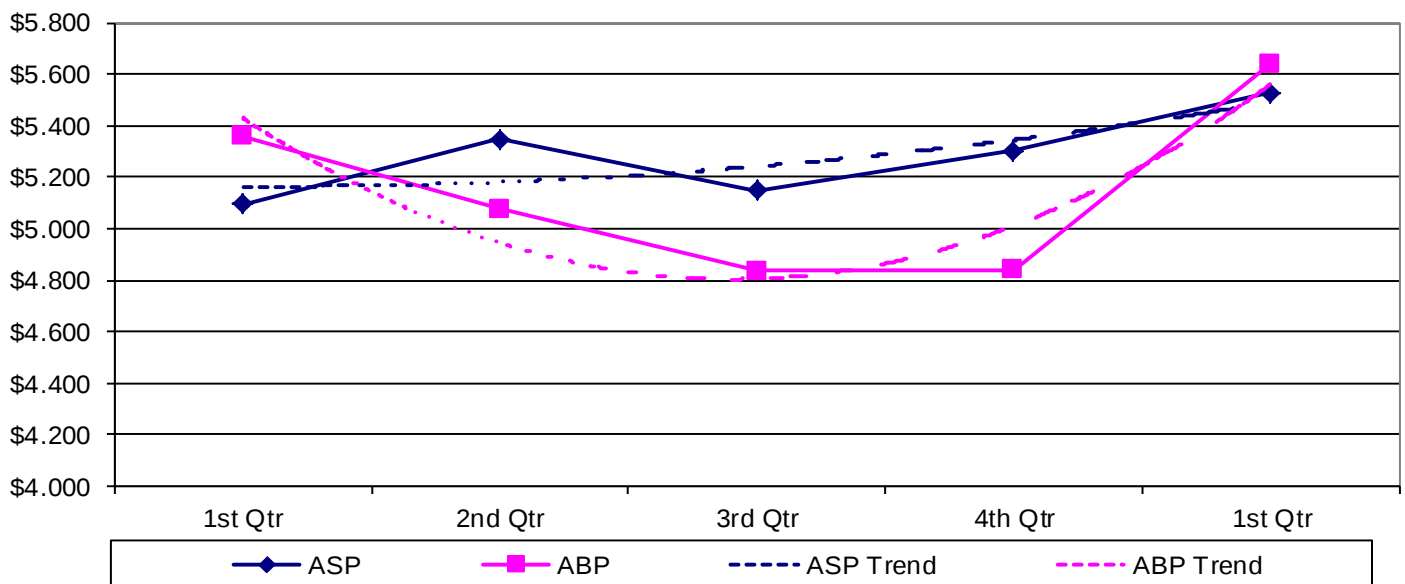


Low amp panel/plug-in sales metrics both increased after dropping sharply last quarter. Booking metrics dropped for a second straight quarter after reaching highs in Q3 CY2021. ASP and ABP both increased as ASP climbed to about \$5.500 while ABP climbed above ASP and \$5.600. Both averages are trending upward over the last five quarters.

CY 2021/2022 Total Panel/Plug-In Mount, >3-20A, EM Relay Sales & Bookings

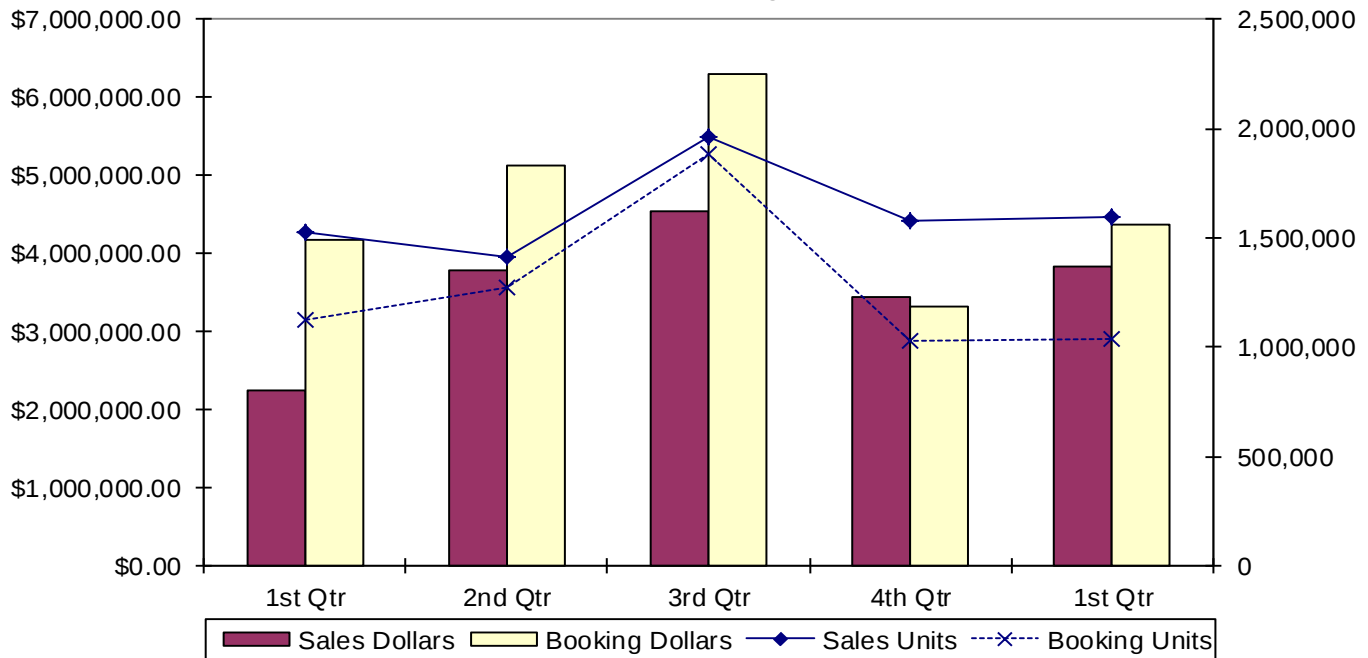


CY 2021/2022 Panel/Plug-In Mount, >3 - 20A, EM Relay Prices

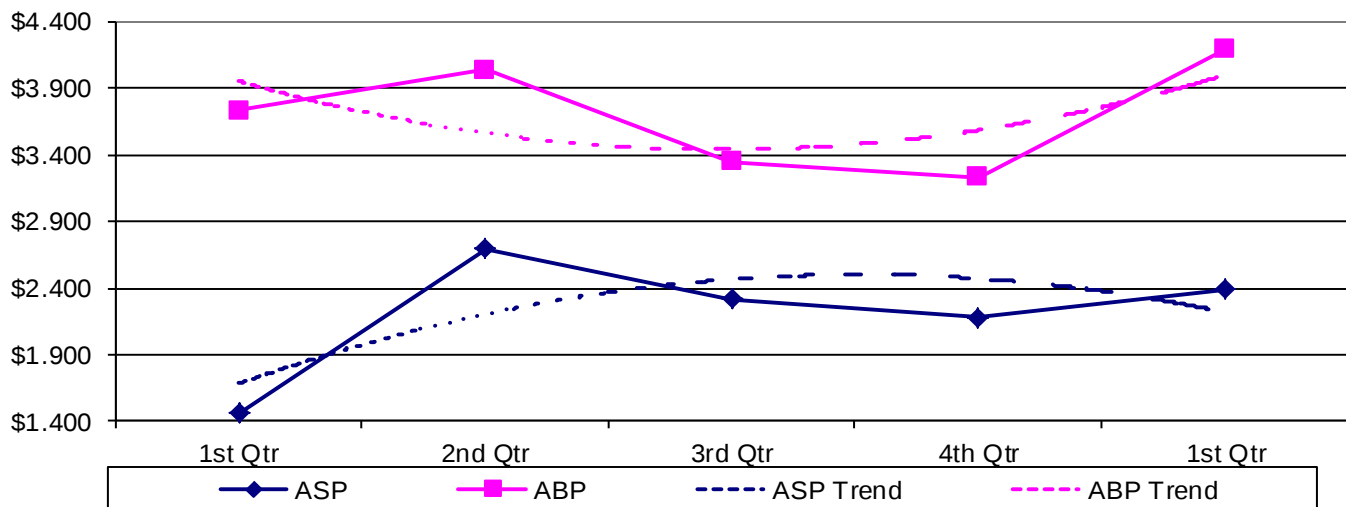


High amp panel/plug-in sales metrics saw both dollars and units increase after decreasing last quarter. Booking metrics show dollars increase while units remained mostly flat. ASP and ABP both increased as ASP climbed to \$2.400 while ABP climbed to nearly \$4.400.

CY 2021/2022 Total Panel/Plug-In Mount, >20 - 30A, EM Relay Sales & Bookings



CY 2021/2022 Panel/Plug-In Mount, >20 - 30A, EM Relay Prices



Q1 CY 2022 Total Reported Electromechanical Relay Data

<u>Sales</u>	<u>1st Qtr</u>	<u>Bookings</u>	<u>4th Qtr</u>	<u>Ratios</u>	<u>4th Qtr</u>
Signal ≤ 3A		Signal ≤ 3A		Signal ≤ 3A	
Sales Dollars	\$17,595,926.65	Booking Dollars	\$22,019,460.88	Book to Bill \$'s	1.251
Sales Units	25,249,402	Booking Units	30,493,364	Book to Bill Units	1.208
ASP	\$0.697	ABP	\$0.722	ABP to ASP	1.036
PCB		PCB		PCB	
>3 – 20A		>3 – 20A		>3 – 20A	
Sales Dollars	\$26,135,595.62	Booking Dollars	\$32,910,629.26	Book to Bill \$'s	1.259
Sales Units	42,746,949	Booking Units	52,698,875	Book to Bill Units	1.233
ASP	\$0.611	ABP	\$0.625	ABP to ASP	1.021
PCB		PCB		PCB	
>20 – 30A		>20 – 30A		>20 – 30A	
Sales Dollars	\$7,755,049.41	Booking Dollars	\$7,650,044.64	Book to Bill \$'s	0.986
Sales Units	6,162,614	Booking Units	5,770,842	Book to Bill Units	0.936
ASP	\$1.258	ABP	\$1.326	ABP to ASP	1.053
PCB		PCB		PCB	
> 30A		> 30A		> 30A	
Sales Dollars	\$1,250,629.61	Sales Dollars	\$1,934,378.23	Sales Dollars	1.547
Sales Units	485,157	Sales Units	586,967	Sales Units	1.210
ASP	\$2.578	ASP	\$3.296	ASP	1.278
Panel/Plug-in		Panel/Plug-in		Panel/Plug-in >3	
>3 – 20A		>3 – 20A		– 20A	
Sales Dollars	\$5,001,632.61	Booking Dollars	\$5,043,844.94	Book to Bill \$'s	1.008
Sales Units	904,680	Booking Units	893,733	Book to Bill Units	0.988
ASP	\$5.529	ABP	\$5.644	ABP to ASP	1.021
Panel/Plug-in		Panel/Plug-in		Panel/Plug-in	
>20 – 30A		>20 – 30A		>20 – 30A	
Sales Dollars	\$3,823,486.87	Booking Dollars	\$4,360,734.49	Book to Bill \$'s	1.141
Sales Units	1,600,143	Booking Units	1,041,179	Book to Bill Units	0.651
ASP	\$2.389	ABP	\$4.188	ABP to ASP	1.753
Panel/Plug-in >		Panel/Plug-in >		Panel/Plug-in >	
30A		30A		30A	
Sales Dollars	\$502,058.25	Sales Dollars	\$573,812.75	Sales Dollars	1.143
Sales Units	151,587	Sales Units	158,076	Sales Units	1.043
ASP	\$3.312	ASP	\$3.630	ASP	1.096
Totals		Totals		Total	
Sales Dollars	\$62,064,379.00	Booking Dollars	\$74,492,905.18	Book to Bill \$'s	1.200
Sales Units	77,300,531	Booking Units	91,643,035	Book to Bill Units	1.186
ASP	\$0.803	ABP	\$0.813	ABP to ASP	1.012

Solid State Relay Sales and Bookings for Q1 CY 2022

Total reported sales for Q1 CY 2021 for SSR's were \$19.7 M and 5.0 M units with an overall ASP of \$3.970 per relay. The companies included in reported sales were American Zettler, Crydom, Omron, Panasonic Electric Works, Schneider, and TE Connectivity. Based on the sales of these manufacturers and estimates for those not yet reporting the total North American SSR market for Q4 CY 2020 is estimated at \$33.8M and 8.5 M units. Total reported bookings for the same period were \$19.4 M and 6.1 M units with an overall ABP of \$3.178.

The two tables below show the breakdown of total reported sales and bookings for Q1 CY 2022 by category:

Sales by Category

Category	Dollars	% Of Total Dollars	Units	% Of Total Units	ASP
PCB Up to 20A	\$ 10.8 M	54.8 %	4.60 M	92.7 %	\$ 2.344
Panel Mount 2 – 25A	\$ 3.5 M	17.8 %	0.15 M	3.0 %	\$ 22.677
Panel Mount >25 – 125A	\$ 4.1 M	20.8 %	0.17 M	3.4 %	\$ 24.249
Din Rail Mount 1 - 5A	\$ 0.2 M	1.0 %	0.01 M	0.2 %	\$ 21.117
Din Rail Mount >5 - 50A	\$ 1.1 M	5.6 %	0.03 M	0.7 %	\$ 40.617
Total	\$ 19.7 M	100 %	4.96 M	100 %	\$ 3.970

Bookings by Category

Category	Dollars	% Of Total Dollars	Units	% Of Total Units	ABP
PCB Up to 20A	\$ 13.2 M	68.0 %	5.81 M	94.9 %	\$ 2.270
Panel Mount 2 – 25A	\$ 2.2 M	11.3 %	0.14 M	2.3 %	\$ 15.992
Panel Mount >25 – 125A	\$ 2.9 M	14.9 %	0.12 M	2.0 %	\$ 24.722
Din Rail Mount 1 - 5A	\$ 0.2 M	1.0 %	0.01 M	0.2 %	\$ 22.509
Din Rail Mount >5 - 50A	\$ 0.9 M	4.8 %	0.04 M	0.6 %	\$ 23.199
Total	\$ 19.4 M	100 %	6.12 M	100 %	\$ 3.178

Contrasting Q1 with Q4, SSR sales dollars were up for all five categories of SSR. Units were down 3% and 1% for low and high amp Din Rail types, but up for the remaining three categories. ASP was

down nearly 9% for PCB types but up otherwise. Overall, dollars were up 13%, units were up 16%, and ASP was down 3%.

Sales for Q1 CY 2022 Versus Q4 CY 2021

Category	Q1 CY 2022			Q4 CY 2021			% Change		
	Dollars	Units	ASP	Dollars	Units	ASP	Dollars	Units	ASP
PCB Up to 20A	\$ 10.8 M	4.60 M	\$ 2.344	\$ 10.1 M	3.92 M	\$ 2.571	6.9%	17.2%	-8.8%
Panel Mount 2 – 25A	\$ 3.5 M	0.15 M	\$ 22.677	\$ 2.7 M	0.13 M	\$ 19.981	28.6%	13.3%	13.5%
Panel Mount >25 – 125A	\$ 4.1 M	0.17 M	\$ 24.249	\$ 3.4 M	0.16 M	\$ 20.834	20.0%	3.1%	16.4%
Din Rail 1 - 5A	\$ 0.2 M	0.01 M	\$ 21.117	\$ 0.2 M	0.01 M	\$ 19.467	5.0%	-3.2%	8.5%
Din Rail >5 - 50A	\$ 1.1 M	0.03 M	\$ 40.617	\$ 1.0 M	0.03 M	\$ 37.312	7.9%	-0.9%	8.9%
Total	\$ 19.7 M	4.96 M	\$ 3.970	\$ 17.4 M	4.26 M	\$ 4.093	12.9%	16.4 %	-3.0%

Compared to Q4, booking dollars increased for all five categories of SSR. Units were down 13% for PCB types but up otherwise. ABP, much like dollars, was up for all five categories of SSR. Overall, dollars were up 5%, units were down 12%, and ABP was up 20%.

Bookings for Q1 CY 2022 Versus Q4 CY 2021

Category	Q1 CY 2022			Q4 CY 2021			% Change		
	Dollars	Units	ABP	Dollars	Units	ABP	Dollars	Units	ABP
PCB Up to 20A	\$ 13.2 M	5.81 M	\$ 2.270	\$ 13.1 M	6.66 M	\$ 1.964	0.8%	-12.8%	15.6%
Panel Mount 2 – 25A	\$ 2.2 M	0.14 M	\$ 15.992	\$ 2.1 M	0.14 M	\$ 15.198	7.2%	1.9%	5.2%
Panel Mount >25 – 125A	\$ 2.9 M	0.12 M	\$ 24.722	\$ 2.3 M	0.11 M	\$ 20.683	26.5%	5.8%	19.5%
Din Rail 1 - 5A	\$ 0.2 M	0.01 M	\$ 22.509	\$ 0.2 M	0.01 M	\$ 20.980	9.1%	1.7%	7.3%
Din Rail >5 - 50A	\$ 0.9 M	0.04 M	\$ 23.199	\$ 0.9 M	0.04 M	\$ 21.743	6.9%	0.2%	6.7%
Total	\$ 19.4 M	6.12 M	\$ 3.178	\$ 18.5 M	6.96 M	\$ 2.659	5.1%	-12.1%	19.5%

When total SSR sales for Q1 CY 2022 are compared to Q1 CY 2021, sales dollars and units decreased for PCB and low amp Panel Mount switches. Sales dollars and units increased for the remaining three categories of SSR. ASP was mostly up as only low panel mount and high amp Din Rail types decreased, doing so by 2% and 1%, respectively. Overall, dollars were down 2%, units were down 3%, and ASP was up 1%.

Sales for Q1 CY 2022 Versus Q1 CY 2021

Category	Q1 CY 2022			Q1 CY 2021			% Change		
	Dollars	Units	ASP	Dollars	Units	ASP	Dollars	Units	ASP
PCB Up to 20A	\$ 10.8 M	4.60 M	\$ 2.344	\$10.9 M	4.72 M	\$ 2.302	-0.9%	-2.6%	1.8%
Panel Mount 2 – 25A	\$ 3.5 M	0.15 M	\$ 22.677	\$ 4.1 M	0.17 M	\$ 23.219	-14.2%	-12.2%	-2.3%
Panel Mount >25 – 125A	\$ 4.1 M	0.17 M	\$ 24.249	\$ 3.9 M	0.16 M	\$ 24.090	7.3%	6.5%	0.7%
Din Rail 1 - 5A	\$ 0.2 M	0.01 M	\$ 21.117	\$ 0.2 M	0.01 M	\$ 21.064	5.7%	5.4%	0.3%
Din Rail >5 - 50A	\$ 1.1 M	0.03 M	\$ 40.617	\$ 1.0 M	0.02 M	\$ 41.002	0.8%	1.7%	-0.9%
Total	\$ 19.7 M	4.96 M	\$ 3.970	\$ 20.1 M	5.09 M	\$ 3.939	-1.9%	-2.6%	0.8%

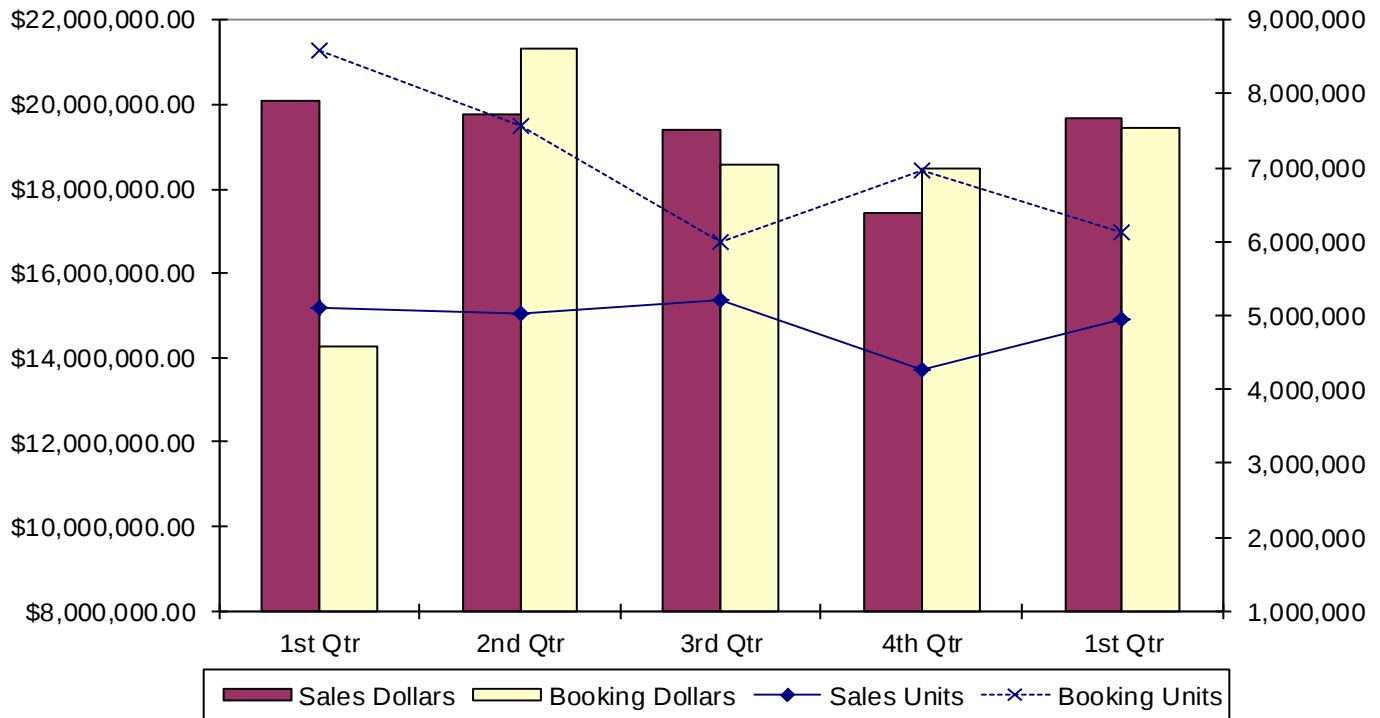
Compared to Q1 CY 2021, Q1 CY 2022 booking dollars decreased by nearly 1% for high amp Din Rail types but increased for the remaining four categories of SSR. Units were also mostly up with only PCB types decreasing, doing so by 30%. ABP was mostly up as only low amp Panel Mount and high amp Din Rail types decreased. Overall, dollars were up 36%, units were down 29%, and ABP was up 91%.

Bookings for Q1 CY 2022 Versus Q1 CY 2021

Category	Q1 CY 2022			Q1 CY 2021			% Change		
	Dollars	Units	ABP	Dollars	Units	ABP	Dollars	Units	ABP
PCB Up to 20A	\$ 13.2 M	5.81 M	\$ 2.270	\$ 8.6 M	8.31 M	\$ 1.042	52.4%	-30.0%	118%
Panel Mount 2 – 25A	\$ 2.2 M	0.14 M	\$ 15.992	\$ 1.8 M	0.11 M	\$ 16.196	22.1%	23.6%	-1.3%
Panel Mount >25 – 125A	\$ 2.9 M	0.12 M	\$ 24.722	\$ 2.6 M	0.11 M	\$ 24.289	9.0%	7.1%	1.8%
Din Rail 1 - 5A	\$ 0.2 M	0.01 M	\$ 22.509	\$ 0.2 M	0.01 M	\$ 22.283	4.3%	3.2%	1.0%
Din Rail >5 - 50A	\$ 0.9 M	0.04 M	\$ 23.199	\$ 0.9 M	0.04 M	\$ 24.242	-0.9%	3.6%	-4.3%
Total	\$ 19.4 M	6.12 M	\$ 3.178	\$ 14.3 M	8.58 M	\$ 1.663	36.3%	-28.7%	91.1%

The chart below shows the sales and bookings in units and dollars for the reported total SSR market for the past five quarters. Sales metrics had positive results as both metrics rebounded from five quarter lows achieved last quarter. Booking had mixed results as dollars increased and units decreased.

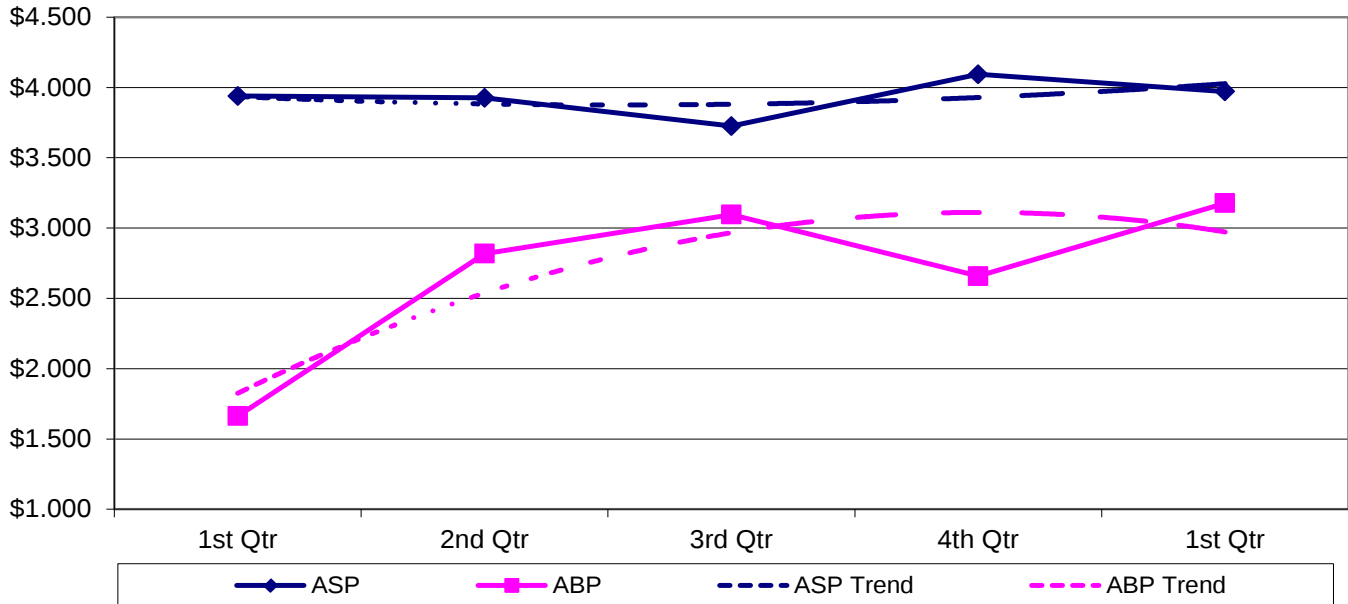
CY 2021/2022 Total Solid State Relay Sales & Bookings



ASP and ABP moved in opposite directions as ASP decreased below \$4.000 while ABP increased to about \$3.250. Despite this quarter's movement, ASP is still trending upward overall and ABP is

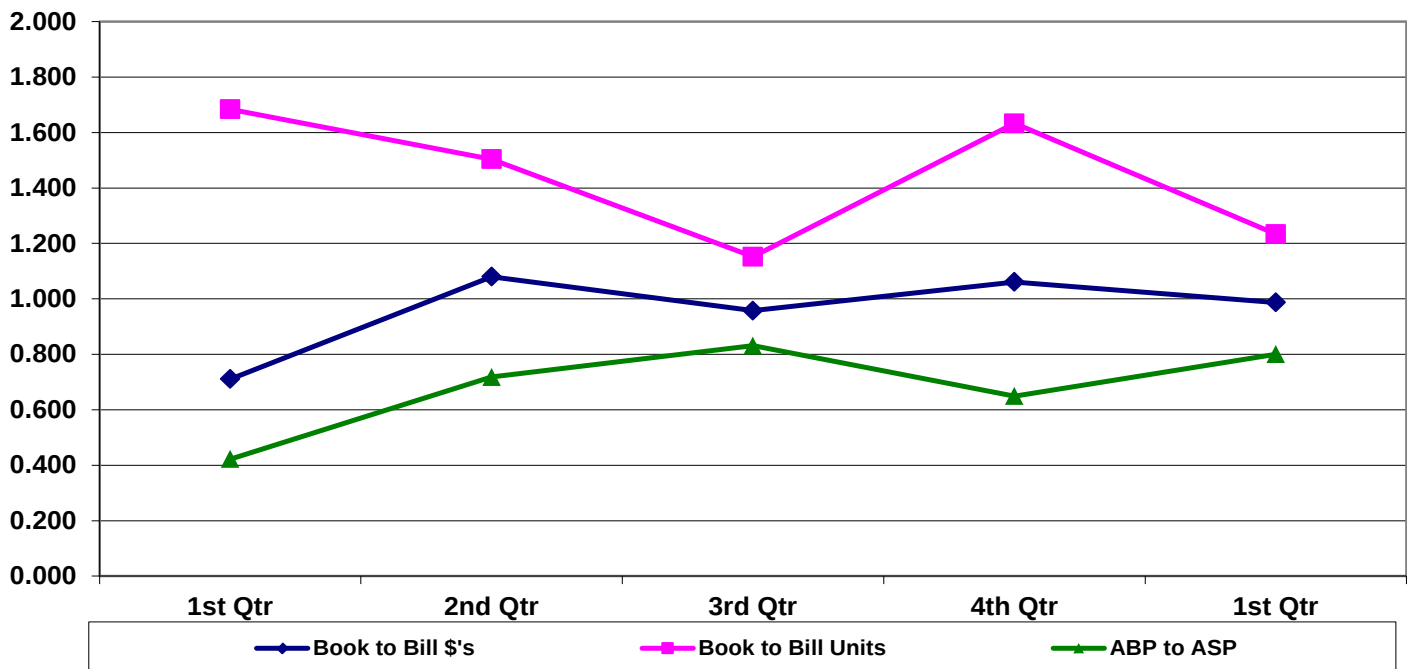
trending downward.

CY 2020/2021 Prices for Total Solid State Relay Market



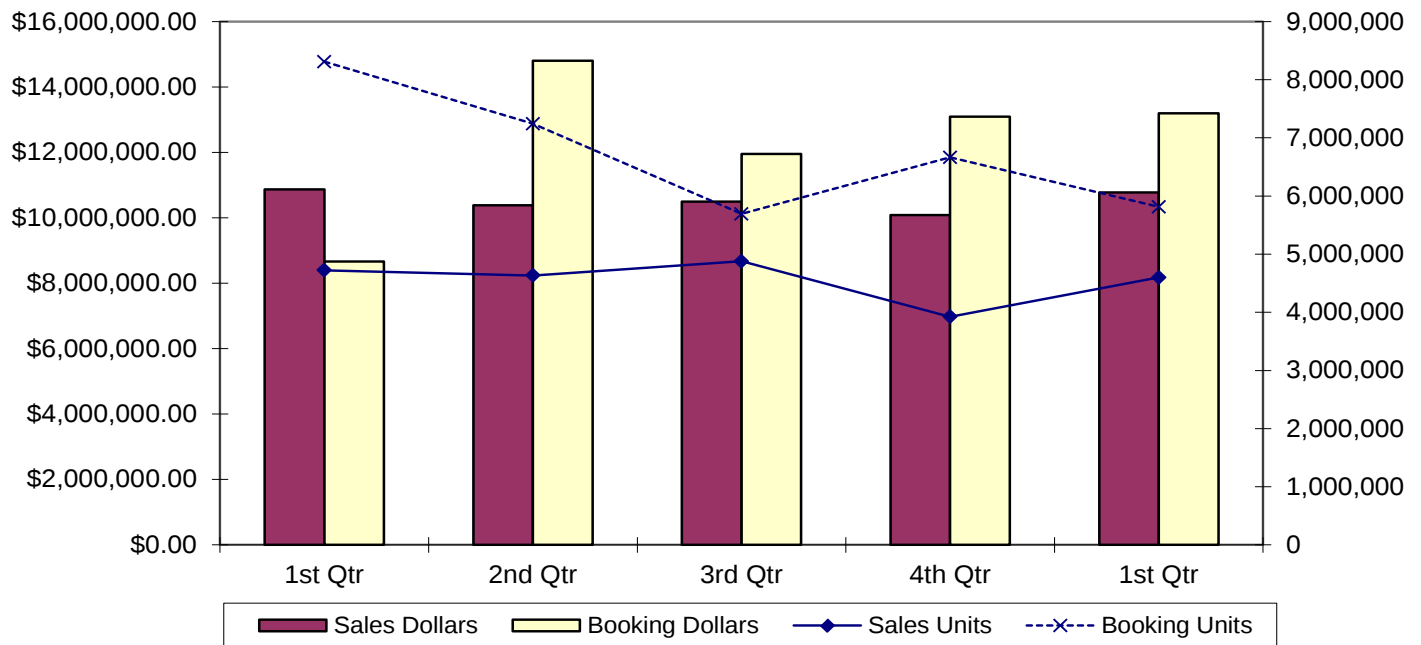
The book-to-bill dollars and units both moved downward as dollars dropped 1.000 while units were down to nearly 1.200. ABP to ASP increased to 0.800.

CY 2021/2022 Ratios for Total Solid State Relay Market

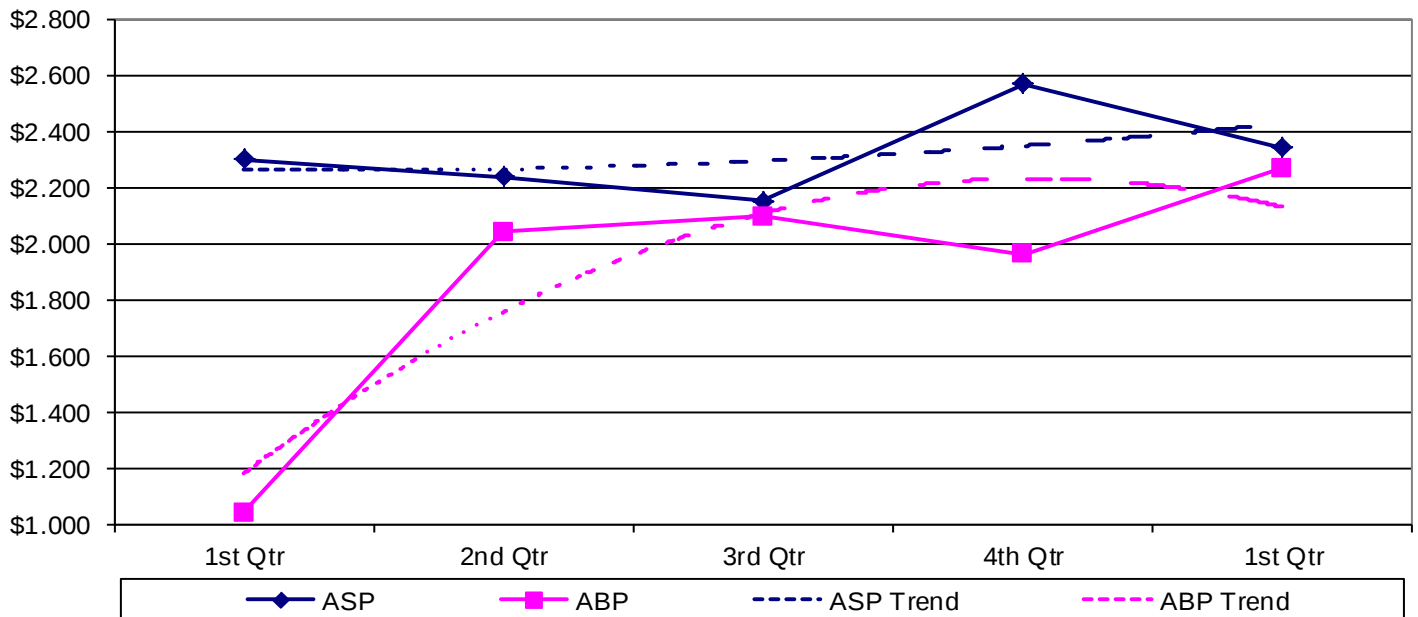


Total PCB mount sales metrics had positive results as both rebounded from low values achieved last quarter. Booking metrics saw mixed results as dollars increased and units decreased. ASP and ABP moved in opposite directions as ASP decreased and ABP increased. Both averages settled around \$2.300.

CY 2021/2022 Total PCB Up to 20A, SS Relay Sales & Bookings

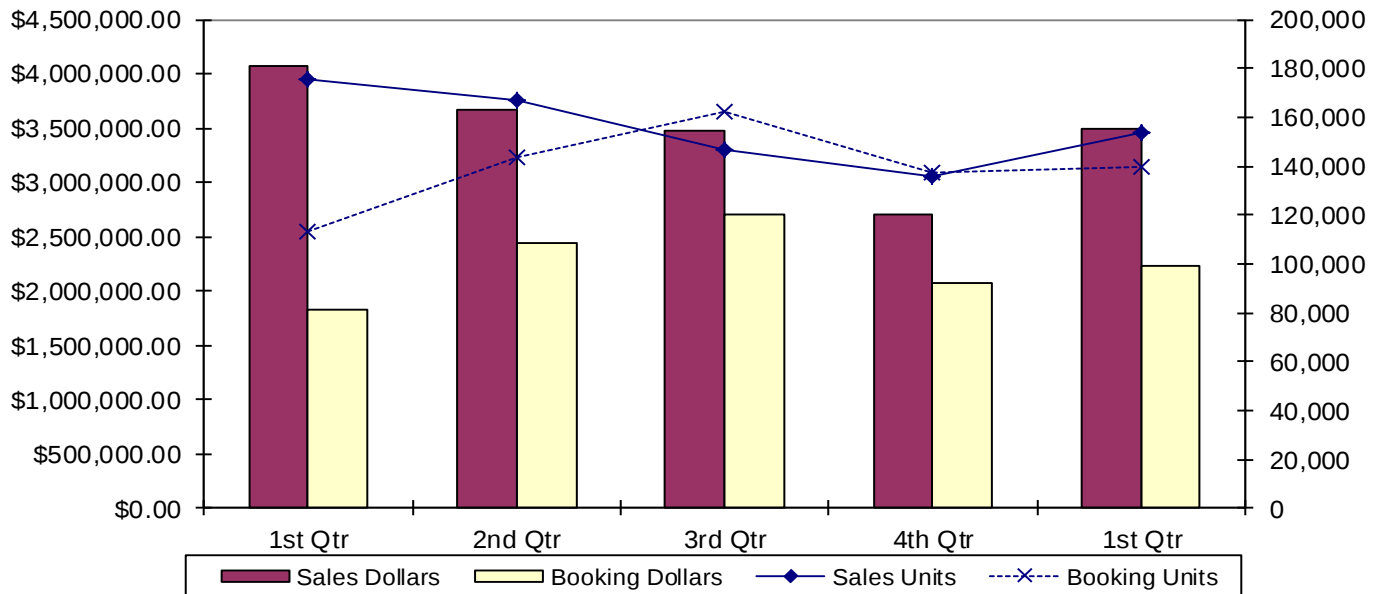


CY2021/2022 PCB Mount Up to 20A, SS Relay Prices

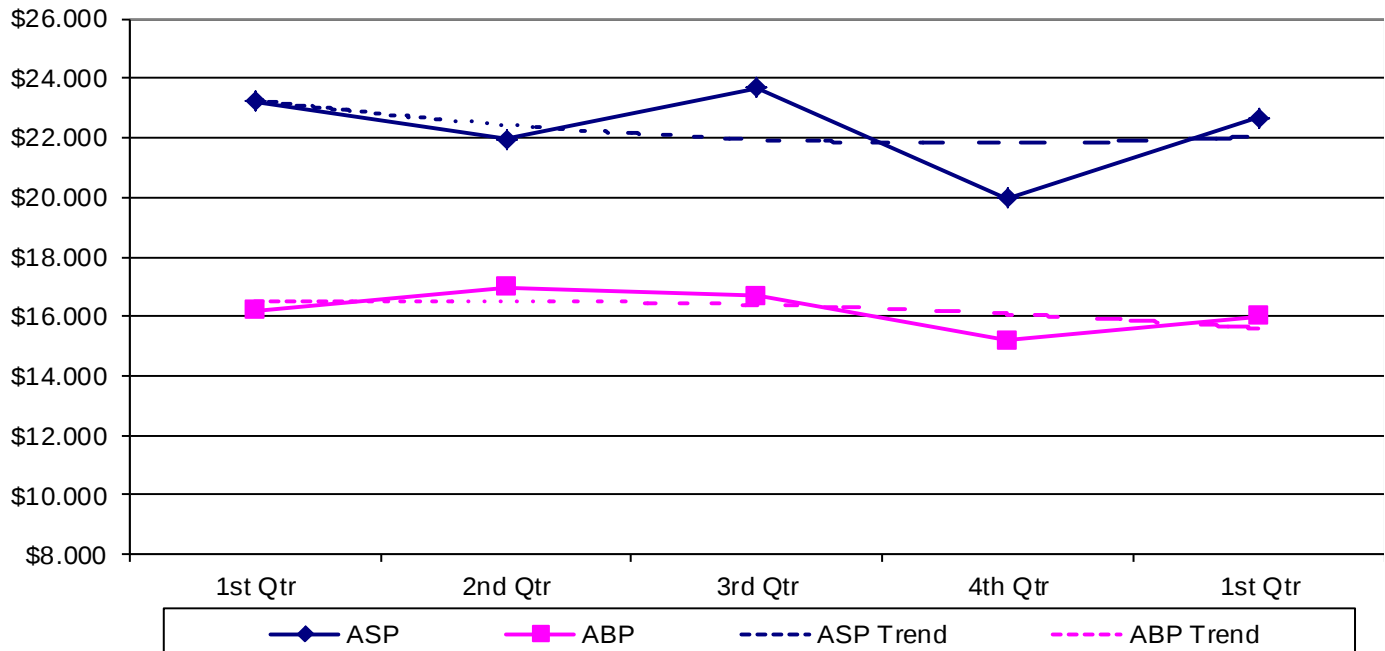


Low amp Panel Mount type sales and booking metrics had positive results as all four increased after each decreased last quarter. ASP and ABP both increased as ASP reached above \$22.000 while ABP climbed to \$16.000.

CY 2021/2022 Total Panel Mount, 2 - 25A, SS Relay Sales & Bookings

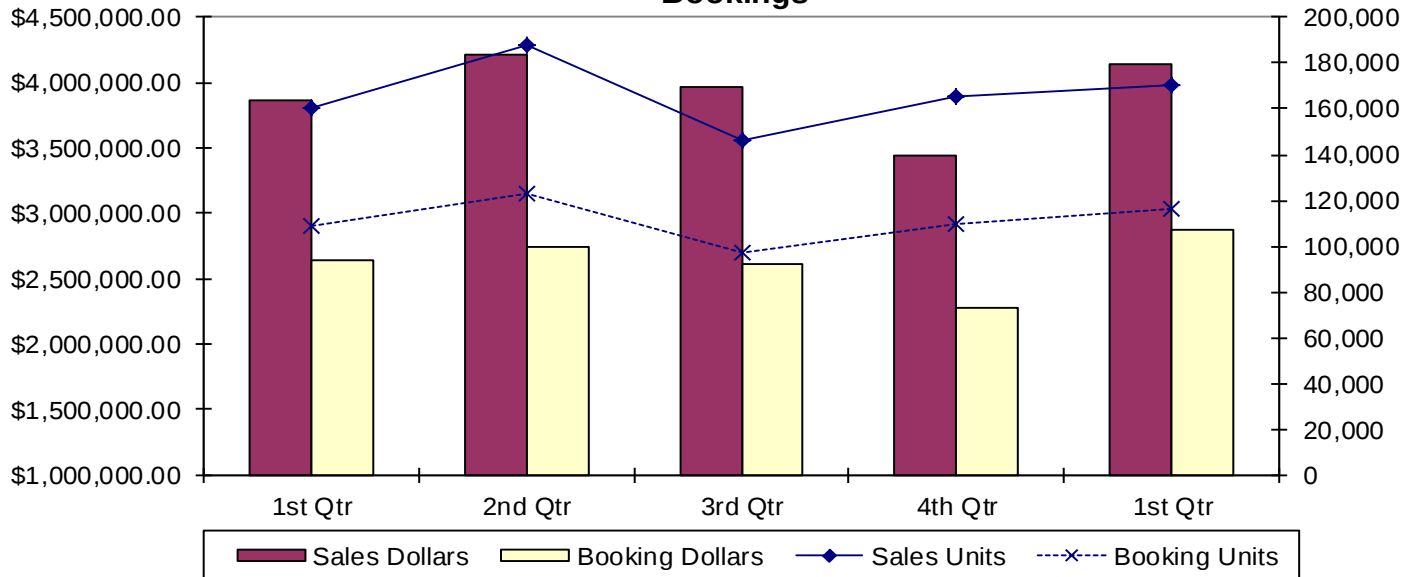


CY 2021/2022 Panel Mount, 2 - 25A, SS Relay Prices

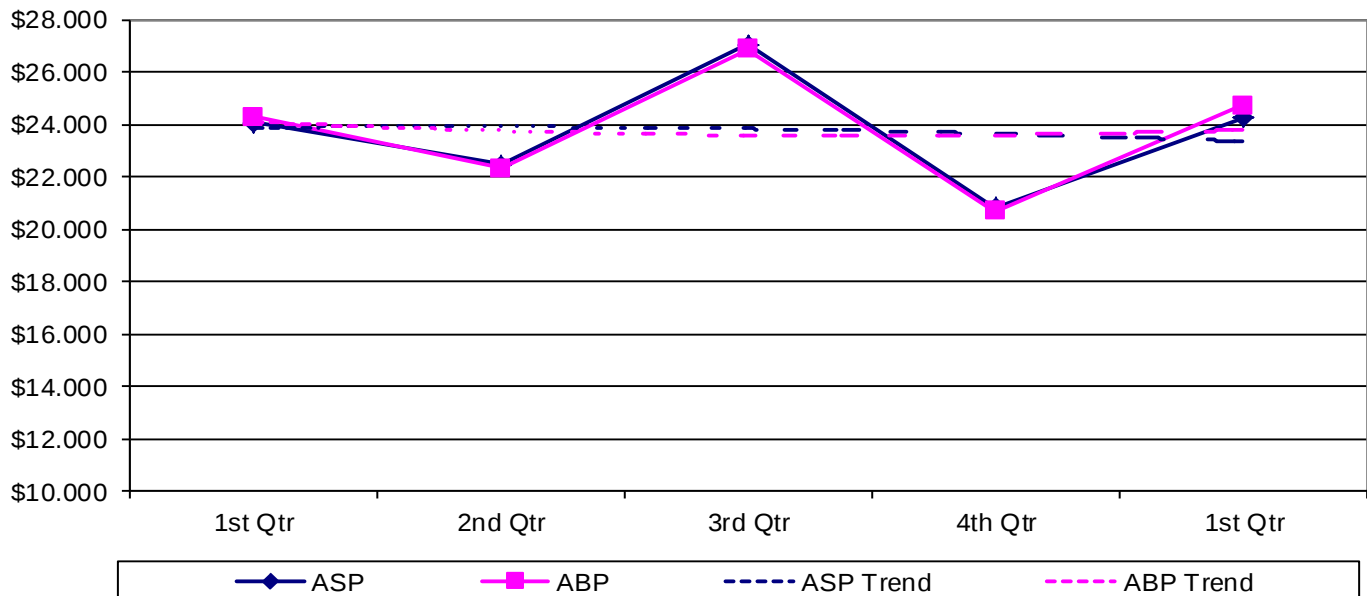


High amp Panel Mount sales and booking metrics all increased. Both dollar metrics recovered from lows achieved last quarter while both unit metrics increased for a second quarter. ASP and ABP remain in lock step as both averages increased above \$24,000.

CY 2021/2022 Total Panel Mount, >25 - 125A, SS Relay Sales & Bookings

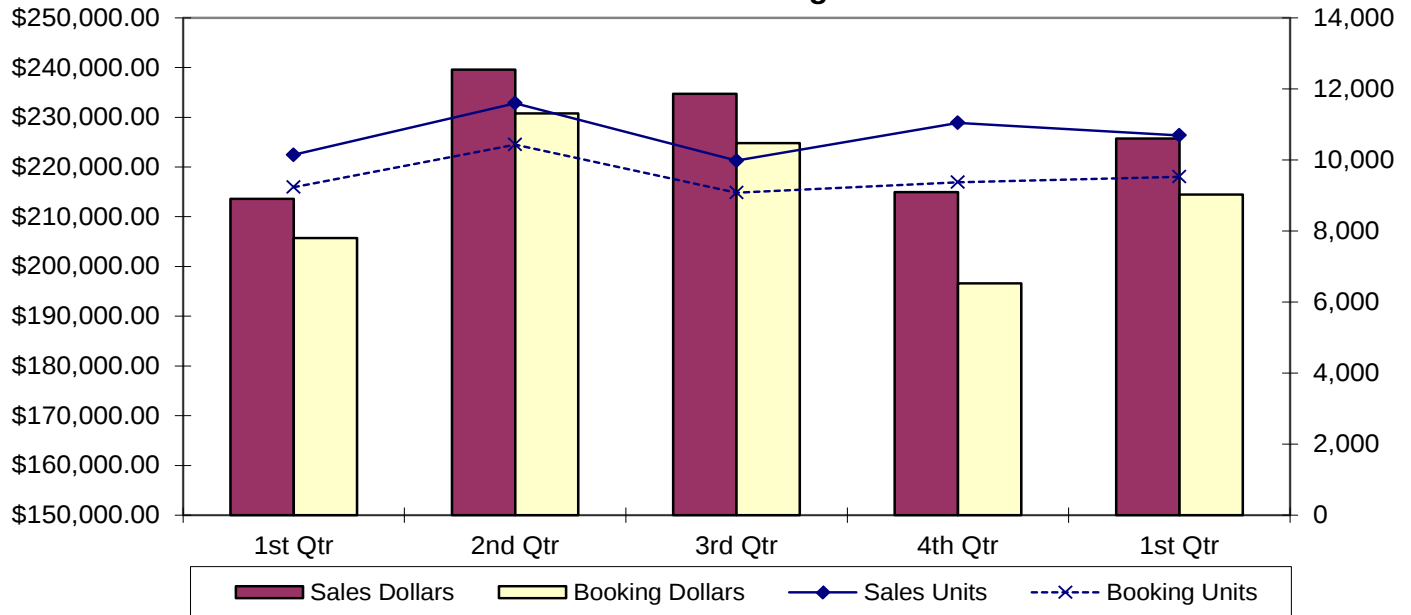


CY 2021/2022 Panel Mount, >25 - 125A, SS Relay Prices

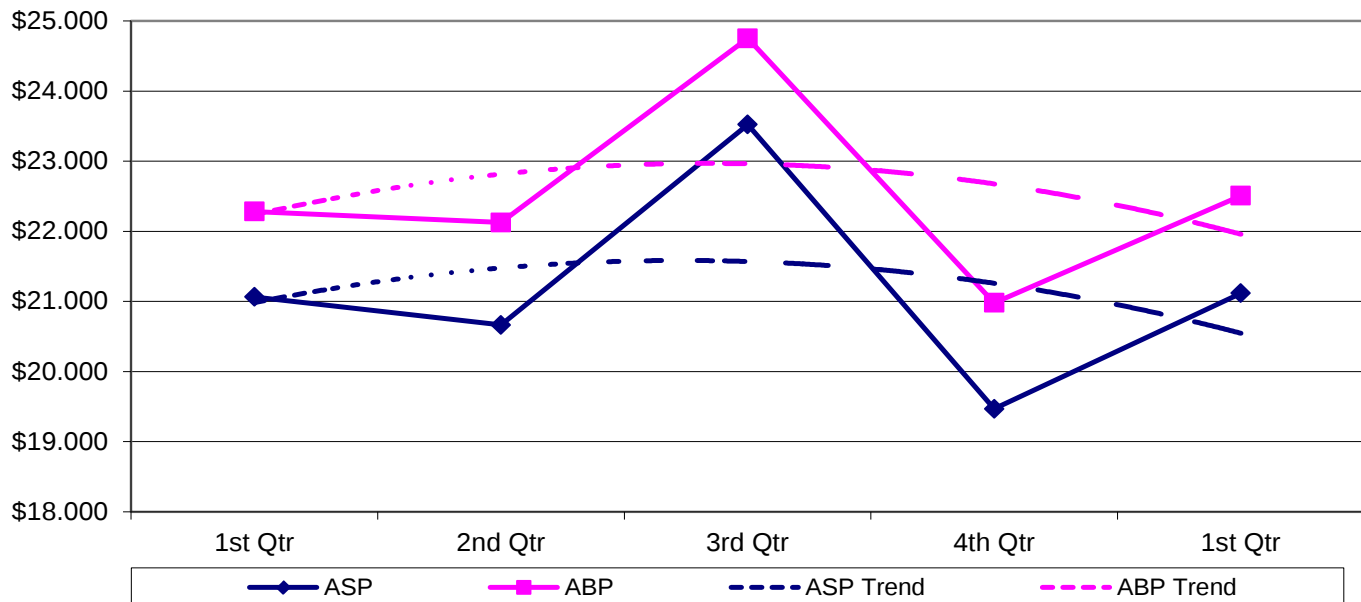


Low amp Din Rail sales metrics had mixed results as dollars rebounded from lows achieved last quarter while units decreased. Booking metrics both increased, with units doing so for a second straight quarter. ASP and ABP remain in lock step as both increased. ASP climbed above \$21.000 and ABP reached to about \$22.500. Despite this quarter's movement, both averages continue to trend downward.

CY 2021/2022 Total DIN Rail Mount, 1 - 5A, SS Relay Sales & Bookings

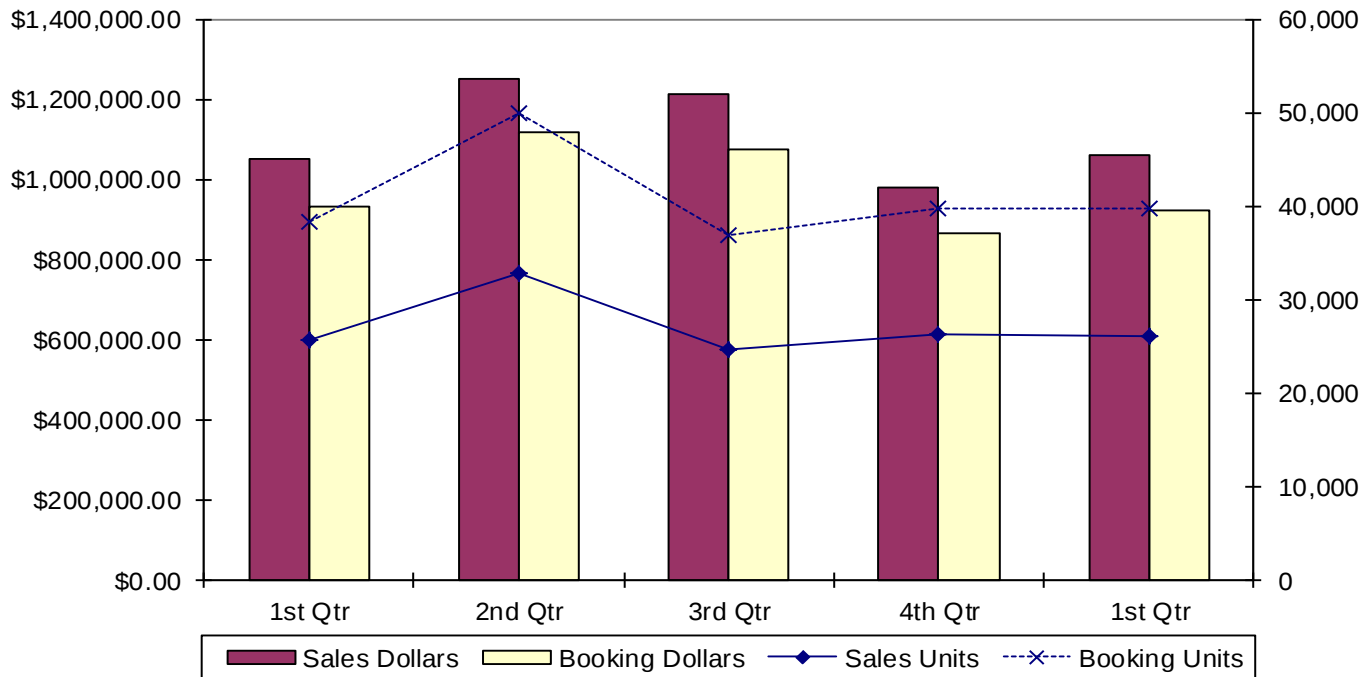


CY 2021/2022 DIN Rail Mount, 1- 5A, SS Relay Prices

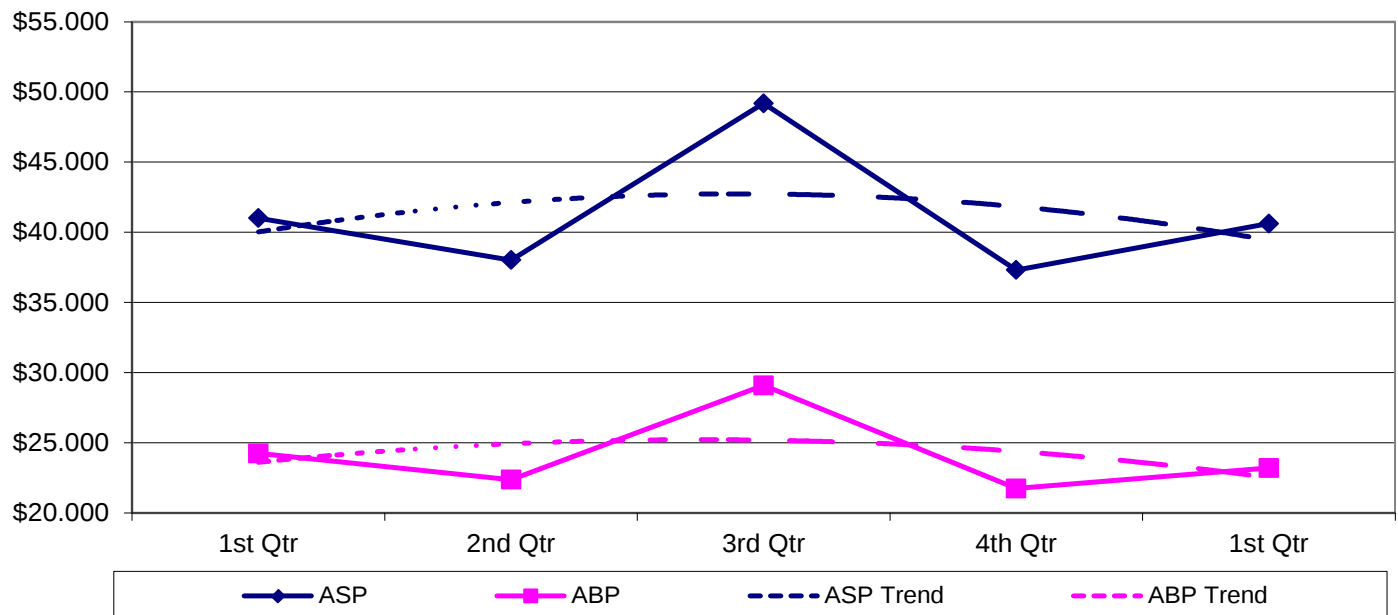


High amp Din Rail sales and booking dollars both increased, stopping two straight quarters of decreasing values. Sales metrics decreased slightly while booking metrics increased barely. ASP and ABP both increased as ASP climbed above \$40.000 while ABP climbed to nearly \$25.000.

CY 2021/2022 Total Din Rail Mount, >5 - 50A, SS Relay Sales & Bookings



CY 2021/2022 DIN Rail Mount, >5 - 50A, SS Relay Prices



Q1 CY 2022 Total Reported Solid State Relay Data

<u>Sales</u>	<u>1st Qtr</u>	<u>Bookings</u>	<u>1st Qtr</u>	<u>Ratios</u>	<u>1st Qtr</u>
PCB Up to 20A					
Sales Dollars	\$10,779,014.10	Booking Dollars	\$13,196,539.60	Book to Bill \$'s	1.224
Sales Units	4,598,924	Booking Units	5,813,710	Book to Bill Units	1.264
ASP	\$2.344	ABP	\$2.270	ABP to ASP	0.968
Panel Mount 2 – 25A					
Sales Dollars	\$3,489,616.27	Booking Dollars	\$2,232,620.73	Book to Bill \$'s	0.640
Sales Units	153,885	Booking Units	139,604	Book to Bill Units	0.907
ASP	\$22.677	ABP	\$15.992	ABP to ASP	0.705
Panel Mount >25 – 125A					
Sales Dollars	\$4,140,555.49	Booking Dollars	\$2,875,433.65	Book to Bill \$'s	0.694
Sales Units	170,751	Booking Units	116,309	Book to Bill Units	0.681
ASP	\$24.249	ABP	\$24.722	ABP to ASP	1.020
DIN Rail Mount 1 – 5A					
Sales Dollars	\$225,730.35	Booking Dollars	\$214,478.92	Book to Bill \$'s	0.950
Sales Units	10,689	Booking Units	9,529	Book to Bill Units	0.891
ASP	\$21.117	ABP	\$22.509	ABP to ASP	1.066
DIN Rail Mount >5 – 50A					
Sales Dollars	\$1,059,347.51	Booking Dollars	\$924,128.87	Book to Bill \$'s	0.872
Sales Units	26,081	Booking Units	39,834	Book to Bill Units	1.527
ASP	\$40.617	ABP	\$23.199	ABP to ASP	0.571
Totals					
Sales Dollars	\$19,694,263.73	Booking Dollars	\$19,443,201.78	Book to Bill \$'s	0.987
Sales Units	4,960,330	Booking Units	6,118,986	Book to Bill Units	1.234
ASP	\$3.970	ABP	\$3.178	ABP to ASP	0.800

Hot Topic

While Director of Marketing at Cherry Electrical Products I searched for measures and methods to gauge our performance versus the marketplace. I was able to find market research that was published every two to three years and the data was about twelve to eighteen months old when released.

Cumulus was founded in October of 2002 to change this by initiating market information service that published data shortly after the end of each calendar quarter. This included trend data on sales and bookings in units and dollars or euros, price trends for sales and bookings, and book to bill ratios for units and dollars. It provided timely, accurate, and insightful market analysis. The first issue of North American Switch Tracks was released in March of 2003. The European edition of Switch Tracks followed in November of 2004. The Relay Report debuted in August of 2006.

Since then we produced 76 issues of North American Switch Tracks, 70 issues of European Switch Tracks, and 64 issues of the Relay Report for a total of 210 quarterly reports. We also conducted 226 monthly surveys of sales and marketing professionals in the North American switch market and produce Market Notes to provide the results.

Electronics Distributor TTI created the MarketEye section of its website to provide market and product information to their customers. In May of 2004 we submitted our first article on the relay and switch markets. We have submitted an article each month since then with a total over 200.

All of this would not have been possible without the support of our many contributing subscribers and partners like TTI. I would like to thank all of you for the twenty years of support. It has been a pleasure serving you and hope we helped you to manage your business better.

Thank you,

Michael Schwert
Founder
Cumulus Inc

Industry News

No Industry news this quarter.

Appendix “A”

Electromechanical Relays

	Signal Relays ≤ 3A	PCB Mount >3 – 20A	PCB Mount >20 – 30A	PCB Mount > 30A	Panel/ Plug-In >3 – 20A	Panel/ Plug-In >20 – 30A	Panel/ Plug-In >30A
American Zettler	AZ5, AZ8, AZ420, AZ830, AZ832, AZ849, AZ850, AZ851, AZ852, AZ853, AZ954, AZ956, AZ957, AZ961, AZ991, AZ8222, AZ8461	AZ164, AZ166, AZ420, AZ673, AZ696, AZ697, AZ733, AZ734, AZ742, AZ743, AZ756, AZ761, AZ762, AZ763, AZ764, AZ765, AZ766, AZ767, AZ770, AZ920, AZ939, AZ940, AZ942, AZ943, AZ946, AZ975, AZ976, AZ6951, AZ6961, AZ6962, AZ9321, AZ9431, AZ9481, AZ9621	AZ755, AZ756, AZ757, AZ760, AZ769, AZ934, AZ935, AZ942A, AZ975, AZ976, AZ984, AZ987, AZ988, AZ989, AZ2110, AZ2120, AZ2150, AZ2200, AZ2270, AZ2700, AZ2705, AZ2800, AZ2850		AZ164, AZ166, AZ420, AZ760, AZ756, AZ757, AZ2300, AZKUP	Z756, AZ757, AZ760, AZ769, AZ973, AZ977, AZ2110, AZ2120, AZ2270, AZ2280, AZ2700, AZ2705, AZ2800, AZ2850	
Crydom							
CIT	J102-1A, J103, J104, J850	J102-3A~5A, J105, J105E, J098, J099, J107F, J109F, J111, J112K, J113, J114AF, J118, J120, J121, J123F	J115F1, J115F2, J119	TBA	J151, J152	J115F3	TBA
Hongfa	HFD16, HFD2, HFD23, HFD27, HFD3, HFD31, HFD4, HFD41A, HFD42	HF102F, HF115F, HF118F, HF140FF, HF141FF, HF14FF, HF14FW, HF152F, HF158F, HF160F, HF161F, HF162F, HF163F, HF21FF, HF25F, HF32F, HF33F, HF36F, HF36FD, HF3F, HF41F, HF42F, HF46F, HF49FD	HF105F, HF116F, HF161F-W, HF165F, HF166F, HF2100, HF2110, HF2120, HF2150, HF2160, HF92F, HFE10	TBA	HF10F, HF13F, HF18FF, HF84F	HF105F, HF116F, HF37F, HF92F, HF94F	TBA

		HF62F, HF7520 HF78F, HF7FD HF7FF, HF8, HFA2 HFA4, HFE20, HFE39, HFE60, HFE7					
Omron	G2E, G5A, G5S, G5V1, G5V2, G6A, G6H, G6H2F, G6S, G6K, G6J, G6E, G6G, G6L, G6T, G6F,	G5NB, G5S, G5J G5B, G5C, G5SB, G6B, G6C, G6D, G6M, G5Q, G5PA, G5PB, G5LA, G5LB, G5LC, G5LE, G5LN, G6RN, G5CA, G5CE, G2RG, G2RL, G5RL, G4A, G4B, G4W, G4X	G8P, G7LP, G7JP,		MK, MY, LY, G2R(S), G8P, MY4H	G7Z, MGN, MJN, G7L-T//B, G7J-T/B, G9E-CA, G9E-B	
Panasonic	AGN, AGQ, ASX, TX, TQ, TN, DF, HY, DS, RE, RJ, RK, RX, RA, RP	JS, JQ, PE, PA, PQ, NC, DSP, DK, DJ, DE, ST, SP, SF, LF, LE, LZ, LJ, LA, LK, JVN, JW, JC, JM, CP, CJ, CT, CF, CQ, CR	JTN, JTV, CM, CB, CA, DQ	TBA	HN, HJ, HC, HK, HL, HP, HG	HE, JH, CBAEP, AEV, AEJ, AEB	TBA
Schneider					RSL, RSB, RXM, RUM, RPM, RH, ABR	RPF	
Tyco	IM, P2 (V23079), FX2, FT2/FU2, FP2, MT2, D2n (V23105), W11 (V23101), P1 (V23026), V23100-V4, Cradle N (V23154/V2316 2), Cradle W (V23005), Cradle S (V23054), Cradle P (V23003), Card SN (V23030), 190, T81, TSC, OUAZ, JWS, JWD, OL, OMR, 159/160, PCN, R10	PE, RE, SNR (V23092), RYII, T75, PCJ, PCH, T77, OJ/OJE, PCD/PCDF, PB, U/UB (V23148), T73, OUDH, T7N, PCE, ORWH, T7C, SRUDH, SRUHH, SRUT, RT, 429, OMI/OMIH, OMI 2 pole, OMIT, OMIF, PCI, OSA, OSZ, SDT, SDT- R, PCK, Card E (V23057), RPII/2, RPII/1, RP3SL, IF (V23077), 410, PCG, 430, 600, RF, SR2M	PCF, T90, T9A, 491, T92, T9C, 590	TBA	KH, PCL, PT, K10, KUP, KCP, RM2/3/7, KUPE, KUIP, KUGP, RM5/6, KUMP, KUP93, KRP, KRPA, MT, KA, 419, KUL, KB/KBP, S89/9 0, S86/87, ST, SR6Z, 155, 156, 157, 158, 258	KRP-3H, RM8, KUHP, RMC/D, PRD, 9400, 9100, 38, 187, 188	TBA

		(V23047), SR4D/M, SR6D/M, SR6 (V23050), SR6- Sensitive, MSR (V23061), LN/LNH, RX, 496, 596, CDR					
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Solid State Relays

	PCB Mount Up to 20A	Panel Mount >2 – 25A	Panel Mount >25 – 125A	DIN Rail 1 – 5A	DIN Rail >5 – 50A
American Zettler	SGC, SGX	SGX, SG			
CIT					
Crydom	ASO, LC,MP, CX, MCX, LS, PF, SPF, DPA, SDV, CN, GA8, DMO, CMX, MP, ED, IO	S1, HA/HD, H1, CW, CSW, CL, EL, EZ, MC, PCV, LPCV, RPC, SMR, CC/CD, S1D, S3, UPD, DC60, DC, 1DC, SSC, DP, GN, GNA5, GND, GN3, GNO	S1, HA/HD, H1, CW, CSW, MC, PCV, LPCV, RPC, SMR, CC/CD, S1D, S3, DC, 1DC, DO6D, DP, HDC, GN, GNAS, GND, GN3, GNO	DRA, S1DR, CKM	DRA, SIDR, CKM, CMR, CTR, GNR
Omron	G3CN, G3DZ, G3M, G3MC, G3R, G3S, G3TB, G3VM, GEVM	G3NA, G3NE	G3NA, GEPH	G3B(D), G3H(D), G3R(D), G3RV, G3TA	G3J, G3PA, G3PE, G3PF
Panasonic	AQG, AQB, AQ8, AQF, AQ1	AQK, AQN, AQR	AQK, AQN, AQR		
Schneider		SSRD, SSRP, SSP	SSRD, SSRP, SSP	ABS, SSM, SSL	SSRD, SSM
Tyco	SSRA, SSRC, SSRF, IAC, OAC, ODC	SSR, SSRL, SSRQ, SSRT	SSR, SSRD		SSRK, SSRM

