6616 TOREX SEMICONDUCTOR

Sponsored Research
December 14, 2021

Sessa Investment Research

Second upward revision for FY3/2022

On course to largely achieve FY3/24 MTP targets in year one

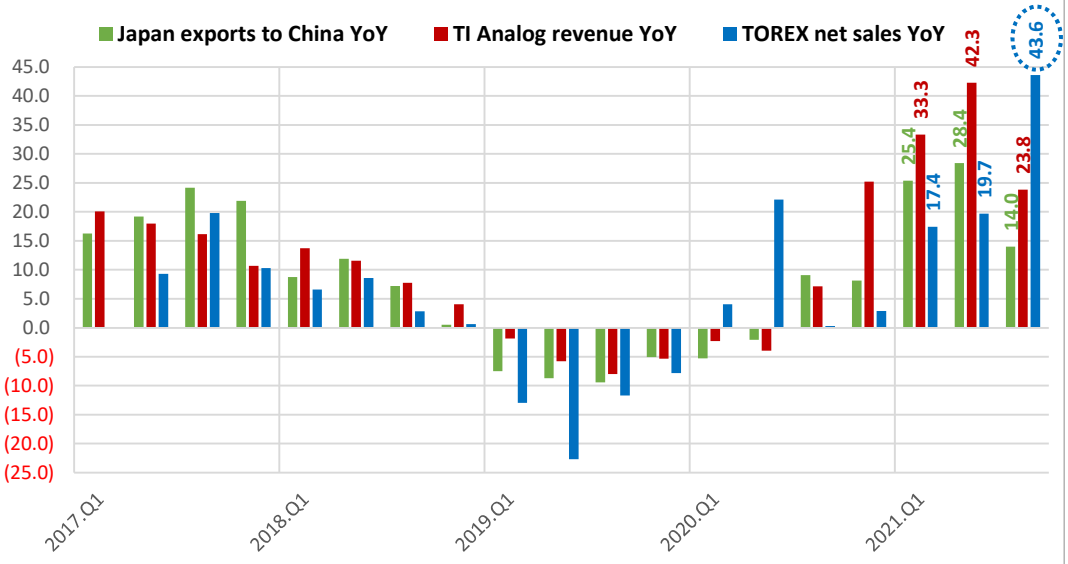
SUMMARY

- TOREX announced Group 1H financial results after the close on November 15 (15:30). Consolidated net sales were ¥14,983mn (+31.3% YoY) and OP was ¥1,783mn (+583.8% YoY). Both TOREX and Phenitec posted a record quarter, driving consolidated Q2 OPM to 14.4%. TOREX Q2 sales rose +61.0% YoY, driven by strength in industrial, automotive and personal electronics, with all regions reporting strong gains, and OPM of 13.8%. Phenitec contribution 2Q OPM reached 14.9%, driven by strong orders boosting utilization rates, with recovery in Japan automotive and North America.

- The company revised up full-term guidance for a 2nd time, details shown on P2. Nevertheless, 1H sales and OP progress ratios were well ahead of 5Y averages, and more importantly, even on revised guidance, estimates imply 2H profit YoY declines, and margins effectively halving. Sessa Partners believes there is room for a 3rd upward revision around Q3 results in February due in part to the tendency for 2H shortfall in depreciation expense, details on P2.

- The current P/E of 19.2x is trading near its historical average of 21.0x, despite the substantial rise in the share price over the last 12 months, more than tripling in value. Ultimately this is the nature of powerful cyclical recoveries, and current-term forecasts cannot capture the true upside potential. As can be seen from the table on P2, FY3/22 earnings are on course to largely achieve FY3/24 MTP targets in year one, with plenty of catalysts going forward, including: ① Phenitec's Kagoshima Plant turning profitable, ② completion of the Daiichi Plant integration, and ③ launch of next-generation SiC and gallium oxide power devices (climate change theme).

TOREX net sales trend outperforms global market indicators in Jul-Sep quarter



Source: compiled by Sessa Partners from MOF Trade Statistics of Japan and TI / TOREX earnings releases.

2Q Follow-up

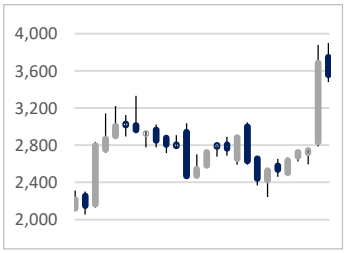
TOREX

Focus Points:

Power management IC specialist with attractive growth profile from new applications driven by 5G, IoT-connected devices and the electrification of cars.

Key Indicators	
Share price (12/14)	3,255
YH (21/11/30)	3,960
YL (21/1/14)	1,285
10YH (21/11/30)	3,960
10YL (14/5/20)	725.8
Shrs out. (mn shrs)	11.554
Mkt cap (¥ bn)	38.418
EV (¥ bn)	34.370
Equity ratio (9/30)	65.3%
22,3 P/E (CE)	18.8x
22.3 EV/EBITDA (CE)	8.0x
21.3 ROE (act)	4.9%
21.3 P/B (act)	1.80x
22.3 DY (CE)	1.35%

6M weekly share price



Source: SPEEDA

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This report was prepared by Sessa Partners on behalf of TOREX SEMICONDUCTOR, LTD. Please refer to the legal disclaimer at the end for details.

Q2 Key Points

▶ FY3/22 Q2 net sales surged +43.6% YoY and OP increased 17.6x YoY, with OPM rising consecutively from Q4 7.9% → Q1 9.1% → Q2 **14.4%**. As can be seen in the table on P3, yellow shaded figures highlight that Q2 was a record quarter for both TOREX and Phenitec.

▶ The company revised up full-term guidance for a second time, details shown at the bottom of the right-hand table in grey. Nevertheless, 1H sales and OP progress ratios were well ahead of 5Y averages, and more importantly, even on revised guidance, estimates imply 2H profit YoY declines, and margins effectively halving.

▶ The YoY change from forex gains in Q1 and Q2 is shown below. Even without the discovery of the Omicron variant, the yen tends to strengthen going into FY-end, so offers no obvious upside. **However, we believe there is room for a 3rd upward revision around Q3 results due to the tendency for 2H shortfall in depreciation** shown below. Over the last 4 years, this has been ¥100mn-¥300mn (avg. ¥194mn). The company says it will do its best to deploy approved capex, but a shortfall would boost profits.

P/L FX impact YoY CHG AMT

JPY mn	1Q act	2Q act	1H act
FY3/21	(27)	(72)	(99)
USD	107.7	107.2	106.7
FY3/22	27	(11)	16
USD	110.0	110.1	110.2
CHG AMT	54	61	114

Note: losses in parentheses

★Depreciation 2H shortfall

JPY mn	1H act	2H est	2H act
FY3/17	528	443	691
FY3/18	449	601	485
FY3/19	434	975	651
FY3/20	621	911	691
FY3/21	546	779	662
FY3/22	584	1,016	??

Source: IR results briefing materials.

Torex Consolidated 1H FY3/22 Results and 2H Outlook

JPY mn, %	Net sales	YoY	Operating profit	YoY	Ordinary Profit	YoY	Profit ATOP	YoY
17.3 Q1	5,227	—	204	—	(385)	—	2,210	—
Q2	5,087	—	183	—	118	—	123	—
Q3	5,473	—	481	—	911	—	489	—
Q4	5,773	—	383	—	261	—	109	—
18.3 Q1	5,714	9.3	455	123.1	466	TB	234	(89.4)
Q2	6,095	19.8	635	246.6	641	441.8	267	117.1
Q3	6,036	10.3	550	14.3	606	(33.5)	293	(40.1)
Q4	6,152	6.6	572	49.4	285	9.3	108	(0.9)
19.3 Q1	6,203	8.6	675	48.3	924	98.3	496	112.1
Q2	6,266	2.8	676	6.5	819	27.7	469	75.4
Q3	6,074	0.6	311	(43.4)	227	(62.6)	123	(58.2)
Q4	5,353	(13.0)	(112)	TR	(149)	TR	(39)	TR
20.3 Q1	4,797	(22.7)	79	(88.4)	11	(98.8)	12	(97.6)
Q2	5,534	(11.7)	252	(62.8)	267	(67.3)	146	(68.9)
Q3	5,599	(7.8)	205	(34.2)	240	5.8	133	8.7
Q4	5,571	4.1	143	TB	157	TB	127	TB
21.3 Q1	5,858	22.1	195	148.9	180	1,470.3	169	1,301.2
Q2	5,551	0.3	65	(74.1)	(2)	TR	(11)	TR
Q3	5,762	2.9	433	111.6	348	45.2	231	73.1
Q4	6,542	17.4	515	259.9	680	331.8	545	330.8
22.3 Q1	7,014	19.7	636	225.4	677	275.9	477	182.6
Q2	7,970	43.6	1,147	1,657.0	1,152	TB	795	TB
H1	14,983	31.3	1,783	583.8	1,828	928.0	1,272	706.4
H2 CE	14,517	18.0	917	(3.4)	872	(15.2)	618	(20.4)
FY CE	29,500	24.4	2,700	123.3	2,700	123.8	1,890	102.4
progress ratios								
1H 5Y AVG	49.1%		49.6%		46.0%		66.0%	
2H 5Y AVG	50.9%		50.4%		54.0%		34.0%	
22.3 H1	50.8%		66.1%		67.7%		67.3%	
22.3 H2 CE	49.2%		33.9%		32.3%		32.7%	
profit margins								
1H 5Y AVG	—		6.1%		5.4%		7.3%	
2H 5Y AVG	—		6.0%		6.1%		3.6%	
22.3 H1	—		11.9%		12.2%		8.5%	
22.3 H2 CE	—		6.3%		6.0%		4.3%	
17.3 FY	21,560	—	1,251	—	906	—	2,931	—
18.3 FY	23,997	11.3	2,212	76.8	1,998	120.6	902	(69.2)
19.3 FY	23,897	(0.4)	1,551	(29.9)	1,820	(8.9)	1,049	16.3
20.3 FY	21,501	(10.0)	678	(56.3)	676	(62.9)	418	(60.2)
21.3 FY	23,713	10.3	1,209	78.3	1,206	78.4	934	123.6
22.3 FY init CE	26,000	9.6	2,000	65.4	2,000	65.8	1,400	50.0
Aug. 13 rev CE	28,500	20.2	2,500	106.7	2,500	107.3	1,750	87.4
Nov. 15 rev CE	29,500	24.4	2,700	123.3	2,700	123.8	1,890	102.4
24.3 MTP	30,000		3,000	10.0%				
26.3 MTP	35,000		4,000	11.4%				

Source: compiled by Sessa Partners from TANSHIN financial statements. Figures reported in thousand yen rounded to the nearest million yen (not truncated).
Note: TR = turned red, TB = turned black, profit ATOP = profit attributable to owners of parent.

TOREX SEMICONDUCTOR Quarterly Consolidated Earnings Trend

JPY mn, %	FY3/19				FY3/20				FY3/21				FY3/22	
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q
Net sales	**6,203**	**6,266**	**6,074**	**5,353**	**4,797**	**5,534**	**5,598**	**5,571**	**5,858**	**5,550**	**5,762**	**6,541**	**7,013**	**7,970**
YoY	8.6	2.8	0.6	(13.0)	(22.7)	(11.7)	(7.8)	4.1	22.1	0.3	2.9	17.4	19.7	43.6
• Phenitec contrib.	3,727	3,539	3,642	2,884	2,595	2,885	3,035	3,322	3,688	3,330	3,411	3,678	4,011	4,395
YoY	15.1	0.7	4.4	(19.6)	(30.4)	(18.5)	(16.7)	15.2	42.1	15.4	12.4	10.7	8.8	32.0
• Torex	2,476	2,727	2,432	2,469	2,202	2,649	2,563	2,249	2,170	2,220	2,351	2,864	3,002	3,575
YoY	0.1	5.7	(4.6)	(3.7)	(11.1)	(2.9)	5.4	(8.9)	(1.5)	(16.2)	(8.3)	27.3	38.3	61.0
Gross profit	**1,921**	**1,892**	**1,530**	**1,151**	**1,269**	**1,422**	**1,446**	**1,315**	**1,325**	**1,210**	**1,606**	**1,817**	**1,942**	**2,433**
GPM	*31.0%*	*30.2%*	*25.2%*	*21.5%*	*26.5%*	*25.7%*	*25.8%*	*23.6%*	*22.6%*	*21.8%*	*27.9%*	*27.8%*	*27.7%*	*30.5%*
SG&A	1,246	1,216	1,218	1,263	1,191	1,170	1,241	1,172	1,129	1,146	1,174	1,301	1,306	1,286
Ratio to sales	*20.1%*	*19.4%*	*20.1%*	*23.6%*	*24.8%*	*21.1%*	*22.2%*	*21.0%*	*19.3%*	*20.6%*	*20.4%*	*19.9%*	*18.6%*	*16.1%*
Depreciation	195	239	300	351	305	317	335	355	269	278	325	336	283	301
YoY	(11.8)	4.4	29.9	38.7	56.4	32.6	11.7	1.1	(11.8)	(12.3)	(3.0)	(5.4)	5.2	8.3
EBITDA	**870**	**915**	**612**	**239**	**384**	**568**	**540**	**498**	**464**	**343**	**758**	**851**	**919**	**1,448**
YoY	28.7	5.8	(21.5)	(71.0)	(55.9)	(37.9)	(11.8)	108.4	21.1	(39.6)	40.4	70.9	98.1	322.2
Ratio to sales	*14.0%*	*14.6%*	*10.1%*	*4.5%*	*8.0%*	*10.3%*	*9.6%*	*8.9%*	*7.9%*	*6.2%*	*13.2%*	*13.0%*	*13.1%*	*18.2%*
Operating profit	**675**	**676**	**311**	**(112)**	**78**	**252**	**204**	**144**	**195**	**65**	**433**	**515**	**636**	**1,147**
YoY	48.4	6.5	(43.5)	TR	(88.4)	(62.7)	(34.4)	TB	148.9	(74.2)	112.3	257.6	226.2	1,664.6
OPM	*10.9%*	*10.8%*	*5.1%*	*-2.1%*	*1.6%*	*4.6%*	*3.6%*	*2.6%*	*3.3%*	*1.2%*	*7.5%*	*7.9%*	*9.1%*	*14.4%*
• Phenitec contrib.	487	413	186	(182)	59	4	78	84	122	(33)	189	415	366	655
YoY	60.7	(19.6)	(46.1)	TR	(87.9)	(99.0)	(58.1)	TB	106.8	TR	142.3	394.0	200.0	TB
OPM	*13.1%*	*11.7%*	*5.1%*	*-6.3%*	*2.3%*	*0.1%*	*2.6%*	*2.5%*	*3.3%*	*-1.0%*	*5.5%*	*11.3%*	*9.1%*	*14.9%*
• Torex	188	263	125	70	19	248	126	60	73	98	244	101	270	492
YoY	23.7	117.4	(39.0)	(54.8)	(89.9)	(5.7)	0.8	(14.3)	284.2	(60.5)	93.7	68.3	269.9	402.0
OPM	*7.6%*	*9.6%*	*5.1%*	*2.8%*	*0.9%*	*9.4%*	*4.9%*	*2.7%*	*3.4%*	*4.4%*	*10.4%*	*3.5%*	*9.0%*	*13.8%*
Ordinary profit	924	819	227	(150)	11	268	240	157	180	(3)	348	680	676	1,152
YoY	98.3	27.8	(62.5)	TR	(98.8)	(67.3)	5.7	TB	16.4x	TR	45.0	333.1	275.6	TB
Profit ATOP	496	469	123	(39)	12	146	133	127	168	(11)	230	545	476	796
YoY	112.0	75.7	(58.0)	TR	(97.6)	(68.9)	8.1	TB	13.9x	TR	72.9	329.1	183.3	TB

Source: compiled by Sessa Partners from TANSHIN financial statements and IR results briefing materials.

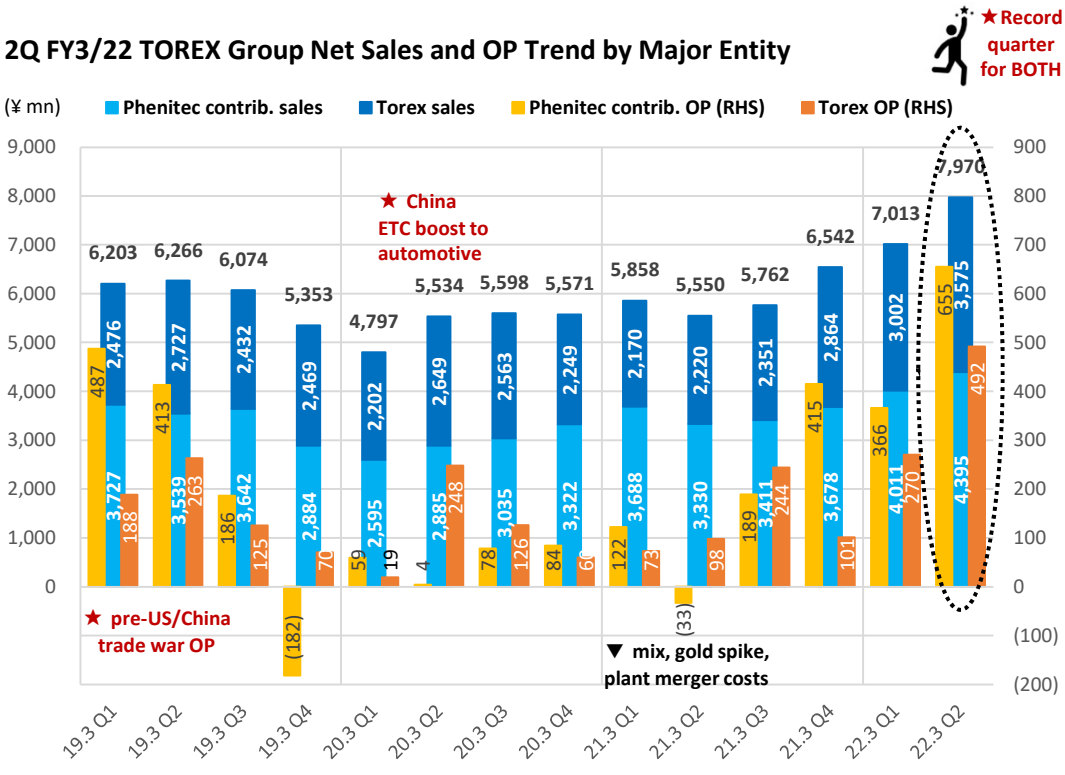
TOREX

Phenitec

▶ Torex posted the highest quarterly sales and OP since listing due to the booming semiconductor market which has continued from 2H last term, with all regions posting strong performance. Revised up FY3/22 guidance for the 2nd time, and it hiked the dividend by 10%.

▶ Phenitec posted high growth in sales and profits driven by strong orders boosting utilization rates, posting the highest sales and OP since becoming a consolidated subsidiary.

2Q FY3/22 TOREX Group Net Sales and OP Trend by Major Entity



Source: compiled by Sessa Partners from IR results briefing materials.

Torex Sales Trend by Application and 'Design-in' based* Region with YoY Heat Map

JPY mn, %	1Q 3/19	2Q 3/19	3Q 3/19	4Q 3/19	1Q 3/20	2Q 3/20	3Q 3/20	4Q 3/20	1Q 3/21	2Q 3/21	3Q 3/21	4Q 3/21	1Q 3/22	2Q 3/22
by Application														
Torex sales	**2,476**	**2,727**	**2,432**	**2,469**	**2,202**	**2,649**	**2,563**	**2,249**	**2,170**	**2,220**	**2,351**	**2,864**	**3,002**	**3,575**
• Industrial equipt.	966	1,063	945	953	784	912	933	834	872	763	805	1,064	1,033	1,238
• Automotive equipt.	381	384	362	408	350	615	457	327	241	249	352	398	400	423
• Medical equipt.	36	26	26	37	25	21	29	43	73	44	43	66	49	59
• Wearable equipt.	71	74	37	56	53	66	54	47	50	100	100	112	86	107
• Other	1,022	1,180	1,062	1,015	990	1,035	1,090	998	934	1,064	1,051	1,224	1,434	1,748
YoY														
Torex sales	**0.1**	**5.7**	**(4.6)**	**(3.7)**	**(11.1)**	**(2.9)**	**5.4**	**(8.9)**	**(1.5)**	**(16.2)**	**(8.3)**	**27.3**	**38.3**	**61.0**
• Industrial equipt.	9.8	14.3	(0.1)	(2.0)	(18.8)	(14.2)	(1.3)	(12.5)	11.2	(16.3)	(13.7)	27.6	18.5	62.3
• Automotive equipt.	(3.5)	(3.3)	(18.1)	(13.9)	(8.1)	60.2	26.2	(19.9)	(31.1)	(59.5)	(23.0)	21.7	66.0	69.9
• Medical equipt.	80.0	(13.3)	(23.5)	54.2	(30.6)	(19.2)	11.5	16.2	192.0	109.5	48.3	53.5	(32.9)	34.1
• Wearable equipt.	10.9	19.4	(31.5)	5.7	(25.4)	(10.8)	45.9	(16.1)	(5.7)	51.5	85.2	138.3	72.0	7.0
• Other	788.7	(45.4)	(1.0)	(2.5)	(3.1)	(12.3)	2.6	(1.7)	(5.7)	2.8	(3.6)	22.6	53.5	64.3
by Region														
Torex D-in* sales	**2,476**	**2,727**	**2,432**	**2,469**	**2,202**	**2,649**	**2,563**	**2,249**	**2,170**	**2,220**	**2,351**	**2,864**	**3,002**	**3,575**
• Japan	1,086	1,159	1,070	1,086	950	1,090	1,104	1,043	896	895	958	1,129	1,160	1,379
• Asia	791	896	818	807	724	1,001	980	700	781	849	876	1,105	1,197	1,444
• Europe	345	402	304	379	305	329	268	310	259	242	304	384	383	408
• North America	254	270	240	197	223	229	211	196	234	234	213	246	262	344
YoY														
Torex D-in* sales	**0.1**	**5.7**	**(4.6)**	**(3.7)**	**(11.1)**	**(2.9)**	**5.4**	**(8.9)**	**(1.5)**	**(16.2)**	**(8.3)**	**27.3**	**38.3**	**61.0**
• Japan	8.8	6.5	0.4	(5.1)	(12.5)	(6.0)	3.2	(4.0)	(5.7)	(17.9)	(13.2)	8.2	29.5	54.1
• Asia	(0.3)	13.0	(8.7)	(4.7)	(8.5)	11.7	19.8	(13.3)	7.9	(15.2)	(10.6)	57.9	53.3	70.1
• Europe	(19.0)	0.5	(7.9)	13.1	(11.6)	(18.2)	(11.8)	(18.2)	(15.1)	(26.4)	13.4	23.9	47.9	68.6
• North America	(1.2)	(10.0)	(6.6)	(17.2)	(12.2)	(15.2)	(12.1)	(0.5)	4.9	2.2	0.9	25.5	12.0	47.0

*Note: Torex 'Design-in' based sales = regional sales adjusted on orders received basis.

- **TOREX:** Similar to TI, high growth was driven by **industrial, automotive and personal electronics**, with strength in all regions. Revised up full-term guidance for the 2nd time (4th consecutive time in 2021), and it revised up the indicated dividend by 10%.
- **Phenitec:** posted growth in sales and profits driven by strong orders boosting **utilization rates** driven by **Japan automotive and recovery of North America**, posting the highest sales and OP since becoming a consolidated subsidiary.

Phenitec** Sales Trend by Application and Region with YoY Heat Map

JPY mn, %	1Q 3/19	2Q 3/19	3Q 3/19	4Q 3/19	1Q 3/20	2Q 3/20	3Q 3/20	4Q 3/20	1Q 3/21	2Q 3/21	3Q 3/21	4Q 3/21	1Q 3/22	2Q 3/22
by Application														
Phenitec sales**	**4,136**	**3,973**	**4,075**	**3,268**	**2,983**	**3,251**	**3,435**	**3,628**	**3,982**	**3,703**	**3,732**	**4,077**	**4,536**	**4,990**
• Industrial equipt.	759	705	1,100	698	408	412	493	696	911	630	588	653	676	793
• Automotive equipt.	908	873	923	856	876	921	892	915	838	738	869	942	1,044	1,228
• Medical equipt.	98	63	145	84	70	48	54	116	60	32	34	39	36	38
• Other	2,371	2,332	1,907	1,630	1,629	1,870	1,996	1,901	2,173	2,303	2,241	2,443	2,780	2,931
YoY														
Phenitec sales**	**14.9**	**1.3**	**5.1**	**(17.6)**	**(27.9)**	**(18.2)**	**(15.7)**	**11.0**	**33.5**	**13.9**	**8.6**	**12.4**	**13.9**	**34.8**
• Industrial equipt.	(15.3)	(8.7)	29.4	(20.3)	(46.2)	(41.6)	(55.2)	(0.3)	123.3	52.9	19.3	(6.2)	(25.8)	25.9
• Automotive equipt.	49.1	11.6	9.8	0.0	(3.5)	5.5	(3.4)	6.9	(4.3)	(19.9)	(2.6)	3.0	24.6	66.4
• Medical equipt.	22.5	(52.6)	70.6	42.4	(28.6)	(23.8)	(62.8)	38.1	(14.3)	(33.3)	(37.0)	(66.4)	(40.0)	18.8
• Other	17.7	4.4	(9.3)	(25.0)	(31.3)	(19.8)	4.7	16.6	33.4	23.2	12.3	28.5	27.9	27.3
by Region														
Phenitec sales**	**4,136**	**3,973**	**4,075**	**3,268**	**2,983**	**3,251**	**3,435**	**3,628**	**3,982**	**3,703**	**3,732**	**4,077**	**4,536**	**4,990**
• Japan	1,479	1,362	1,356	1,332	1,346	1,410	1,427	1,403	1,280	1,277	1,307	1,654	1,983	2,286
• Asia	1,019	1,070	750	467	495	661	803	805	914	869	1,088	1,193	1,118	1,084
• Europe	198	182	204	205	199	224	261	236	268	244	194	183	230	269
• North America	1,440	1,359	1,765	1,264	943	956	944	1,184	1,520	1,313	1,143	1,047	1,205	1,351
YoY														
Phenitec sales**	**14.9**	**1.3**	**5.1**	**(17.6)**	**(27.9)**	**(18.2)**	**(15.7)**	**11.0**	**33.5**	**13.9**	**8.6**	**12.4**	**13.9**	**34.8**
• Japan	27.5	5.6	8.2	1.9	(9.0)	3.5	5.2	5.3	(4.9)	(9.4)	(8.4)	17.9	54.9	79.0
• Asia	25.0	17.8	(23.9)	(53.3)	(51.4)	(38.2)	7.1	72.4	84.6	31.5	35.5	48.2	22.3	24.7
• Europe	8.8	(20.9)	7.4	25.8	0.5	23.1	27.9	15.1	34.7	8.9	(25.7)	(22.5)	(14.2)	10.2
• North America	(0.1)	(9.0)	21.7	(15.5)	(34.5)	(29.7)	(46.5)	(6.3)	61.2	37.3	21.1	(11.6)	(20.7)	2.9

**Note: Phenitec sales include intra-company transactions with Torex. Classifications subject to change.

Japan exports to China have been a reliable proxy for the general health of the global electronics supply chain, a function of Japan's ongoing leadership in critical electronic components and advanced materials.

Robust Statistical Correlation

parameter (between ❶ and ❷)	since 2014	since 2018
correlation coefficient (r)	0.843	0.921
coefficient of determination (r^2)	0.711	0.848

Note: r measures the strength and direction of the linear relationship between two variables. r^2 measures the goodness of fit of a linear regression model (variance of one variable explained by the other). Of course, correlation does not imply causation. Source: compiled and calculated by Sessa Partners.

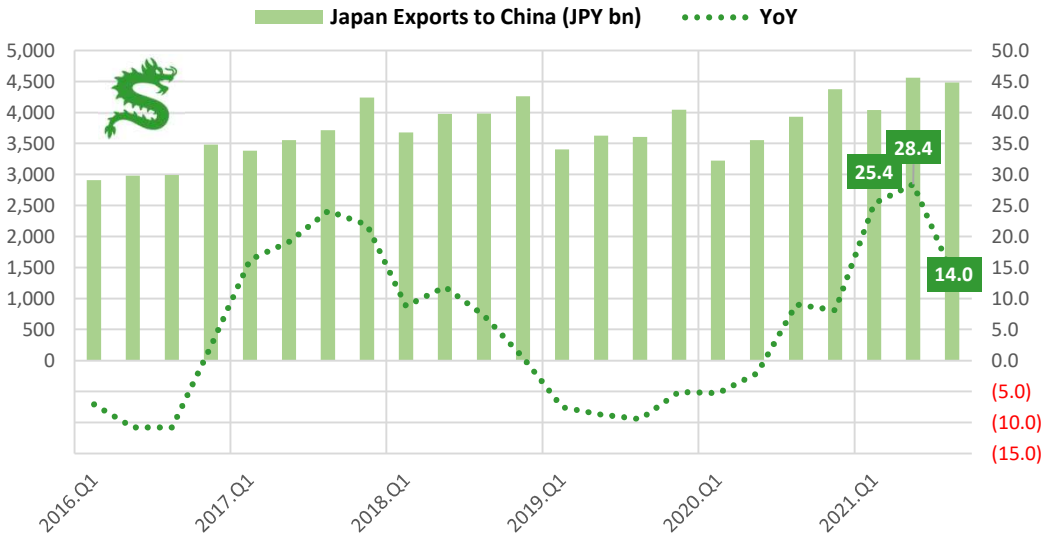
▶ While statistical data from the Japan Electronics and Information Technology Industries Association (JEITA) provides useful trends on growth products such as drive recorders (DR) which use TOREX power mgt. ICs, our macro checkpoints ❶ and ❷ provide a quick snapshot of the business environment. The graph on P1 shows that TOREX can **outperform** the market such as in 21.3 Q1 from China ETC demand and Q2 this term.

Since TI quarterly results are announced roughly 3 weeks ahead of TOREX, they are one useful checkpoint to identify potential positive or negative surprises in TOREX results.

Two Useful Macro Checkpoints:

❶ MOF Monthly Trade Statistics of Japan: Exports to China

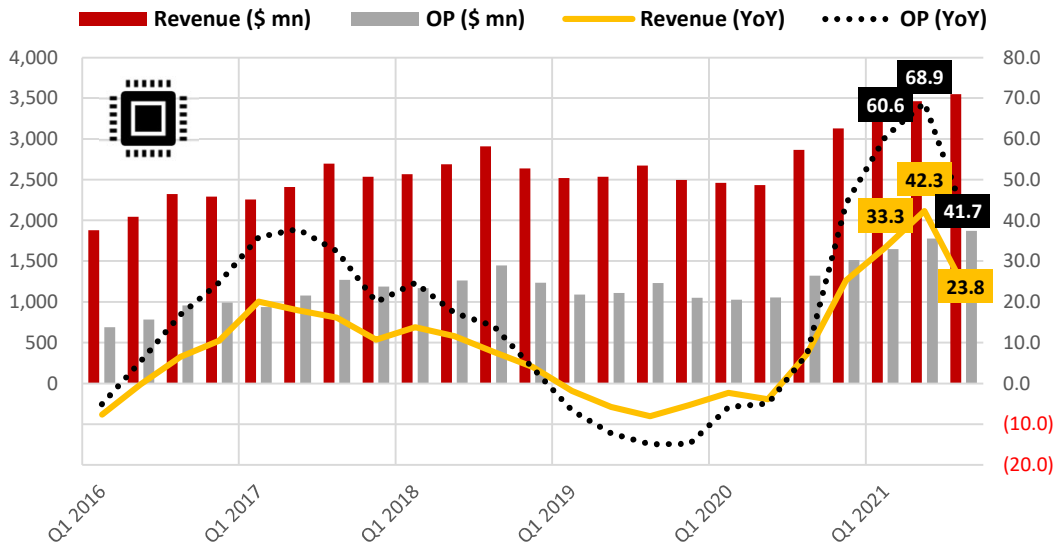
Based on MOF Trade Statistics of Japan (monthly press releases), exports to its no.1 trading partner China rose +28.4% in Q2 driven by chipmaking equipment, hybrid vehicles and scrap copper. The slowdown in momentum in Q3 was due to lower growth of chipmaking equipment and auto exports turning negative YoY. October provisional exports were +9.5%, and despite a rebound in chipmaking equipment (+30%), autos posted declines for the 3rd consecutive month (-11% → -72% → -47%).



Source: compiled by Sessa Partners from MOF Trade Statistics of Japan (monthly press releases): https://www.customs.go.jp/toukei/shinbun/happyou_e.htm.

❷ Global No.1 Texas Instruments Analog Segment Revenue Quarterly Trend

On July 21, TI reported strong 2Q results attributed to strong demand in industrial, automotive and personal electronics. In 3Q results announced on October 26, 4Q revenue midpoint of the guidance range is for $4,400mn (+8.0% YoY). TI revised up its 3Q dividend by 13%.



Source: compiled by Sessa Partners from TXN IR summary data, segment revenue and operating profit spreadsheet: https://investor.ti.com/financial-information/financial-data-non-gaap-reconciliations.

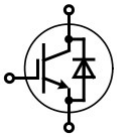
IGBT modules
(image licensed from Adobe Stock)

★TOREX Group significant customer (over 10% of sales)

JPY mn, %	IXYS Corp.	YoY
17.3	2,628	—
18.3	3,249	23.6
19.3	3,189	(1.9)
20.3	2,038	(36.1)
21.3	2,557	25.4

Source: YUHO financial statements.

▶ According to LFUS results briefing materials, high growth in electronics end markets is being driven by ongoing trends toward **a more connected world** and electronification of new consumer products. Areas of strength included: telecom, data centers and cloud infrastructure, building and home automation, smart factories / mfg. tools, battery protection and renewables.



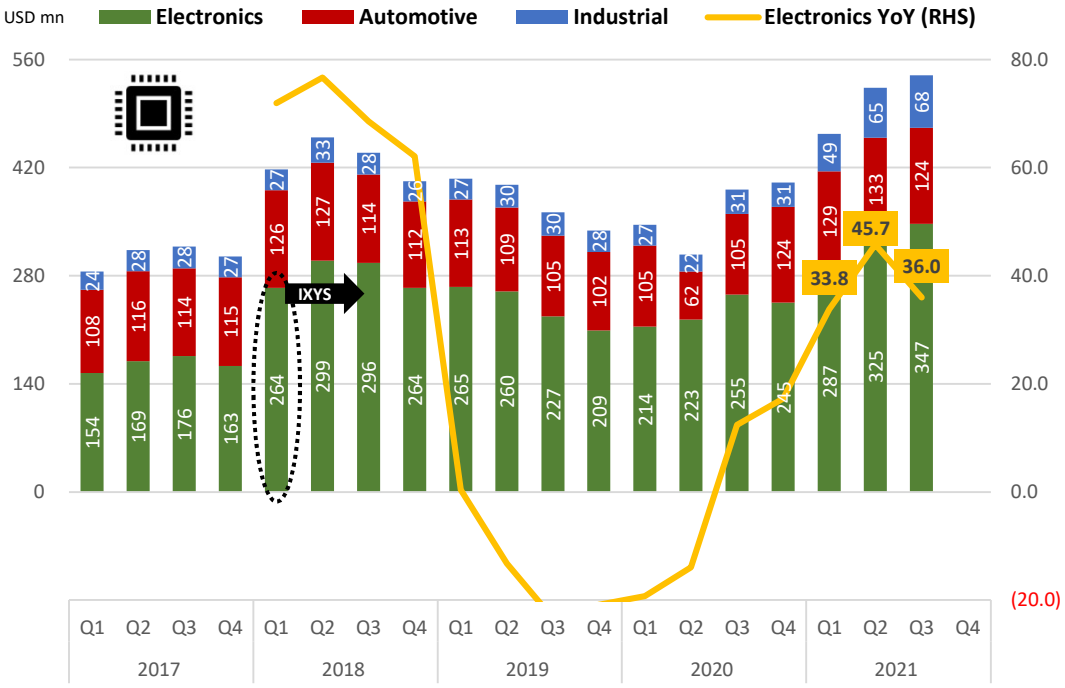
IXYS Power Devices

- MOSFET modules
- IGBT modules
- Rectifier diodes, bridges, PFC
- Fast recovery diodes
- Schottky diodes
- Thyristor discretes / modules
- DCB substrates and dice
- HV current regulators
- SMPD
- Protection devices
- Silicon carbide (SiC) products

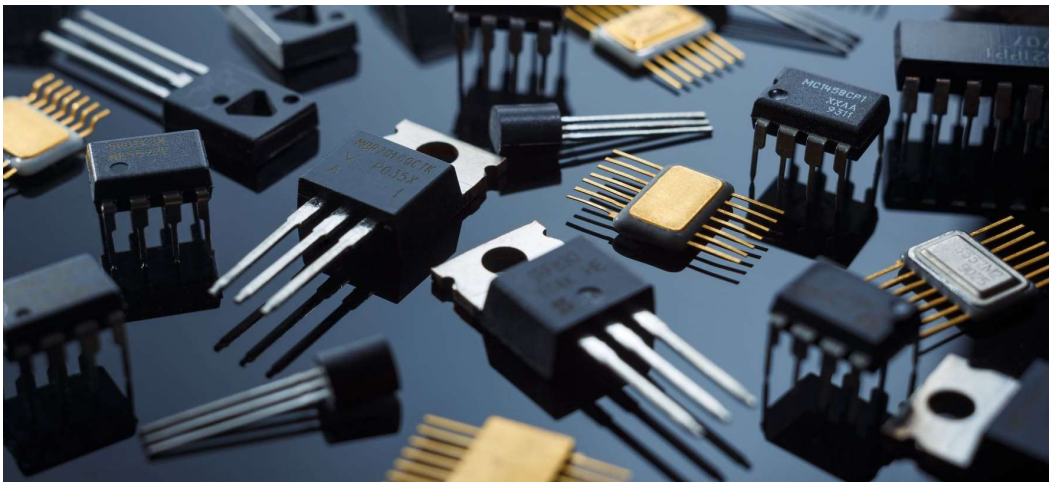
One Useful Micro Checkpoint:

❶ Phenitec major client IXYS Corp. parent Littelfuse Inc. Electronics Segment Trend

On January 17, 2018, Littelfuse, Inc. (NASDAQ: LFUS) announced the completion of its acquisition of IXYS Corporation. IXYS is a global pioneer in the power semiconductor market with a focus on medium- to high-voltage power semiconductors covering the industrial, communications, consumer and medical device markets. Advanced products include wide band gap solutions silicon carbide (SiC) MOSFETs and Schottky diodes (in discrete and module packages) for eco-friendly improved efficiency, reliability and thermal management. As can be seen from the left-hand table, IXYS Corp. is Phenitec's major North American client, accounting for over 10% of total Group net sales. The graph below shows that the IXYS acquisition added roughly $100mn in sales from 2018 Q1 to the LFUS Electronics segment of roughly $150mn.



Source: compiled by Sessa Partners from LFUS investor relations quarterly earnings releases: https://investor.littelfuse.com/news-releases.



Source: power semiconductors image licensed from Adobe Stock.

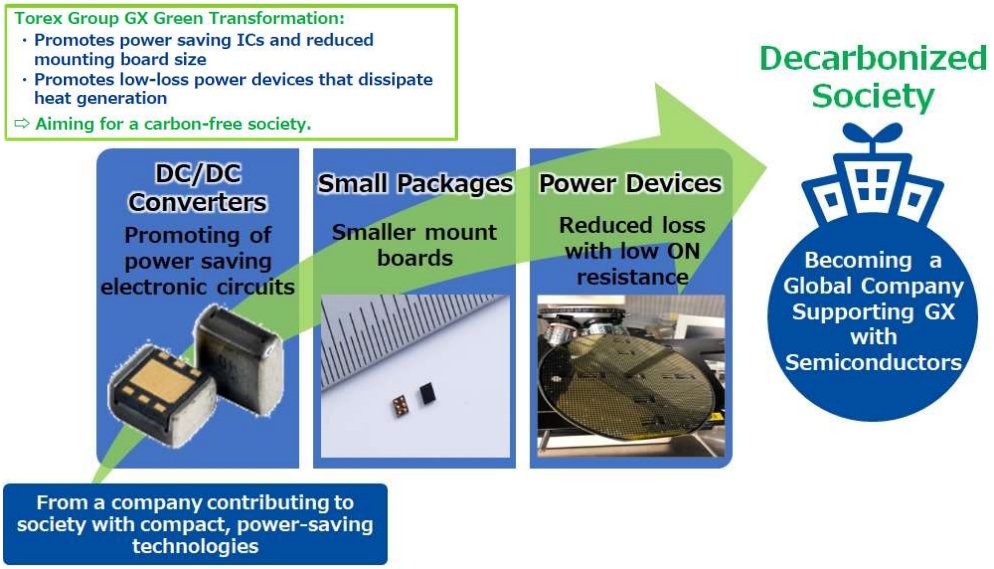
New 5-Year MTP 2021 – 2025 [FY3/22 – FY3/26]

The new MTP promotes **'GX green transformation'** through promoting power-saving circuits, reducing mounting board area and promoting low power-loss devices that suppress heat generation.

Parent Torex will continue to focus on developing high value-added power management ICs, including further share expansion of inductor built-in micro DC/DC converters, products specialized for 5G/IoT, solutions for solid-state and semi solid-state batteries, ultra-compact large-capacity packages, etc.

Initiatives for Phenitec include development of silicon-based power devices and compound semiconductors at Kagoshima, and thorough measures for manufacturing cost reduction, following completion of the Daiichi Plant integration project at Okayama.

Since the new MTP was announced last February, FY3/21 full-term guidance was revised up twice, and initial FY3/22 has also been revised up twice, with potential for a third upward revision around Q3 results in Feb-2022. There is strong potential FY3/24 targets will largely be achieved in year one, two years early (see P2).



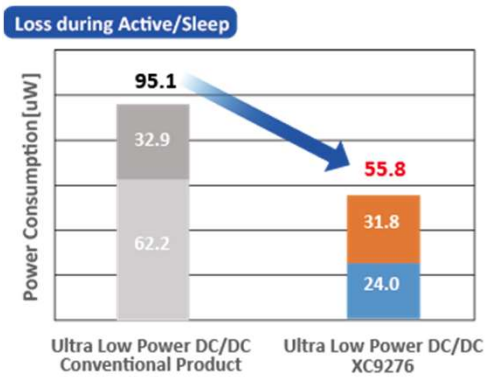
Contributing to the realization of a net zero carbon-neutral society through:

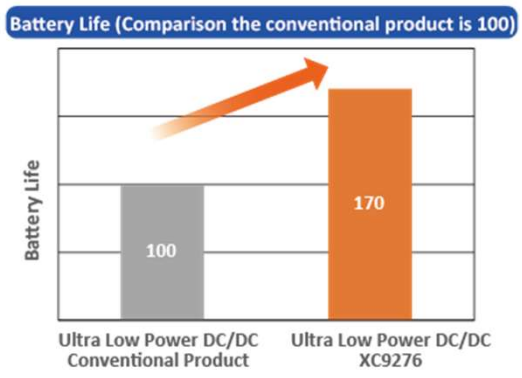
❶ Development of highly efficient, energy-saving power mgt. IC products

The step-down DC/DC converter XC9276 Series was awarded the 2020 Energy Conservation Grand Prize in the Product & Business Model category, by the Energy Conservation Center of Japan. By using the newly developed VSET function for switching the 2-value output voltage, the XC9276 series reduces power consumption by 41.3% and increases battery life by 1.7 times compared with traditional products.

Reduced Power Consumption
41.3%

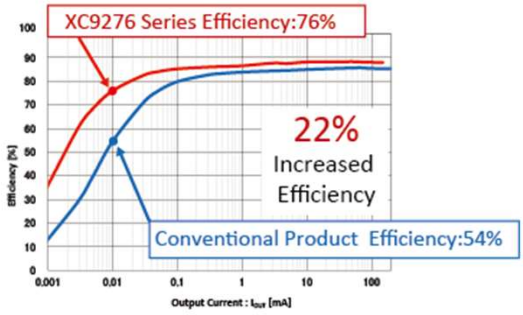
Battery Life
170%





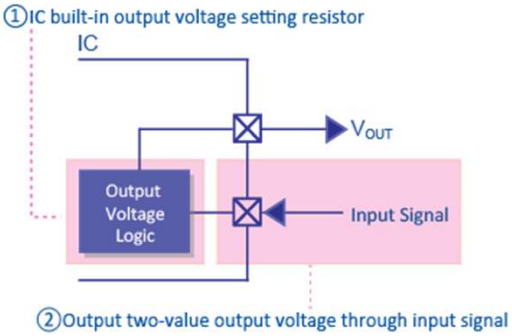
■Technology of ultra-low power

Stop the internal circuit of the IC according to the control status of the IC.Realize ultra-low current consumption.



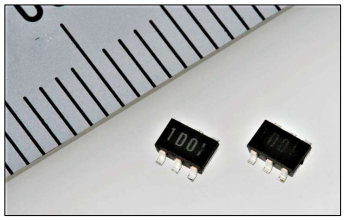
■Technology of switching between two-value output voltage

Only input signal without external parts, Achieves a function that can switch between binary output voltages.

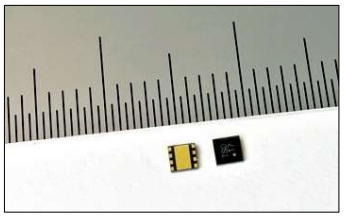


Source: company website.

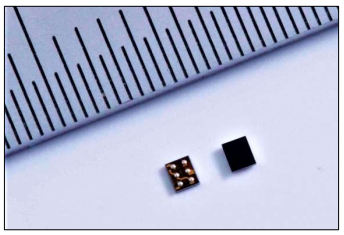
SOT package
(small-outline transistor)



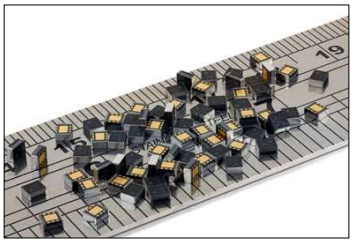
USP package
(ultra-small package)



WLP package
(wafer-level package)



Powerfully small.



"Micro DC/DC" XCL Series
Ultra small DC/DC converters that integrate a coil and a control IC. Simultaneously achieve **space-saving, high efficiency, low noise, high heat dissipation, and low cost**.

❷ Resource conservation with PKG miniaturization and space-saving design

The XC9276 series is expected to be deployed in products such as **small IoT devices and wearable devices** that are small and need to be driven for a long time.

Technology of reduce mounting area

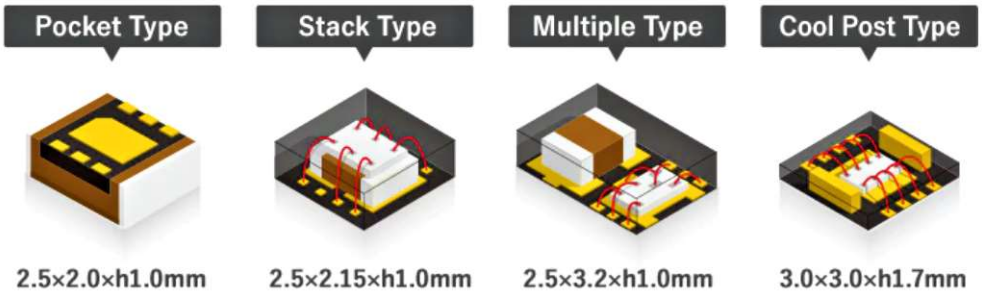
The installation area is reduced by reducing the coil inductance value and the IC package area.

High-growth focus product: Inductor Built-in Micro DC/DC converters

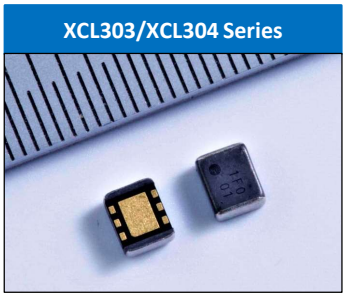
The Micro DC/DC XCL Series is ultra small DC/DC converters that integrate a coil and a control IC using Torex's unique technology, which realize devices that **simultaneously achieve space-saving, high efficiency, low noise, high heat dissipation, and low cost**.

Wireless and GPS functions are being added to a wide variety of devices, and radio-frequency interference and noise have become key concerns in electrical circuit design. Torex's Micro DC/DC XCL Series is optimized to achieve a lower noise than with a discrete DC/DC converter configuration. Improving power conversion efficiency is a key point in miniaturizing a power circuit. When semiconductor and electronic components are made smaller, the resistance component increases, and the loss appears as heat generation. The Micro DC/DC XCL Series reduces the loss of efficiency that accompanies miniaturization.

Different package types emphasize the required properties of 1) low EMI noise, 2) small, low-cost, 3) high efficiency/heat dissipation for large current, and 4) high heat dissipation and low noise for high withstand voltages.



The XCL303/XCL304 series below targets high-speed optical transceivers for 5G applications, and it is the first inductor built-in Micro DC/DC converter product on the market to handle negative output voltage.



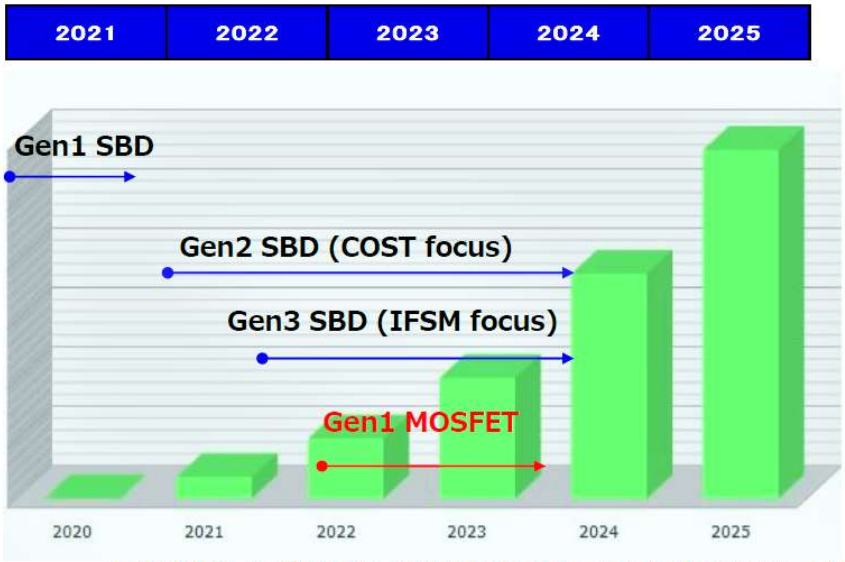
Source: company website.

❸ Reduced power loss with low ON resistance* through development and sales promotion of next-generation silicon carbide (SiC) and gallium oxide (β-Ga_2O_3) power devices

Phenitec schedule for advancing development of next-generation SiC power devices

Development of SiC devices on Kagoshima's 6-inch line
Developing price-competitive SiC SBD (Schottky Barrier Diode)
➡ SiC SBD Sample shipments started

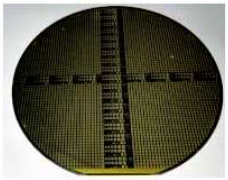
Participating as an Associate Member of Tsukuba Power Electronics Constellations (TPEC) promoted by the National Institute of Advanced Industrial Science and Technology (AIST) toward further cost reduction and R&D of SiC MOSFETs



Preparing for mass production

Uses high-concentration substrate
⇓
Process simplification
Chip size shrink
⇓
✓ Low cost
✓ High quality

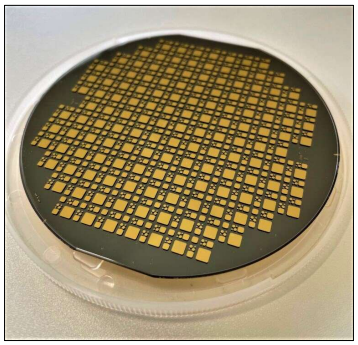
SiC devices produced in-house



In the future, we will make capital investment according to the progress of development and mass production of SiC-SBD and SiC-FET.

Source: excerpt from 4Q FY3/21 IR results briefing materials, May 24, 2021.

NCT 4-inch beta-gallium oxide β-Ga_2O_3 epitaxial wafer



Source: Novel Crystal Technology June 16, 2021 press release.

***ON Resistance**
The resistance value between the Drain and Source of a MOSFET during operation (ON) is called the ON Resistance $R_{DS(on)}$. The smaller the value, the lower the power loss.

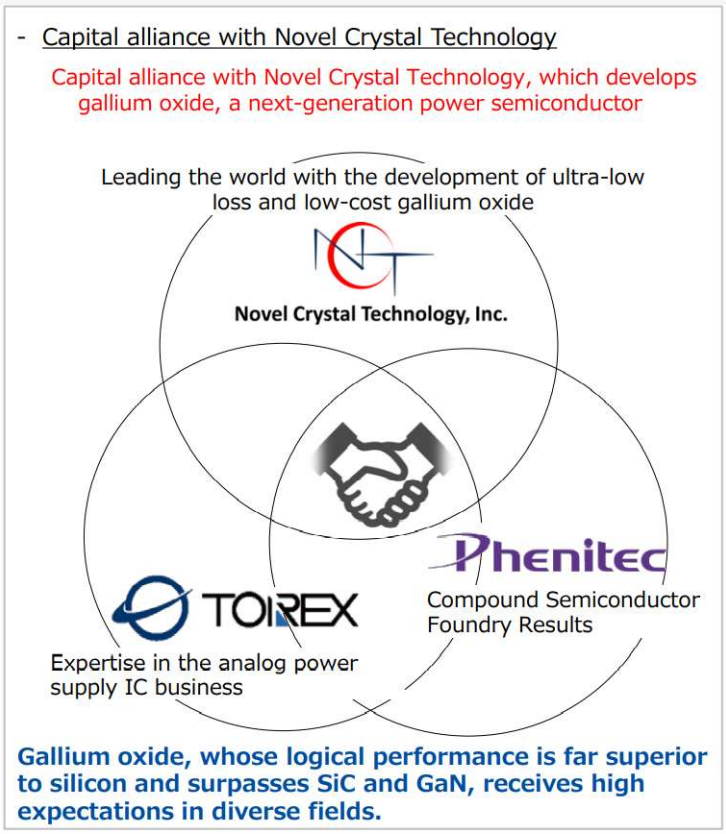
Torex capital tie-up partner Novel Crystal Technology achieves world's first mass production of 100mm (4-inch) beta-gallium oxide (β-Ga_2O_3) epitaxial wafers, making it possible to mass produce next-generation power devices (June 16, 2021)

Previously Novel Crystal Technology had announced in April 2019 that it succeeded in developing high-quality 50mm (2-inch) beta-gallium oxide (β-Ga_2O_3) epitaxial wafers, and it has been manufacturing them and selling them since then, but they are limited to use for R&D since mass production is not economically viable with 2-inch wafers. Compared with silicon carbide (SiC) and gallium nitride (GaN), beta-gallium oxide (β-Ga_2O_3) has large band gap energy of 4.5eV (electron volts) which translates to lower loss of power, making it ideal for applications such as electric vehicles (EV) and other industrial equipment. In addition, beta-gallium oxide bulk single crystals are grown using the melt growth method, which is 100 times faster than the vapor growth method used for SiC and GaN. Finally, since beta-gallium oxide has a hardness similar to silicon, it can be processed (cutting and polishing) using existing equipment for silicon wafers (reducing the capex burden for customers).

NCT succeeded in demonstrating beta-gallium oxide low-loss Schottky barrier diodes (SBD) with a trench structure in September 2017, and it will continue to build mass production technology for trench-type SBDs on the 100mm line. The company plans to supply 150mm (6-inch) beta-gallium oxide (β-Ga_2O_3) epitaxial wafers in 2023.

Source: NCT website.

Torex announced a capital tie-up with Novel Crystal Technology on June 30, 2020, as Group subsidiary Phenitec is also working on developing next-generation power devices, and the market for ultra low-loss and low-cost power devices is expected to grow rapidly over the next decade. NCT's β-Ga_2O_3 is summarized below.



Source: excerpt from IR material "FY2021 – 2025 Mid-Term Management Plan," February 15, 2021.

NCT Business Description
- Manufacture and sale of substrates with gallium oxide epitaxial film
- Manufacture and sale of single crystals and their applied products
- Manufacture and sale of semiconductors and their applied products

Head Office
2-3-1 Hirosedai, Sayama City, Saitama

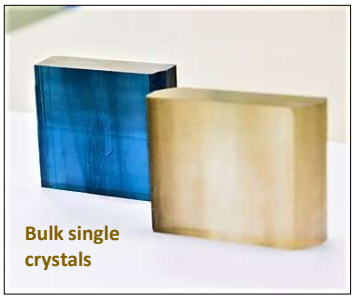
President and CEO
Akito Kuramata

Summary of Novel Crystal Technology's next-generation power device material beta-gallium oxide (β-Ga_2O_3) epitaxial wafers and bulk single crystal growth technology

Established in June 2015, Novel Crystal Technology Inc. is a carve-out venture of Tamura Corporation (6768 TSE1) and a technology transfer venture of NICT (National Institute of Information and Communications Technology), and along with the Tokyo University of Agriculture and Technology, it is advancing research on beta-gallium oxide, a promising next generation power device material, aiming to IPO in 2023.

Novel Crystal Technology Inc. is developing and manufacturing β-Ga_2O_3 substrates and epitaxial wafers. It also leads the world in bulk single crystal growth technology, epitaxial film-forming techniques and power device fabrication technology. With the growing call for a carbon-free society, renewable energy development and efficient power usage are expected to build momentum. β-Ga_2O_3 power devices have promising applications in electric vehicles, robots and a host of other industrial equipment, contributing to sustainable society.

Large band gap energy of 4.5eV (electron volts) means lower loss of power. Silicon is reaching its theoretical limit to lower ON resistance.



Bulk single crystals

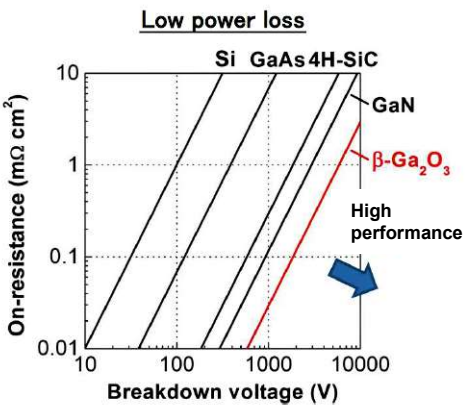
NCT Shareholders:
- Tamura Corp. (6768): 38%
- Individual investors: 36%
- Corporate investors: 26%

Corporate investors:
- AGC (5201)
- TDK (6762)
- Iwatani Venture Capital
- Satori Electric (7420)
- Shindengen Electric (6844)
- JX Nippon Mining & Metals
- Sojitz Machinery Corp.
- **Torex Semiconductor (6616)**
- Yaskawa Electric (6506)

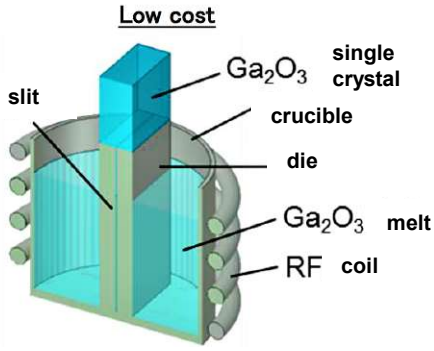
Source: NEDO Project Review: Practical Development of Ampere-grade Gallium Oxide Power Device <July 2018 – May 2020>

Source: NCT company website

Features of β-Ga_2O_3: Promising Next-Generation Power Device Material
– Comparison with other wide band-gap semiconductor materials



High dielectric breakdown electric field (8 MV/cm)



Single crystal growth method diagram

High growth rate due to melt growth (30 mm/h)

The closer to the bottom-right corner, the greater the material's ability to realize a device that both saves energy and has a high breakdown voltage. Silicon is the material currently used for power devices, yet it is reaching its performance limits. Silicon carbide (SiC) and gallium nitride (GaN) have wider band gaps and greater theoretical values than Si, yet beta gallium oxide (β-Ga_2O_3) surpasses them both.

★Cost / performance advantages of beta-gallium oxide (β-Ga_2O_3)

❶ Difference in bulk crystal growth speed

With SiC and GaN, bulk single crystals are generally grown using the vapor growth method. However, the issues with this method are that only several hundred micrometers can be grown per hour, and high-quality crystals are difficult to produce. Meanwhile, beta gallium oxide (β-Ga_2O_3) is grown using the melt growth method. With a growth rate of several dozen millimeters per hour, this method is approximately 100 times faster than the vapor growth method, enabling the production of high-quality bulk single crystals. The speed at which the bulk single crystals can be grown translates to noticeably lower crystal growth costs.

❷ Easy to process (cutting, polishing)

Because both SiC and GaN are extremely hard materials, the process of cutting out substrates from bulk single crystals and polishing them is time-consuming and labor intensive. Meanwhile, β-Ga_2O_3 has a hardness similar to silicon. This means it can be processed easily in the same facilities as silicon.

❸ Development of large-diameter substrates has progressed rapidly

With SiC, it took roughly 15 years to develop a 6-inch substrate (1997 – 2012). With β-Ga_2O_3, the same was achieved in just 5 years (2012 – 2017).

Summary of beta-gallium oxide (β-Ga_2O_3) characteristics:
1) Energy saving / high breakdown voltage (ultra low-loss)
2) Bulk single crystals can be grown rapidly (100x faster than the vapor method)
3) The material is easy to process on existing equipment for silicon wafers
4) Large diameter substrates were achieved in a short time period

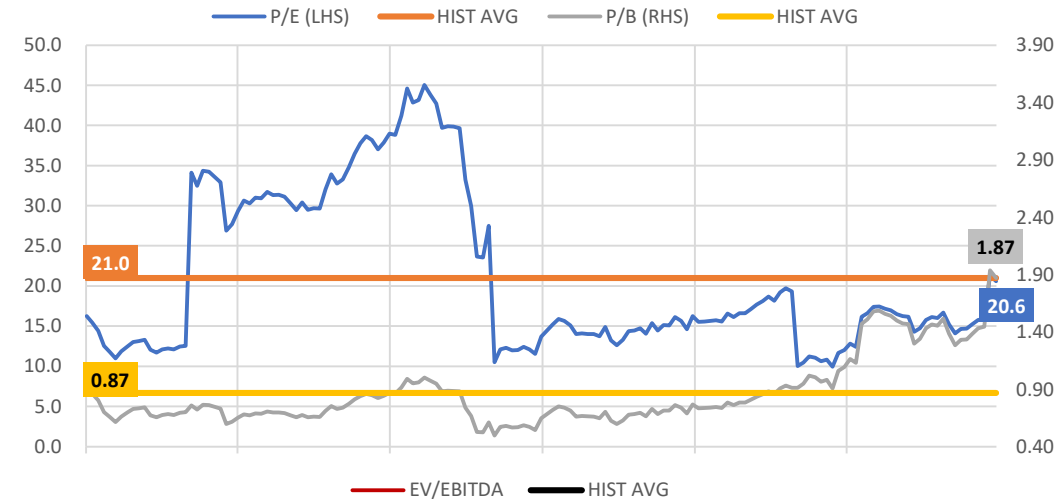
Share Price, Valuations and Shareholder Rebates

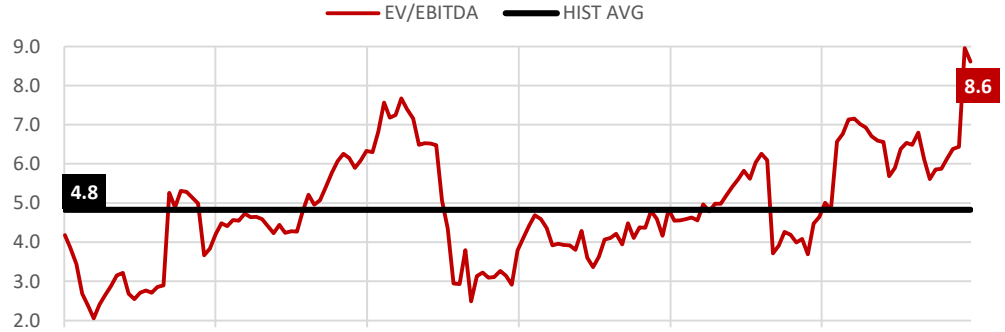
Performance and Valuations: SESSA Smart Charts

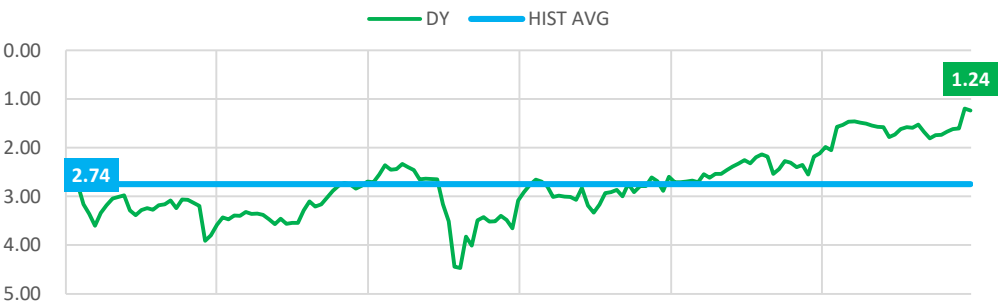
- ✓ The P/E of 19.2x is still below the historical avg. Torex has revised up full-term guidance for 4 consecutive quarters.
- ✓ Ultimately this is the nature of powerful cyclical recoveries, and current-term forecasts cannot capture the true upside potential.
- ✓ The three key medium-term growth drivers include 1) 5G / Ind'l IoT 2) EV / Connected Cars / ADAS, and 3) Next-gen Power Devices, all of which have entered accelerating growth phases.

Analyst's view

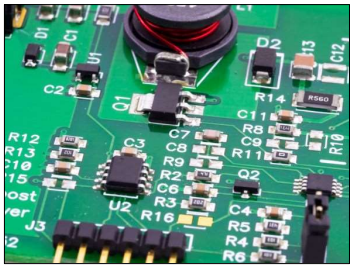
Sessa Smart Charts: 3-Year Weekly Share Price and Valuations Trend





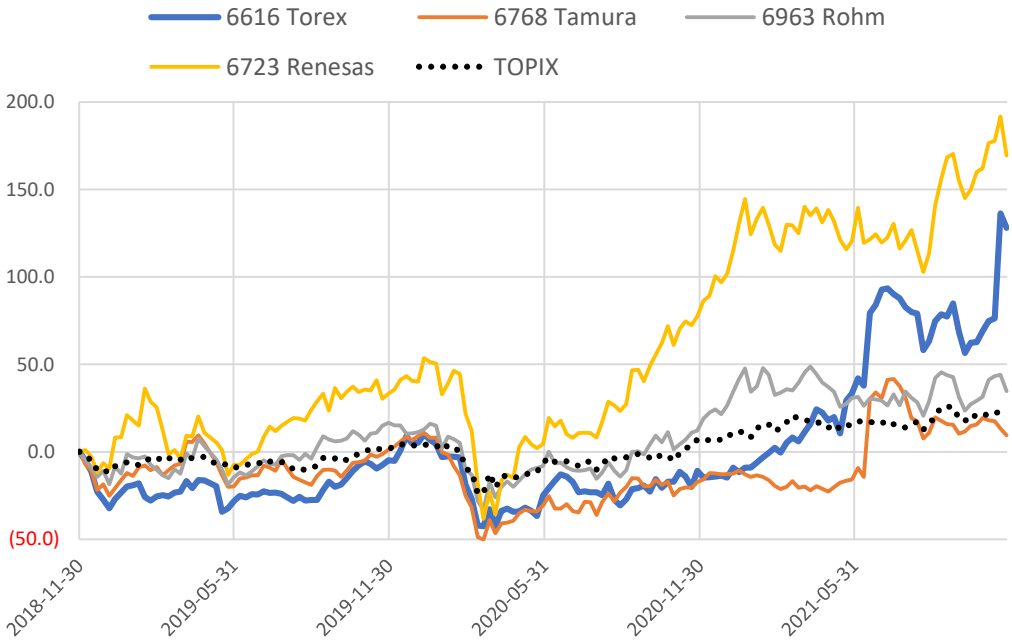


Source: compiled by Sessa Partners from SPEEDA historical earnings and price data. Valuations calculated based on CE.



Boost converter circuit
(image licensed from Adobe Stock)

3-Year Weekly Relative Performance Trend



Koji Shibamiya (President)

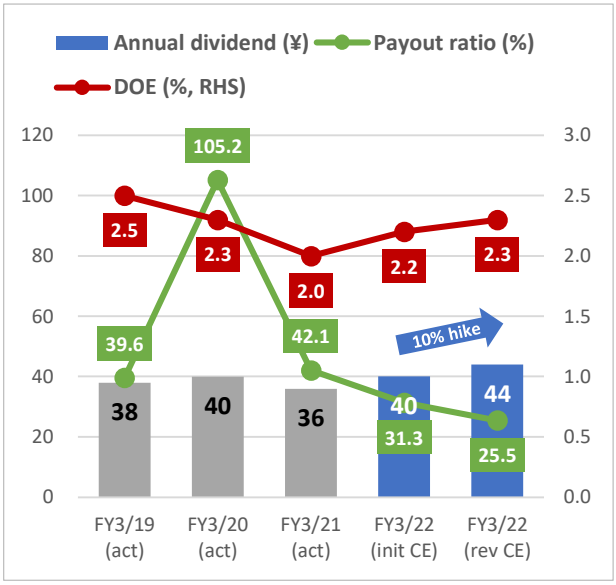
The lower left table shows that **both Phenitec Chairman Fujisaka and Torex President Shibamiya are in the top 10 shareholders, whose interests are aligned with all shareholders, an attractive point that cannot be understated in our view.**

The company's stated dividend policy is highlighted in the graph below: consolidated dividend payout ratio of at least 20%, aiming for DOE of 3.0%. Like many Japanese companies, a common point of frustration among foreign shareholders is policy which emphasizes 'stable' dividends. It is also true that Torex has a large net cash position, and given that its business is highly cash generative, the unrelenting increase in shareholders' equity will make the DOE target of 3.0% increasingly difficult to achieve. HOWEVER, it is also true that management did not hesitate to approve a 5.2% share buyback in 2019, which is not the same as many Japanese companies, nor is two top managers among the top 10 shareholders. "Actions speak louder than words."

TOREX SEMICONDUCTOR Major Shareholders (2021/09/30)

Rank	Shareholder	03/31	09/30
1	The Master Trust Bank of Japan, Ltd. (Trust Acct)	9.01%	13.10%
2	THE BANK OF NEW YORK 133652	6.93%	7.42%
3	Custody Bank of Japan, Ltd. (Trust Acct)	7.02%	7.19%
4	**Tomoyuki Fujisaka (Phenitec Chairman)**	**4.60%**	**4.60%**
5	The Chugoku Bank, Limited	4.28%	4.28%
6	ARS Co., Ltd.	4.10%	4.10%
7	Kibi Kogyo Co., Ltd.	3.61%	3.61%
8	Takanori Ozaki	2.91%	2.91%
9	**Koji Shibamiya (Torex President)**	**2.67%**	**2.67%**
10	Kimiko Ozaki	1.86%	1.86%
Top 10	—	**46.99%**	**51.74%**

Source: FY3/21 Q4 and FY3/22 Q2 YUHO financial statements.



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