

APPENDIX 1: CONNECTORS

Modules equipped with PV wiring connectors that comply with the Standard for Connectors for Use in Photovoltaic Systems, UL 61730, shall have the specific allowable mating connector manufacturer(s) and model number(s) listed as below:

The type of Connector	Connector manufacturer	Trade mark identification	Rated Voltage	Rated Current(A)	Temperature Range
TS4	Trina Solar Co., Ltd.	Trina Solar	1500V	41A/46A	-40°C-85°C
TS4-36	Trina Solar Co., Ltd.	Trina Solar	1500V	41A/46A	-40°C-85°C
TS4-cd	Trina Solar Co., Ltd.	Trina Solar	1500V	41A/46A	-40°C-85°C
TS4-xz (x=1; z=1 or 2);	Trina Solar Co., Ltd.	Trina Solar	1500V	41A/46A	-40°C-85°C
TS4-cd (c=1; d=1 or 2)	Trina Solar Co., Ltd.	Trina Solar	1500V	41A/46A	-40°C-85°C
QC4.10-cds(c=3 or 4; d=5 or 6; s=blank or 1)	QC Solar (Suzhou) Corporation	QC Solar (Suzhou) Corporation	1500V	41A/46A	-40°C-85°C
PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR; PV-KST4-EVO2A/xy; PV-KBT4-EVO2A/xy	Stäubli Electrical Connectors AG	Stäubli Electrical Connectors AG	1500V	46A/53A	-40°C-85°C

APPENDIX 2: Wiring cable

Modules equipped with PV wiring Cable that comply with the Standard for cable for Use in Photovoltaic Systems, shall have the specific allowable mating cable manufacturer(s) and model number(s) listed as below

The type of Cable	The Cable manufacturer	Rated Voltage	Cable diameters	Temperature Range
62930 IEC 131 1X1,5...35mm ² HALOGEN FREE LOW SMOKE	Wuxi Xinhongye Wire & Cable Co., Ltd.	1500V	1x4,0mm ²	-40°C-85°C
62930 IEC 131 1X1,5...35mm ² HALOGEN FREE LOW SMOKE	Trina Solar Co., Ltd.	1500V	1x4,0mm ² or 1x6,0mm ²	-40°C-85°C
62930 IEC 131 1X1,5...35mm ² HALOGEN FREE LOW SMOKE	Changshu JHOSIN Communication Technology Co., Ltd.	1500V	1x4,0mm ² or 1x6,0mm ²	-40°C-85°C
62930 IEC 131 1X1,5...35mm ² HALOGEN FREE LOW SMOKE	SUZHOU YONGHAO CABLE CO LTD	1500V	1x4,0mm ² or 1x6,0mm ²	-40°C-85°C
62930 IEC 131 1X1,5...35mm ² HALOGEN FREE LOW SMOKE	Changzhou Greateen New Energy Technology Co., Ltd.	1500V	1x4,0mm ²	-40°C-85°C

APPENDIX 3: Bypass diode

Modules equipped with PV Bypass diode that comply with the Standard for Bypass diode for Use in Photovoltaic Systems, shall have the specific allowable mating bypass diode manufacturer(s) and model number(s) listed as below:

The type of Bypass Diode	The Bypass Diode manufacturer	Technical data / ratings
TM3045-18	Brand of diode Trina Solar Co., Ltd.; Manufacturer : SUZHOU UKT NEW ENERGY TECHNOLOGY CO., LTD Panjit Electronics (Wuxi) CO., LTD. Yangzhou Yangjie Electronic Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd. Sichuan S-Chip Microelectronics., Ltd.	Tj max=200°C

	Changzhou Greateen New Energy Technology Co., Ltd.	
TM3045-20	Brand of diode Trina Solar Co., Ltd.; Manufacturer : SUZHOU UKT NEW ENERGY TECHNOLOGY CO., LTD Panjit Electronics (Wuxi) CO., LTD. Yangzhou Yangjie Electronic Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd. Sichuan S-Chip Microelectronics., Ltd. Changzhou Greateen New Energy Technology Co., Ltd.	Tj max=200°C
TM3045-25	Brand of diode Trina Solar Co., Ltd.; Manufacturer : SUZHOU UKT NEW ENERGY TECHNOLOGY CO., LTD Panjit Electronics (Wuxi) CO., LTD. Yangzhou Yangjie Electronic Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd. Sichuan S-Chip Microelectronics., Ltd. Changzhou Greateen New Energy Technology Co., Ltd. China Resources Semiconductor (Chongqing) Co., Ltd.	Tj max=200°C
TM3045-28	Brand of diode Trina Solar Co., Ltd.; Manufacturer : SUZHOU UKT NEW ENERGY TECHNOLOGY CO., LTD Panjit Electronics (Wuxi) CO., LTD. Yangzhou Yangjie Electronic Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd. Sichuan S-Chip Microelectronics., Ltd. Changzhou Greateen New Energy Technology Co., Ltd. China Resources Semiconductor (Chongqing) Co., Ltd.	Tj max=200°C
TM3045-30	Brand of diode Trina Solar Co., Ltd.; Manufacturer : SUZHOU UKT NEW ENERGY TECHNOLOGY CO., LTD Panjit Electronics (Wuxi) CO., LTD. Yangzhou Yangjie Electronic Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd. Sichuan S-Chip Microelectronics., Ltd. Changzhou Greateen New Energy Technology Co., Ltd. China Resources Semiconductor (Chongqing) Co.,Ltd.	Tj max=200°C
TM3045-18T/ TM3045-20T/ TM3045-25T/ TM3045-30T	Jiangsu Tonglin Electric Co., Ltd.	Tj max=200°C

<p>TM3045-30Q</p>	<p>QC Solar (Suzhou) Corporation Panjit Electronics (Wuxi) CO., LTD. Changzhou Greateen New Energy Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Yangzhou Yangjie Electronic Technology Co., Ltd. Sichuan S-Chip Microelectronics., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd. SUZHOU UKT NEW ENERGY TECHNOLOGY CO.,LTD.</p>	<p>Tj max=200°C</p>
<p>TM3045-32Q</p>	<p>QC Solar (Suzhou) Corporation Panjit Electronics (Wuxi) CO., LTD. Changzhou Greateen New Energy Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Yangzhou Yangjie Electronic Technology Co., Ltd. Sichuan S-Chip Microelectronics., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd. SUZHOU UKT NEW ENERGY TECHNOLOGY CO.,LTD.</p>	<p>Tj max=200°C</p>
<p>TM3045-25Q</p>	<p>QC Solar (Suzhou) Corporation Panjit Electronics (Wuxi) CO., LTD. Changzhou Greateen New Energy Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Yangzhou Yangjie Electronic Technology Co., Ltd. Sichuan S-Chip Microelectronics., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd. SUZHOU UKT NEW ENERGY TECHNOLOGY CO.,LTD.</p>	<p>Tj max=200°C</p>
<p>TM3045-20Q</p>	<p>QC Solar (Suzhou) Corporation Panjit Electronics (Wuxi) CO., LTD. Changzhou Greateen New Energy Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Yangzhou Yangjie Electronic Technology Co., Ltd. Sichuan S-Chip Microelectronics., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd. SUZHOU UKT NEW ENERGY TECHNOLOGY CO.,LTD</p>	<p>Tj max=200°C</p>
<p>TM3045-28Q</p>	<p>Panjit Electronics (Wuxi) CO., LTD. Changzhou Greateen New Energy Technology Co., Ltd. Sichuan S-Chip Microelectronics., Ltd. SUZHOU UKT NEW ENERGY TECHNOLOGY CO.,LTD</p>	<p>Tj max=200°C</p>
<p>TM3045-18Q</p>	<p>Panjit Electronics (Wuxi) CO., LTD. Changzhou Greateen New Energy Technology Co., Ltd. Sichuan S-Chip Microelectronics., Ltd. SUZHOU UKT NEW ENERGY TECHNOLOGY CO.,LTD</p>	<p>Tj max=200°C</p>

TM3045-20U/ TM3045-25U	SUZHOU UKT NEW ENERGY TECHNOLOGY CO.,LTD	Tj max=200°C
TM3045-25X	Suzhou Xtong Photovoltaic Technologies Co., Ltd.	Tj max=200°C

APPENDIX 4: Electrical and mechanical properties

Appendix I: Electrical and mechanical properties for DE09R/DE18M(II)/DE19R/DE20/DE21/NE09R /NEG18R /NE20/NE21/NE19R / NEG22.20/ NEG9RH.20/28 / NEG10R.28 Series ---All electrical data shall be shown as relative to standard test conditions (1000W/m², (25 ± 2) °C, AM 1.5) Torolance Mono Pmax ± 3% Isc ± 4% Voc ± 3% ;

Appendix I: Electrical and mechanical properties for DEG20C/DEG21C/NEG9RC/NEG19RC/ NEG20C/ NEG21C---All electrical data shall be shown as relative to standard test conditions (1000W/m², (25 ± 2) °C, AM 1.5) Torolance Mono Pmax ± 3% Isc ± 5% Voc ± 3% ;

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
DE09R Series	395	40.8	9.67	49.4	10.44	20	-0.34	-0.25	0.04	1500V	Protection Class II
	400	41	9.75	49.6	10.47		-0.34	-0.25	0.04		
	405	41.3	9.82	49.7	10.5		-0.34	-0.25	0.04		
	410	41.5	9.87	49.8	10.53		-0.34	-0.25	0.04		
	415	41.7	9.94	50	10.55		-0.34	-0.25	0.04		
	420	42	10.01	50.1	10.58		-0.34	-0.25	0.04		
	425	42.2	10.08	50.2	10.61		-0.34	-0.25	0.04		
	430	42.3	10.17	50.3	10.64		-0.34	-0.25	0.04		
	435	42.5	10.24	50.4	10.67		-0.34	-0.25	0.04		
440	42.7	10.3	50.5	10.69	-0.34	-0.25	0.04				

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
DE18M(II) Series	470	41.6	11.30	50.4	11.83	25	-0.34	-0.25	0.04	1500V	Protection Class II
	475	41.8	11.37	50.6	11.91		-0.34	-0.25	0.04		
	480	42.0	11.42	50.8	11.99		-0.34	-0.25	0.04		
	485	42.2	11.49	51.1	12.07		-0.34	-0.25	0.04		
	490	42.4	11.56	51.3	12.14		-0.34	-0.25	0.04		
	495	42.6	11.63	51.5	12.21		-0.34	-0.25	0.04		
	500	42.8	11.69	51.7	12.28		-0.34	-0.25	0.04		
	505	43.0	11.75	51.9	12.35		-0.34	-0.25	0.04		
	510	43.2	11.81	52.1	12.42		-0.34	-0.25	0.04		
	515	43.4	11.87	52.3	12.49		-0.34	-0.25	0.04		
	520	43.6	11.93	52.5	12.55		-0.34	-0.25	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
DE19R Series	550	37.5	14.65	44.8	15.67	30	-0.34	-0.25	0.04	1500V	Protection Class II
	555	37.8	14.69	45	15.72		-0.34	-0.25	0.04		
	560	38.0	14.72	45.3	15.76		-0.34	-0.25	0.04		
	565	38.3	14.76	45.6	15.81		-0.34	-0.25	0.04		
	570	38.5	14.79	45.8	15.85		-0.34	-0.25	0.04		

	575	38.8	14.83	46.1	15.90		-0.34	-0.25	0.04		
	580	39.0	14.86	46.3	15.94		-0.34	-0.25	0.04		
	585	39.3	14.90	46.6	15.99		-0.34	-0.25	0.04		
	590	39.5	14.93	46.8	16.03		-0.34	-0.25	0.04		
	595	39.8	14.97	47.1	16.08		-0.34	-0.25	0.04		
	600	40.0	15.00	47.3	16.12		-0.34	-0.25	0.04		
	605	40.2	15.04	47.6	16.17		-0.34	-0.25	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
DE20 Series	575	33.4	17.22	40.5	18.27	30	-0.34	-0.25	0.04	1500V	Protection Class II
	580	33.6	17.26	40.7	18.32		-0.34	-0.25	0.04		
	585	33.8	17.31	40.9	18.37		-0.34	-0.25	0.04		
	590	34.0	17.35	41.1	18.42		-0.34	-0.25	0.04		
	595	34.2	17.40	41.3	18.47		-0.34	-0.25	0.04		
	600	34.4	17.44	41.5	18.52		-0.34	-0.25	0.04		
	605	34.6	17.49	41.7	18.57		-0.34	-0.25	0.04		
	610	34.8	17.53	41.9	18.62		-0.34	-0.25	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
DEG20C Series	580	33.8	17.16	40.9	18.21	35	-0.34	-0.25	0.04	1500V	Protection Class II
	585	34.0	17.21	41.1	18.26		-0.34	-0.25	0.04		
	590	34.2	17.25	41.3	18.31		-0.34	-0.25	0.04		
	595	34.4	17.30	41.5	18.36		-0.34	-0.25	0.04		
	600	34.6	17.34	41.7	18.42		-0.34	-0.25	0.04		
	605	34.8	17.39	41.9	18.48		-0.34	-0.25	0.04		
	610	35.0	17.44	42.1	18.53		-0.34	-0.25	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
DE21 Series	635	36.8	17.26	44.7	18.30	30	-0.34	-0.25	0.04	1500V	Protection Class II
	640	37.0	17.30	44.9	18.34		-0.34	-0.25	0.04		
	645	37.2	17.35	45.1	18.39		-0.34	-0.25	0.04		
	650	37.4	17.39	45.3	18.44		-0.34	-0.25	0.04		
	655	37.6	17.43	45.5	18.48		-0.34	-0.25	0.04		
	660	37.8	17.47	45.7	18.53		-0.34	-0.25	0.04		
	665	38.0	17.51	45.9	18.57		-0.34	-0.25	0.04		
	670	38.2	17.55	46.1	18.62		-0.34	-0.25	0.04		
	675	38.4	17.55	46.3	18.66		-0.34	-0.25	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
DEG21C Series	640	37.3	17.19	45.1	18.26	35	-0.34	-0.25	0.04	1500V	Protection Class II
	645	37.5	17.23	45.3	18.31		-0.34	-0.25	0.04		
	650	37.7	17.27	45.5	18.35		-0.34	-0.25	0.04		
	655	37.9	17.31	45.7	18.4		-0.34	-0.25	0.04		
	660	38.1	17.35	45.9	18.45		-0.34	-0.25	0.04		
	665	38.3	17.39	46.1	18.5		-0.34	-0.25	0.04		
	670	38.5	17.43	46.3	18.55		-0.34	-0.25	0.04		
	675	38.7	17.47	46.5	18.57		-0.34	-0.25	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
NEG9R Series	410	41.8	9.82	49.8	10.47	25/20				1500V	Protection Class II
	415	42.1	9.86	50.1	10.50						
	420	42.5	9.89	50.5	10.53		-0.29	-0.24	0.04		
	425	42.9	9.92	50.9	10.56		-0.29	-0.24	0.04		
	430	43.2	9.96	51.4	10.59		-0.29	-0.24	0.04		
	435	43.6	9.99	51.8	10.64		-0.29	-0.24	0.04		
	440	44.0	10.01	52.2	10.67		-0.29	-0.24	0.04		
	445	44.3	10.05	52.6	10.71		-0.29	-0.24	0.04		
	450	44.6	10.09	52.9	10.74		-0.29	-0.24	0.04		
	455	45.0	10.11	53.4	10.77		-0.29	-0.24	0.04		
	460	45.4	10.14	53.8	10.81		-0.29	-0.24	0.04		
	465	45.8	10.16	54.2	10.85		-0.29	-0.24	0.04		
	470	46.1	10.20	54.6	10.89		-0.29	-0.24	0.04		
	475	46.4	10.24	55.0	10.93		-0.29	-0.24	0.04		
	480	46.7	10.28	55.4	10.97		-0.29	-0.24	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
NEG9RC Series	410	41.8	9.82	49.8	10.47	25	-0.29	-0.24	0.04	1500V	Protection Class II
	415	42.1	9.86	50.1	10.50		-0.29	-0.24	0.04		
	420	42.5	9.89	50.5	10.53		-0.29	-0.24	0.04		
	425	42.9	9.92	50.9	10.56		-0.29	-0.24	0.04		
	430	43.2	9.96	51.4	10.59		-0.29	-0.24	0.04		
	435	43.6	9.99	51.8	10.64		-0.29	-0.24	0.04		
	440	44.0	10.01	52.2	10.67		-0.29	-0.24	0.04		
	445	44.3	10.05	52.6	10.71		-0.29	-0.24	0.04		
	450	44.6	10.09	52.9	10.74		-0.29	-0.24	0.04		
	455	45.0	10.11	53.4	10.77		-0.29	-0.24	0.04		
	460	45.4	10.14	53.8	10.81		-0.29	-0.24	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
NEG9RH .20/28series	440	30.01	14.66	35.81	15.62	25	-0.29	-0.24	0.04	1500V	Protection Class II
	445	30.25	14.71	35.98	15.67		-0.29	-0.24	0.04		
	450	30.49	14.76	36.15	15.72		-0.29	-0.24	0.04		
	455	30.72	14.81	36.32	15.77		-0.29	-0.24	0.04		
	460	30.96	14.86	36.49	15.82		-0.29	-0.24	0.04		
	465	31.19	14.91	36.66	15.87		-0.29	-0.24	0.04		
	470	31.42	14.96	36.83	15.92		-0.29	-0.24	0.04		
	475	31.65	15.01	37.0	15.97		-0.29	-0.24	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
NEG18R NEG18RC Series	470	32.1	14.67	38.8	15.62	30	-0.29	-0.24	0.04	1500V	Protection Class II
	475	32.3	14.72	39.0	15.68		-0.29	-0.24	0.04		
	480	32.5	14.77	39.2	15.72		-0.29	-0.24	0.04		
	485	32.7	14.84	39.4	15.76		-0.29	-0.24	0.04		
	490	32.9	14.91	39.6	15.80		-0.29	-0.24	0.04		
	495	33.1	14.97	39.8	15.83		-0.29	-0.24	0.04		
	500	33.3	15.03	40.1	15.86		-0.29	-0.24	0.04		
	505	33.5	15.09	40.3	15.89		-0.29	-0.24	0.04		
	510	33.7	15.14	40.6	15.93		-0.29	-0.24	0.04		
	515	33.9	15.19	40.9	15.96		-0.29	-0.24	0.04		
	520	34.1	15.25	41.2	15.99		-0.29	-0.24	0.04		
	525	34.3	15.31	41.6	16.02		-0.29	-0.24	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
NE19R Series	565	38.4	14.72	46.3	15.59	30	-0.29	-0.25	0.04	1500V	Protection Class II
	570	38.6	14.75	46.6	15.61		-0.29	-0.25	0.04		
	575	38.9	14.78	46.9	15.63		-0.29	-0.25	0.04		
	580	39.2	14.79	47.2	15.65		-0.29	-0.25	0.04		
	585	39.5	14.82	47.5	15.68		-0.29	-0.25	0.04		
	590	39.7	14.86	47.8	15.72		-0.29	-0.25	0.04		
	595	40	14.89	48.1	15.76		-0.29	-0.25	0.04		
	600	40.3	14.91	48.4	15.8		-0.29	-0.25	0.04		
	605	40.5	14.94	48.7	15.83		-0.29	-0.25	0.04		
	610	40.8	14.96	49	15.86		-0.29	-0.25	0.04		
	615	41.1	14.98	49.3	15.89		-0.29	-0.25	0.04		

	620	41.4	14.99	49.6	15.91		-0.29	-0.25	0.04		
	625	41.6	15	49.8	15.93		-0.29	-0.25	0.04		
	630	42.0	15.01	50.3	15.94		-0.29	-0.25	0.04		
	635	42.3	15.02	50.5	15.95		-0.29	-0.25	0.04		
	640	42.6	15.03	50.9	15.97		-0.29	-0.25	0.04		
	645	42.9	15.04	51.2	15.99		-0.29	-0.25	0.04		
	650	43.2	15.05	51.5	16.01		-0.29	-0.25	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
NEG19RC Series	525	36.2	14.53	44.1	15.45	35	-0.29	-0.24	0.04	1500V	Protection Class II
	530	36.4	14.56	44.3	15.46		-0.29	-0.24	0.04		
	535	36.7	14.58	44.5	15.47		-0.29	-0.24	0.04		
	540	37.0	14.60	44.8	15.49		-0.29	-0.24	0.04		
	545	37.3	14.62	45.1	15.51		-0.29	-0.24	0.04		
	550	37.6	14.65	45.4	15.53		-0.29	-0.24	0.04		
	555	37.8	14.68	45.7	15.55		-0.29	-0.24	0.04		
	560	38.1	14.70	46.0	15.57		-0.29	-0.24	0.04		
	565	38.4	14.72	46.3	15.59		-0.29	-0.24	0.04		
	570	38.6	14.75	46.6	15.61		-0.29	-0.24	0.04		
	575	38.9	14.78	46.9	15.63		-0.29	-0.24	0.04		
	580	39.2	14.79	47.2	15.65		-0.29	-0.24	0.04		
	585	39.5	14.82	47.5	15.68		-0.29	-0.24	0.04		
	590	39.13	15.08	47.29	15.90		-0.29	-0.24	0.04		
	595	39.28	15.15	47.49	15.96		-0.29	-0.24	0.04		
	600	39.43	15.22	47.69	16.02		-0.29	-0.24	0.04		
	605	39.57	15.29	47.89	16.08		-0.29	-0.24	0.04		
	610	39.79	15.33	48.09	16.14		-0.29	-0.24	0.04		
	615	39.97	15.39	48.29	16.20		-0.29	-0.24	0.04		
	620	40.24	15.41	48.50	16.26		-0.29	-0.24	0.04		
625	40.46	15.45	48.70	16.32	-0.29	-0.24	0.04				
630	40.68	15.49	48.90	16.38	-0.29	-0.24	0.04				
635	40.84	15.55	49.10	16.44	-0.29	-0.24	0.04				
640	41.06	15.60	49.30	16.51	-0.29	-0.24	0.04				
645	41.22	15.65	49.52	16.55	-0.29	-0.24	0.04				
650	41.43	15.69	49.77	16.59	-0.29	-0.24	0.04				

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
NE20 Series	590	34.8	16.96	42	17.96	30	-0.29	-0.25	0.04	1500V	Protection Class II
	595	35	16.99	42.2	18		-0.29	-0.25	0.04		
	600	35.3	17.02	42.4	18.03		-0.29	-0.25	0.04		
	605	35.5	17.06	42.6	18.07		-0.29	-0.25	0.04		
	610	35.7	17.09	42.8	18.1		-0.29	-0.25	0.04		

	615	35.9	17.12	43	18.14		-0.29	-0.25	0.04		
	620	36.1	17.16	43.2	18.18		-0.29	-0.25	0.04		
	625	36.4	17.19	43.5	18.21		-0.29	-0.25	0.04		
	630	36.6	17.22	43.9	18.24		-0.29	-0.25	0.04		
	635	36.8	17.26	44.2	18.27		-0.29	-0.25	0.04		
	640	37	17.3	44.5	18.3		-0.29	-0.25	0.04		
	645	37.3	17.34	44.8	18.33		-0.29	-0.25	0.04		
	650	37.5	17.36	45.1	18.36		-0.29	-0.25	0.04		
	655	37.7	17.38	45.4	18.39		-0.29	-0.25	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
NEG20C Series	585	34.6	16.92	41.8	17.93	35	-0.29	-0.24	0.04	1500V	Protection Class II
	590	34.8	16.96	42.0	17.96		-0.29	-0.24	0.04		
	595	35.0	16.99	42.2	18.00		-0.29	-0.24	0.04		
	600	35.3	17.02	42.4	18.03		-0.29	-0.24	0.04		
	605	35.5	17.06	42.6	18.07		-0.29	-0.24	0.04		
	610	35.7	17.09	42.8	18.10		-0.29	-0.24	0.04		
	615	35.9	17.12	43.0	18.14		-0.29	-0.24	0.04		
	620	36.1	17.16	43.2	18.18		-0.29	-0.24	0.04		
	625	36.4	17.19	43.5	18.21		-0.29	-0.24	0.04		
	630	36.6	17.22	43.9	18.24		-0.29	-0.24	0.04		
	635	36.8	17.26	44.2	18.27		-0.29	-0.24	0.04		
	640	37.0	17.30	44.5	18.30		-0.29	-0.24	0.04		
	645	37.2	17.34	44.8	18.33		-0.29	-0.24	0.04		
	650	37.4	17.38	45.1	18.36		-0.29	-0.24	0.04		
	655	37.6	17.43	45.4	18.39		-0.29	-0.24	0.04		
	660	37.8	17.46	45.7	18.42		-0.29	-0.24	0.04		
	665	38.30	17.49	45.9	18.46		-0.29	-0.24	0.04		
	670	38.50	17.52	46.1	18.50		-0.29	-0.24	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
NE21 Series	645	38.1	16.92	46.0	17.92	30	-0.29	-0.25	0.04	1500V	Protection Class II
	650	38.3	16.96	46.2	17.96		-0.29	-0.25	0.04		
	655	38.6	16.99	46.4	18.00		-0.29	-0.25	0.04		
	660	38.8	17.02	46.6	18.03		-0.29	-0.25	0.04		
	665	39.0	17.06	46.8	18.07		-0.29	-0.25	0.04		
	670	39.2	17.09	47.0	18.10		-0.29	-0.25	0.04		
	675	39.4	17.12	47.2	18.14		-0.29	-0.25	0.04		
	680	39.6	17.16	47.4	18.18		-0.29	-0.25	0.04		
	685	39.8	17.19	47.7	18.21		-0.29	-0.25	0.04		
	690	40.1	17.23	47.9	18.25		-0.29	-0.25	0.04		
	695	40.3	17.25	48.3	18.28		-0.29	-0.25	0.04		

	700	40.5	17.29	48.6	18.32		-0.29	-0.25	0.04		
	705	40.7	17.33	48.8	18.36		-0.29	-0.25	0.04		
	710	40.9	17.36	49	18.4		-0.29	-0.25	0.04		
	715	41.1	17.40	49.2	18.44		-0.29	-0.25	0.04		
	720	41.3	17.44	49.4	18.48		-0.29	-0.25	0.04		
	725	41.5	17.47	49.5	18.49		-0.29	-0.25	0.04		
	730	41.7	17.51	49.9	18.54		-0.29	-0.25	0.04		

Product Series	Pmax	Vmpp (V)	Imp (A)	Voc (V)	Isc (A)	Maximum over current protection rating(A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage[V]	Classification
NEG21C Series	635	37.7	16.84	45.6	17.84	35	-0.29	-0.24	0.04	1500V	Protection Class II
	640	37.9	16.88	45.8	17.88		-0.29	-0.24	0.04		
	645	38.1	16.92	46	17.92		-0.29	-0.24	0.04		
	650	38.3	16.96	46.2	17.96		-0.29	-0.24	0.04		
	655	38.6	16.99	46.4	18		-0.29	-0.24	0.04		
	660	38.8	17.02	46.6	18.03		-0.29	-0.24	0.04		
	665	39	17.06	46.8	18.07		-0.29	-0.24	0.04		
	670	39.2	17.09	47	18.1		-0.29	-0.24	0.04		
	675	39.4	17.12	47.2	18.14		-0.29	-0.24	0.04		
	680	39.6	17.16	47.4	18.18		-0.29	-0.24	0.04		
	685	39.8	17.19	47.7	18.21		-0.29	-0.24	0.04		
	690	40.1	17.23	47.9	18.25		-0.29	-0.24	0.04		
	695	40.3	17.25	48.3	18.28		-0.29	-0.24	0.04		
	700	40.5	17.29	48.6	18.32		-0.29	-0.24	0.04		
	710	40.9	17.36	49	18.4		-0.29	-0.24	0.04		
	715	41.1	17.40	49.2	18.44		-0.29	-0.24	0.04		
	720	41.3	17.44	49.4	18.49		-0.29	-0.24	0.04		
	725	41.5	17.47	49.6	18.54		-0.29	-0.24	0.04		
	730	41.7	17.51	49.9	18.58		-0.29	-0.24	0.04		
735	41.9	17.55	50.1	18.62	-0.29	-0.24	0.04				
740	42.1	17.58	50.3	18.66	-0.29	-0.24	0.04				

Product Series	Pmax	Vmpp(V)	Imp(A)	Voc(V)	Ish(A)	Maximum over current protection rating (A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage [V]	Classification
NEG22.20 Series	770	45.2	17.04	53.6	18.30	35	-0.30	-0.24	0.04	1500V	Protection Class II
	775	45.4	17.08	53.8	18.33		-0.30	-0.24	0.04		
	780	45.5	17.15	54.0	18.36		-0.30	-0.24	0.04		
	785	45.6	17.22	54.2	18.39		-0.30	-0.24	0.04		
	790	45.7	17.29	54.4	18.42		-0.30	-0.24	0.04		
	795	45.8	17.36	54.6	18.45		-0.30	-0.24	0.04		
	800	45.9	17.43	54.9	18.48		-0.30	-0.24	0.04		

Product Series	Pmax	Vmpp(V)	Impp(A)	Voc(V)	Ish(A)	Maximum over current protection rating (A)	Temperature coefficient for Pmax(%)	Temperature coefficient for Voc(%)	Temperature coefficient for Isc(%)	Maximum System Voltage [V]	Classification
NEG10R.20Z Series NEG10R.25Z Series NEG10R.27Z Series NEG10R.29Z Series NEG10R.28Z	480	32.60	14.75	39.10	15.88	30	-0.30	-0.24	0.04	1500	II
	485	32.75	14.83	39.25	15.90		-0.30	-0.24	0.04		
	490	32.90	14.91	39.40	15.91		-0.30	-0.24	0.04		
	495	33.05	14.99	39.55	15.93		-0.30	-0.24	0.04		
	500	33.20	15.07	39.70	15.94		-0.30	-0.24	0.04		
	505	33.35	15.15	39.85	15.96		-0.30	-0.24	0.04		
	510	33.50	15.23	40.00	15.97		-0.30	-0.24	0.04		
	515	33.65	15.31	40.15	15.98		-0.30	-0.24	0.04		

BNPI & BSI Electrical and mechanical properties DEG21C.20 Series / DEG20C.20 Series / NEG21C.20 Series / NEG20C.20 Series / NEG19RC.20 Series / NEG9RC.27 Series / NEG18RC.2* Series

BNPI: (1000+135*φ W/m2, (25 ± 2) °C, AM 1.5 BSI: (1000+300*φ W/m2, (25 ± 2) °C, AM 1.5

(φ= Min(φIsc, φPmax), φ=0.7 for DEG21C.20 Series / DEG20C.20 Series, φ=0.8 for NEG21C.20 Series / NEG20C.20 Series/NEG19RC.20 Series / NEG9RC.27 Series

Product Series	BNPI					BSI	
	Pmax (W)	Voc(V)	Isc(A)	Vmpp(V)	Impp(A)	Isc(A)	Impp(A)
TSM-640DEG21C. Series	700	45.1	19.99	37.3	18.78	22.09	20.76
TSM-645DEG21C. Series	706	45.3	20.04	37.5	18.83	22.16	20.81
TSM-650DEG21C. Series	711	45.5	20.08	37.7	18.87	22.20	20.86
TSM-655DEG21C. Series	717	45.7	20.14	37.9	18.92	22.26	20.91
TSM-660DEG21C. Series	722	45.9	20.19	38.1	18.96	22.32	20.96
TSM-665DEG21C. Series	728	46.1	20.25	38.3	19.00	22.39	21.01
TSM-670DEG21C. Series	733	46.3	20.30	38.5	19.05	22.45	21.06
TSM-675DEG21C. Series	739	46.5	20.32	38.7	19.09	22.47	21.10
Product Series	BNPI					BSI	
	Pmax (W)	Voc(V)	Isc(A)	Vmpp(V)	Impp(A)	Isc(A)	Impp(A)
TSM-580DEG20C. Series	635	40.9	19.93	33.8	18.67	22.03	20.76
TSM-585DEG20C. Series	640	41.1	19.99	34.0	18.72	22.09	20.82
TSM-590DEG20C. Series	646	41.3	20.04	34.2	18.77	22.16	20.87
TSM-595DEG20C. Series	651	41.5	20.1	34.4	18.82	22.22	20.93
TSM-600DEG20C. Series	657	41.7	20.16	34.6	18.87	22.29	20.98
TSM-605DEG20C. Series	662	41.9	20.23	34.8	19.03	22.36	21.04
TSM-610DEG20C. Series	668	42.1	20.28	35	19.08	22.42	21.09

Product Series	BNPI					BSI	
	Pmax (W)	Voc(V)	Isc(A)	Vmpp(V)	Impp(A)	Isc(A)	Impp(A)
TSM-645NEG21C. Series	715	46.0	19.86	38.1	18.76	22.22	20.99
TSM-650NEG21C. Series	720	46.2	19.90	38.3	18.80	22.27	21.04
TSM-655NEG21C. Series	726	46.4	19.94	38.6	18.81	22.32	21.04
TSM-660NEG21C. Series	731	46.6	19.98	38.8	18.85	22.36	21.09

TSM-665NEG21C. Series	737	46.8	20.02	39.0	18.89	22.41	21.14
TSM-670NEG21C. Series	742	47.0	20.05	39.2	18.94	22.44	21.19
TSM-675NEG21C. Series	748	47.2	20.10	39.4	18.98	22.49	21.24
TSM-680NEG21C. Series	753	47.4	20.14	39.6	19.03	22.54	21.29
TSM-685NEG21C. Series	759	47.7	20.18	39.8	19.07	22.58	21.34
TSM-690NEG21C. Series	765	47.9	20.22	40.1	19.07	22.63	21.34
TSM-695NEG21C. Series	770	48.3	20.25	40.3	19.11	22.67	21.38
TSM-700NEG21C. Series	776	48.6	20.30	40.5	19.15	22.72	21.43
TSM-705NEG21C. Series	781	48.8	20.34	40.7	19.19	22.77	21.48
TSM-710NEG21C. Series	787	49.0	20.39	40.9	19.23	22.82	21.53
TSM-715NEG21C. Series	792	49.2	20.43	41.1	19.28	22.87	21.57
TSM-720NEG21C. Series	798	49.4	20.49	41.3	19.32	22.93	21.62
TSM-725NEG21C. Series	801	49.6	20.54	41.5	19.301	22.99	21.66
TSM-730NEG21C. Series	809	49.9	20.59	41.7	19.40	23.04	21.71
TSM-735NEG21C. Series	814	50.1	20.63	41.9	19.45	23.09	21.76
TSM-740NEG21C. Series	820	50.3	20.68	42.1	19.48	23.14	21.80

Product Series	BNPI					BSI	
	Pmax (W)	Voc(V)	Isc(A)	Vmpp(V)	Impp(A)	Isc(A)	Impp(A)
TSM-585NEG20C. Series	648	41.8	19.87	34.6	18.73	22.23	20.97
TSM-590NEG20C. Series	654	42	19.90	34.8	18.79	22.27	21.02
TSM-595NEG20C. Series	659	42.2	19.94	35.0	18.84	22.32	21.08
TSM-600NEG20C. Series	665	42.4	19.98	35.3	18.83	22.36	21.08
TSM-605NEG20C. Series	670	42.6	20.02	35.5	18.88	22.41	21.13
TSM-610NEG20C. Series	676	42.8	20.05	35.7	18.93	22.44	21.19
TSM-615NEG20C. Series	681	43.0	20.10	35.9	18.98	22.49	21.24
TSM-620NEG20C. Series	687	43.2	20.14	36.1	19.03	22.54	21.30
TSM-625NEG20C. Series	693	43.5	20.18	36.4	19.04	22.58	21.31
TSM-630NEG20C. Series	698	43.9	20.21	36.6	19.07	22.62	21.34
TSM-635NEG20C. Series	704	44.2	20.24	36.8	19.12	22.65	21.40
TSM-640NEG20C. Series	709	44.5	20.28	37.0	19.17	22.69	21.45
TSM-645NEG20C. Series	715	44.8	20.31	37.2	19.22	22.73	21.46
TSM-650NEG20C. Series	720	45.1	20.34	37.4	19.26	22.77	21.55
TSM-655NEG20C. Series	726	45.4	20.38	37.6	19.30	22.80	21.60
TSM-660NEG20C. Series	731	45.7	20.41	37.6	19.34	22.84	21.65
TSM-665NEG20C. Series	737	45.9	20.45	38.3	19.38	22.89	21.69
TSM-670NEG20C. Series	742	46.1	20.50	38.5	19.41	22.94	21.72

Product Series	BNPI					BSI	
	Pmax (W)	Voc(V)	Isc(A)	Vmpp(V)	Impp(A)	Isc(A)	Impp(A)
TSM-525NEG19RC. Series	582	44.1	17.12	36.2	16.07	19.16	17.98
TSM-530NEG19RC. Series	587	44.3	17.13	36.4	16.13	19.17	18.05
TSM-535NEG19RC. Series	593	44.5	17.14	36.7	16.15	19.18	18.08
TSM-540NEG19RC. Series	598	44.8	17.16	37.0	16.17	19.21	18.10
TSM-545NEG19RC. Series	604	45.1	17.19	37.3	16.19	19.23	18.12
TSM-550NEG19RC. Series	609	45.4	17.21	37.6	16.21	19.26	18.14

TSM-555NEG19RC. Series	615	45.7	17.23	37.8	16.27	19.28	18.21
TSM-560NEG19RC. Series	620	46.0	17.25	38.1	16.29	19.31	18.23
TSM-565NEG19RC. Series	626	46.3	17.27	38.4	16.30	19.33	18.24
TSM-570NEG19RC. Series	632	46.6	17.30	38.6	16.36	19.36	18.31
TSM-575NEG19RC. Series	637	46.9	17.32	38.9	16.38	19.38	18.33
TSM-580NEG19RC. Series	643	47.2	17.34	39.2	16.39	19.41	18.35
TSM-585NEG19RC. Series	648	47.5	17.37	39.5	16.41	19.44	18.36
TSM-590NEG19RC. Series	654	47.29	17.62	39.13	16.71	19.72	18.70
TSM-595NEG19RC. Series	659	47.49	17.68	39.28	16.79	19.79	18.79
TSM-600NEG19RC. Series	665	47.69	17.75	39.43	16.83	19.86	18.87
TSM-605NEG19RC. Series	670	47.89	17.82	39.57	16.94	19.94	18.96
TSM-610NEG19RC. Series	676	48.09	17.88	39.79	17.00	20.01	19.01
TSM-615NEG19RC. Series	681	48.29	17.95	39.97	17.05	20.09	19.08
TSM-620NEG19RC. Series	687	48.50	18.02	40.24	17.07	20.16	19.11
TSM-625NEG19RC. Series	692	48.70	18.08	40.46	17.12	20.24	19.16
TSM-630NEG19RC. Series	698	48.90	18.15	40.68	17.16	20.31	19.21
TSM-635NEG19RC. Series	704	49.10	18.22	40.84	17.23	20.39	19.28
TSM-640NEG19RC. Series	709	49.30	18.29	41.06	17.28	20.47	19.34
TSM-645NEG19RC. Series	715	49.52	18.34	41.22	17.34	20.52	19.41
TSM-650NEG19RC. Series	720	49.77	18.38	41.43	17.38	20.57	19.46

Product Series	BNPI					BSI	
	Pmax (W)	Voc(V)	Isc(A)	Vmpp(V)	Impp(A)	Isc(A)	Impp(A)
TSM-410NEG9RC. Series	454	49.8	11.60	41.8	10.87	12.98	12.16
TSM-415NEG9RC. Series	460	50.1	11.63	42.1	10.92	13.02	12.22
TSM-420NEG9RC. Series	465	50.5	11.67	42.5	10.95	13.06	12.25
TSM-425NEG9RC. Series	471	50.9	11.70	42.9	10.98	13.09	12.28
TSM-430NEG9RC. Series	476	51.4	11.73	43.2	11.03	13.13	12.34
TSM-435NEG9RC. Series	482	51.8	11.79	43.6	11.05	13.19	12.37
TSM-440NEG9RC. Series	488	52.2	11.82	44	11.08	13.23	12.40
TSM-445NEG9RC. Series	493	52.6	11.87	44.3	11.13	13.28	12.46
TSM-450NEG9RC. Series	499	52.9	11.90	44.6	11.18	13.32	12.51
TSM-455NEG9RC. Series	504	53.4	11.93	45	11.2	13.35	12.54
TSM-460NEG9RC. Series	510	53.8	11.98	45.4	11.23	13.40	12.56

Product Series	BNPI					BSI	
	Pmax (W)	Voc(V)	Isc(A)	Vmpp(V)	Impp(A)	Isc(A)	Impp(A)
TSM-470NEG18RC.2*	521	38.8	17.31	32.1	16.23	19.37	18.19
TSM-475NEG18RC.2*	526	39.0	17.37	32.3	16.28	19.44	18.25
TSM-480NEG18RC.2*	531	39.2	17.41	32.5	16.33	19.49	18.31
TSM-485NEG18RC.2*	537	39.4	17.46	32.7	16.42	19.54	18.40
TSM-490NEG18RC.2*	542	39.6	17.51	32.9	16.47	19.59	18.49
TSM-495NEG18RC.2*	548	39.8	17.57	33.1	16.55	19.63	18.56
TSM-500NEG18RC.2*	554	40.1	17.61	33.3	16.63	19.67	18.64
TSM-505NEG18RC.2*	559	40.3	17.65	33.5	16.68	19.70	18.71

TSM-510NEG18RC.2*	565	40.6	17.65	33.7	16.78	19.75	18.77
TSM-515NEG18RC.2*	570	40.9	17.68	33.9	16.83	19.79	18.85
TSM-520NEG18RC.2*	576	41.2	17.72	34.1	16.90	19.83	18.91
TSM-525NEG18RC.2*	581	41.6	17.75	34.3	16.96	19.86	18.98