Cenexe®

Power Semiconductor Devices

Rectifiers

Thyristors

GTO

IGBT

Tianjin Century Electronics Co.,Ltd.

Company Introduction

Tianjin Century Electronics Co,.Ltd (hereafter referred to as TCEC) was registered in Tianjin Port Free Trade Zone as an independent legal entity in 1997. TCEC is a professional export & import corporation which mainly exports power electronic devices, power equipment and other related items.

The earliest business that can be traced back to 1987 started with the export of rectifiers, thyristors and its parts. After years of efforts, our business domain expand to the following items: 1) Power semiconductor devices: thyristor, GTO, IGBT and other related devices; 2) Power semiconductor assemblies: rotating excitation assembly of turbine generator, high power resistance welder assembly, and power factor reactive compensation equipment; 3) Electrical equipment and Auxiliary device for foundry and metallurgy.

TCEC can offer turnkey client-oriented service. The company can provide project planning including site inspection; system solution based on client requirement for selection and evaluation; taking orders and delivery; before-sales, on-sales and after-sales services and field installation & debugging services; and training for client services.

TCEC adopts the modern enterprise management system. Talents, Experience & Credibility is our core philosophy. TCEC has been acknowledged by the accreditation of Standard ISO9001:2008 of Quality Management System, and it was rated as the highest AAA enterprise of Credit China System issued by Ministry of Commerce. TCEC has a global market network covering over 40 countries and regions with our “Cenexe” brand and excellent product quality and services.

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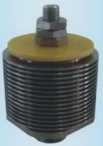

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Power semiconductor devices
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Phase Control Thyristors —Stud Type

Model	$I_{T(AV)}$ @T_C=75℃ A	V_{DRM} V_{RRM} V	I_{DRM} I_{RRM} mA	I_{TSM} @50Hz kA	V_{TM} V	@I_{TM} A	V_{GT} V	I_{GT} mA	dv/dt V/μs	R_{thjc} ℃/W	T_{vj} ℃	Outline
KP10/20	10	2000	≤10	0.2	≤2.4	30	≤2.0	≤60	≥500	0.80	125	T1
KP20/12	20	1200		0.4	≤1.8	60	≤2.5	≤100				
KP50/20	50	2000	≤20	1.0	≤2.0	150	≤3.0	≤150	≥500	0.35	125	T2
KP100/20	100		≤30	1.8		300				0.20		T3
KP100/30	100	3000	≤40	1.8	≤2.6	300	≤3.0	≤150	≥1000	0.12	125	T4
KP200/20	200	2000	≤30	3.6	≤1.8	600			≥500			
KP200/30	200	3000	≤50	3.6	≤2.6	1500	≤3.0	≤200	≥1000	0.10	125	T5
KP300/20	300	2000	≤40	5.4	≤1.8				≥500			
KP350/16	350	1600		6.3	≤1.5							

Phase Control Thyristors (1) —Disc Type

Model	$I_{T(AV)}$ @T_C=75℃ A	V_{DRM} V_{RRM} V	I_{DRM} I_{RRM} mA	I_{TSM} @10ms kA	V_{TM} V	@I_{TM} A	V_{GT} V	I_{GT} mA	dv/dt V/μs	R_{thjc} ℃/W	T_{vj} ℃	Outline
KP200/35	200	3500	≤40	3.0	≤2.8	600	≤3.0	≤150	≥1000	0.045	125	T7
KP300/18	300	1800	≤30	4.5	≤2.0	900			≥500	0.080		T6
KP500/06	500	600	≤20	6.0	≤1.4	1500						
KP300/35	300	3500	≤40	4.5	≤2.8	900	≤3.0	≤200	≥1000	0.035	125	T9
KP400/26	400	2600		6.0	≤2.4	1200						
KP500/18	500	1800	≤30	7.5	≤2.0	1500			≥500	0.045		T7
KP800/06	800	600	≤20	12.5	≤1.5	2000						

(Continued)

Model	$I_{T(AV)}$ @T_C=75℃ A	V_{DRM} V_{RRM} V	I_{DRM} I_{RRM} mA	I_{TSM} @10ms kA	V_{TM} V	V_{TM} @I_{TM} A	V_{GT} V	I_{GT} mA	dv/dt V/μs	R_{thjc} ℃/W	T_{vj} ℃	Outline
KP200/60	200	6000	≤120	3.0	≤3.8	600	≤3.0	≤200	≥1000	0.035	125	T9
KP300/46	300	4600	≤100	4.5	≤3.2	900						
KP400/35	400	3500	≤80	6.0	≤2.6	1200						
KP500/26	500	2600	≤60	7.5	≤2.2	1500						
KP800/18	800	1800	≤50	12.0	≤1.8	2000			≥500			
KP1000/06	1000	600	≤40	21.0	≤1.5	3000						
KP800/35	800	3500	≤120	12.0	≤2.8	2000	≤3.0	≤200	≥1000	0.031	125	T10
KP1000/18	1000	1800	≤100	18.0	≤2.0	3000			≥500			
KP1200/06	1200	600	≤80	24.0	≤1.5							
KP500/60	500	6000	≤200	8.0	≤4.0	1500	≤3.0	≤200	≥1000	0.022	125	T11
KP800/46	800	4600	≤150	10.0	≤3.2	2000						
KP1000/35	1000	3500	≤120	18.0	≤2.6	3000						
KP1200/18	1200	1800	≤100	28.0	≤2.2				≥500			
KP1500/06	1500	600	≤80	36.0	≤1.5	6000						
KP1200/35	1200	3500	≤200	20.0	≤2.8	3000	≤3.5	≤250	≥1000	0.018	125	T12
KP1500/26	1500	2600	≤150	27.0	≤2.4							
KP1800/18	1800	1800	≤120	33.0	≤2.0				≥500			
KP2000/06	2000	600	≤100	40.0	≤1.4	6000						
KP1000/60	1000	6000	≤250	15.0	≤4.2	3000	≤3.5	≤250	≥1000	0.015	125	T13
KP1200/46	1200	4600	≤200	20.0	≤3.0							
KP1500/35	1500	3500	≤180	25.0	≤2.4							
KP1800/26	1800	2600	≤150	30.0	≤2.2	6000						
KP2000/18	2000	1800	≤120	36.0	≤1.8				≥500			
KP2500/06	2500	600	≤100	50.0	≤1.4							
KP1500/60	1500	6000	≤300	25.0	≤3.6	3000	≤4.0	≤300	≥1000	0.011	125	T14
KP1800/46	1800	4600	≤280	30.0	≤3.0	6000						
KP2000/35	2000	3500	≤250	36.0	≤2.4							
KP2500/26	2500	2600	≤200	45.0	≤2.0							
KP3000/18	3000	1800	≤180	54	≤2.0	9000			≥500			
KP3500/06	3500	600	≤150	65	≤1.4							
KP2000/60	2000	6000	≤350	30	≤3.8	6000	≤4.0	≤400	≥1000	0.008	125	T15
KP3000/32	3000	3200	≤300	45	≤2.4							
KP4000/20	4000	2000	≤250	60	≤2.0	9000						
KP5000/06	5000	600	≤200	90	≤1.5				≥500			
KP2500/60	2500	6000	≤400	35	≤4.0		≤4.0	≤400	≥1000	0.006	125	T16
KP4000/32	4000	3200	≤350	60	≤2.2	9000						
KP5000/20	5000	2000	≤300	80	≤1.8							
KP6000/06	6000	600	≤250	100	≤1.4				≥500			

Phase Control Thyristors (2)
— Disc Type

Model **=V_{RRM}	$I_{T(AV)}$	@T_C	V_{RRM} V_{DRM}	I_{TSM} @ 10ms	V_{TM} @ T_{vj}	@I_{TM}	V_{TO} @ T_{vj}	r_T @ T_{vj}	T_{vj}	R_{thjc}	Outline
	A	℃	V	kA	V	A	V	mΩ	℃	℃/W	
KP$_C$6000-**	6020	70	1400-1800	94.0	≤1.00	3000	≤0.83	≤0.056	125	0.005	KP$_C$
KP$_B$3900-**	3980	70	1800-2200	64.0	≤1.15	3000	≤0.86	≤0.095	125	0.007	KP$_B$
KP$_C$5200-**	5270	70	1800-2200	80.0	≤1.05	3000	≤0.87	≤0.061	125	0.0057	KH$_C$
KP$_C$5700-**	5750	70	1800-2200	80.0	≤1.05	3000	≤0.87	≤0.061	125	0.005	KP$_C$
KP$_B$3300-**	3300	70	2200-2800	60.0	≤1.40	3000	≤0.95	≤0.150	125	0.007	KP$_8$
KP$_C$4700-**	4780	70	2200-2800	75.0	≤1.14	3000	≤0.90	≤0.080	125	0.0057	KH$_C$
KP$_C$5100-**	5190	70	2200-2800	75.0	≤1.14	3000	≤0.90	≤0.080	125	0.005	KP$_C$
KP$_D$6800-**	6810	70	2200-2800	105.0	≤1.04	3000	≤0.88	≤0.052	125	0.004	KH$_D$
KP$_B$3200-**	3270	70	2800-3400	54.0	≤1.41	3000	≤0.95	≤0.153	125	0.007	KP$_8$
KP$_C$4200-**	4240	70	2800-3400	68.0	≤1.21	3000	≤0.86	≤0.115	125	0.0067	KH$_C$
KP$_C$4600-**	4610	70	2800-3400	69.0	≤1.21	3000	≤0.86	≤0.115	125	0.005	KP$_C$
KP$_D$6300-**	6330	70	2600-3200	100.0	≤1.09	3000	≤0.88	≤0.070	125	0.004	KH$_D$
KP$_8$500-**	500	70	3600-4200	6.4	≤2.50	1000	≤1.05	≤1.450	125	0.035	KP$_8$
KP$_9$1000-**	1090	70	3600-4200	15.0	≤1.65	1000	≤1.05	≤0.800	125	0.017	KP$_9$
KP$_X$1900-**	1910	70	3600-4200	32.0	≤1.41	1500	≤0.96	≤0.300	125	0.011	KH$_X$
KP$_X$2000-**	2030	70	3600-4200	32.0	≤1.41	1500	≤0.96	≤0.300	125	0.010	KL$_X$
KP$_B$3000-**	3000	70	3600-4200	52.0	≤1.55	3000	≤0.95	≤0.200	125	0.007	KP$_B$
KP$_C$3900-**	3970	70	3600-4200	60.0	≤1.35	3000	≤0.97	≤0.126	125	0.0057	KH$_C$
KP$_C$4300-**	4320	70	3600-4200	60.0	≤1.35	3000	≤0.97	≤0.126	125	0.005	KP$_C$
KP$_D$5200-**	5250	70	3600-4200	97.5	≤1.24	3000	≤0.90	≤0.114	125	0.004	KH$_D$
KP$_8$400-**	400	70	4200-4600	5.0	≤2.80	1000	≤1.10	≤1.700	125	0.045	KH$_8$
KP$_9$800-**	830	70	4200-4600	12.4	≤1.90	1000	≤1.12	≤0.780	125	0.022	KH$_9$
KP$_A$1300-**	1300	70	4200-4600	20.0	≤1.73	1500	≤1.10	≤0.420	125	0.015	KH$_A$
KP$_X$1800-**	1840	70	4200-4600	29.0	≤1.50	1500	≤1.03	≤0.315	125	0.011	KH$_X$
KP$_B$2300-**	2360	70	4200-4600	42.0	≤1.70	3000	≤1.01	≤0.230	125	0.009	KH$_8$
KP$_B$2700-**	2770	70	4200-4600	42.0	≤1.70	3000	≤1.01	≤0.230	125	0.007	KP$_B$
KP$_C$3400-**	3460	70	4200-4600	55.0	≤1.54	3000	≤1.00	≤0.180	125	0.0057	KH$_C$
KP$_D$5000-**	5000	70	4200-4600	85.2	≤1.38	3000	≤1.00	≤0.125	125	0.004	KH$_D$
KP$_8$300-**	350	70	4500-5600	4.5	≤3.50	1000	≤1.20	≤2.300	125	0.045	KH$_8$
KP$_8$400-**	420	70	4500-5600	4.5	≤3.50	1000	≤1.20	≤2.300	125	0.035	KP$_8$
KP$_9$700-**	730	70	4500-5600	11.8	≤2.25	1000	≤1.20	≤1.050	125	0.022	KH$_9$
KP$_9$800-**	850	70	4500-5600	11.8	≤2.25	1000	≤1.20	≤1.050	125	0.017	KP$_9$

(Continued)

Model **=V_{RRM}	$I_{T(AV)}$	@T_C	V_{RRM} V_{DRM}	I_{TSM} @ 10ms	V_{TM} @ T_{vj}	@I_{TM}	V_{TO} @ T_{vj}	r_T @ T_{vj}	T_{vj}	R_{thjc}	Outline
	A	℃	V	kA	V	A	V	mΩ	℃	℃/W	
KP_A1000-**	1010	70	4500-5600	14.0	≤2.37	1500	≤1.20	≤0.780	125	0.015	KH_A
KP_A1100-**	1140	70	4500-5600	14.0	≤2.37	1500	≤1.20	≤0.780	125	0.013	KP_A
KP_X1300-**	1360	70	4500-5600	21.9	≤2.12	1500	≤1.15	≤0.645	125	0.011	KH_X
KP_X1400-**	1450	70	4500-5600	21.9	≤2.12	1500	≤1.15	≤0.645	125	0.010	KL_X
KP_B1800-**	1800	70	4500-5600	32.0	≤2.49	3000	≤1.25	≤0.412	125	0.009	KH_B
KP_B2100-**	2100	70	4500-5600	32.0	≤2.49	3000	≤1.25	≤0.412	125	0.007	KL_B
KP_C2800-**	2800	70	4500-5600	45.0	≤2.00	3000	≤1.18	≤0.274	125	0.0057	KH_C
KP_C3000-**	3070	70	4500-5600	45.0	≤2.00	3000	≤1.18	≤0.274	125	0.005	KP_C
KP_D4200-**	4250	70	4500-5600	71.4	≤1.69	3000	≤1.13	≤0.185	125	0.004	KH_D
KP_B1600-**	1600	70	6300-6800	32.0	≤2.50	3000	≤1.25	≤0.420	125	0.009	KH_B
$KP_8$300-**	300	70	7000-7500	4.0	≤2.90	500	≤1.45	≤2.900	125	0.045	KH_8
$KP_9$600-**	600	70	7000-7500	12.1	≤2.90	1000	≤1.35	≤1.550	125	0.022	KH_9
KP_C1900-**	1980	70	7000-7500	55.0	≤2.55	3000	≤1.25	≤0.435	110	0.0057	KH_C
$KP_8$300-**	300	70	7500-8000	4.0	≤2.95	500	≤1.45	≤2.950	125	0.045	KH_8
$KP_9$500-**	540	70	7500-8000	12.1	≤2.90	1000	≤1.35	≤1.550	115	0.022	KH_9
KP_C1900-**	1900	70	7500-8000	35.0	≤2.88	3000	≤1.32	≤0.520	115	0.0057	KH_C
KP_D2400-**	2400	55	7500-8000	40.0	≤2.50	3000	≤1.30	≤0.400	90	0.004	KH_D

Fast Switching Thyristors — Stud Type

Model	$I_{T(AV)}$ @T_C= 70℃	V_{DRM} V_{RRM}	V_{TM}	@I_{TM}	I_{DRM} I_{RRM}	I_{GT}	V_{GT}	dv/dt	di/dt	tq @ 115℃	t_{gt} @ 115℃	R_{thjc}	Outline
	A	V	V	A	mA	mA	V	V/μs	A/μs	μs	μs	℃/W	
KK20	20	400～1600	≤2.6	60	≤10	≤100	≤2.0	≥50	≥50	≤20	≤3	≤1.0	T1
KK50	50			150	≤20							≤0.4	T2
KK100	100		≤3.0	300	≤30	≤150	≤2.5			≤35	≤4	≤0.2	T3
KK200	200			600				≥200	≥200			≤0.11	T4
KK300	300			900							≤6	≤0.06	T5
KK100	100	1800～3000	≤3.0	600	≤25	≤200	≤2.5	≥100	≥500	≤30		≤0.11	T4
KK200	200			900	≤30							≤0.06	T5

Fast Switching Thyristors
— Disc Type

Model	$I_{T(AV)}$ @T_C= 70℃ A	V_{DRM} V_{RRM} V	V_{TM} V	@I_{TM} A	I_{DRM} I_{RRM} mA	I_{GT} mA	V_{GT} V	dv/dt V/μs	di/dt A/μs	tq @ 115℃ μs	t_{gt} @ 115℃ μs	R_{thjc} ℃/W	Outline
KK100	100	400～1600	≤3.0	300	≤30	≤150	≤2.5	≥50	≥50	≤35	≤4	0.20	T6
KK200	200			600				≥200	≥200			0.11	T6 T7
KK300	300			900							≤6	0.08	T7 T8
KK500	500		≤3.2	1500	≤40							0.04	T8 T9
KK800	800			2400	≤60	≤250	≤3.0					0.026	T9 T10
KK1000	1000			3000	≤80							0.02	T10 T11
KK1200	1200				≤100							0.02	T11 T12
KK1500	1500				≤120							0.015	
KK1800	1800											0.012	T12 T13
KK2000	2000				≤160							0.012	T13 T14
KK2500	2500			5000	≤200							0.01	T14 T15
KK3000	3000											0.01	T15 T16
KK1000	1000	1800～2200	≤3.2	3000	≤80	≤300	≤3.0	≥200	≥200	≤60	≤6	0.02	T10 T11
KK1200	1200				≤100							0.02	T11 T12
KK1500	1500				≤120							0.015	
KK1800	1800											0.012	T12 T13
KK2000	2000				≤160							0.012	T13 T14
KK2500	2500			5000	≤200							0.01	T14 T15
KK1500	1500	2400～2800	≤3.2	3000	≤120	≤300	≤3.0	≥200	≥200	≤80	≤6	0.02	T11 T12
KK1800	1800											0.012	T12 T13
KK2000	2000				≤200							0.012	T13 T14
KK2500	2500			5000								0.01	T14 T15
KK3000	3000	2400～2800	≤3.2	5000	≤200	≤300	≤3.0	≥500	≥200	≤80		0.009	T15
KK4000	4000											0.0075	T16
KK4000	4000	2500	≤2.8	6000	≤200					≤100		0.0057	KH_C
	55℃	3000											
KK3400	3500	3500	≤2.5	4000	≤200					≤200			
	55℃	4500											

High Frequency Thyristors — Stud Type

Model	$I_{T(AV)}$ @T_C=70℃ A	V_{DRM} V_{RRM} V	V_{TM} V	@I_{TM} A	I_{DRM} I_{RRM} mA	I_{GT} mA	V_{GT} V	dv/dt V/μs	di/dt A/μs	tq @ 115℃ μs	t_{gt} @ 115℃ μs	R_{thjc} ℃/W	Outline
KA20	20	400 ~ 1200	≤3.2	60	≤10	≤150	≤3.0	≥50	≥50	≤10	≤2.5	≤1.0	T1
KA50	50			150	≤20							≤0.4	T2
KA100	100			300	≤30						≤3	≤0.2	T3
KA200	200			600		≤250	≤3.0	≥200	≥200	≤15		≤0.11	T4
KA300	300			900	≤40						≤4	≤0.08	T5

High Frequency Thyristors — Disc Type

Model	$I_{T(AV)}$ @T_C=70 ℃ A	V_{DRM} V_{RRM} V	V_{TM} V	@I_{TM} A	I_{DRM} I_{RRM} mA	I_{GT} mA	V_{GT} V	dv/dt V/μs	di/dt A/μs	tq @ 115℃ μs	t_{gt} @ 115℃ μs	R_{thjc} ℃/W	Outline
KA100	100	400~ 1200	≤3.2	300	≤30	≤150	≤3.0	≥50	≥50	≤10	≤3	0.20	T6
KA200	200			600		≤250	≤3.0	≥200	≥200	≤15		0.11	T6 T7
KA300	300			900	≤40						≤4	0.08	T7 T8
KA500	500			1500	≤50							0.04	T8 T9
KA800	800			2400	≤80							0.026	T9 T10
KA1000	1000			3000								0.02	T10 T11
KA1500	1500			3000	≤100							0.015	T11 T12
KA2000	2000		≤2.6	6000	≤100	≤400	≤3.5	≥200	≥200	≤15	≤4	0.015	T13
KA2500	2500		≤2.4									0.011	T14
KG200	200	1400~ 1600	≤3.4	600	≤25	≤200	≤3.0	≥500	≥200	≤20	≤3	0.026	T9
KG500	500			1500	≤45							0.02	T10
KG1000	1000			3000	≤50							0.015	T11

High Temperature Thyristors — Disc Type

Model	$I_{T(AV)}$ @T_C=70 ℃ A	V_{DRM} V_{RRM} V	V_{TM} V	@I_{TM} A	I_{DRM} I_{RRM} mA	I_{GT} mA	V_{GT} V	dv/dt V/μs	di/dt A/μs	T_{vj} ℃	R_{thjc} ℃/W	Outline
KW100	100	200～600	⩽1.5	300	⩽40	⩽150	⩽3.0	⩾200	⩾100	150	0.2	T6
KW200	200			600	⩽50						0.15	T6 T7
KW300	300			900	⩽70						0.1	T7
KW400	400			1200	⩽100						0.08	T8
KW500	500			1500	⩽120						0.06	T9

TRIACS — Stud Type and Disc Type

Stud Type

Model	V_{DRM} V_{RRM} V	$I_{T(AV)}$ @T_C= 85℃ A	V_{TM} V	@I_{TM} A	I_{GT} mA	V_{GT} V	I_{DRM} I_{RRM} mA	I_H mA	I_{TSM} @10 ms A	dv/dt V/μs	di/dt A/μs	dv/dt(c) V/μs	R_{thjc} ℃/W	Outline
KS5	600～1600	5	⩽2.0	15	⩽70	⩽2.0	⩽5	⩽60	40	⩾100	⩾50	3～10	2.5	T1
KS10		10		30	⩽100		⩽8	⩽100	80				1.0	T2
KS20		20		60	⩽100				160				0.4	T2
KS50		50		150	⩽150	⩽2.5	⩽20		400				0.2	T3
KS100		100		150	⩽150				800			5～50	0.15	T3

— Disc Type

Model	V_{DRM} V_{RRM} V	$I_{T(AV)}$ @T_C=85 ℃ A	V_{TM} V	@I_{TM} A	I_{GT} mA	V_{GT} V	I_{DRM} I_{RRM} mA	I_{TSM} @10 ms A	dv/dt V/μs	dv/dt(c) V/μs	R_{thjc} ℃/W	Outline
KS200	100～1800	200	≤2.4	600	≤350	≤3.5	≤25	1.7	≥50	≥4	0.120	T6
KS300		300		900			≤30	2.5			0.055	T7
KS500		500		1500	≤400	≤4.0	≤30	4.0		≥10	0.043	T9
KS800		800		2400			≤50	6.8	≥200		0.027	T11
KS1000		1000		3000			≤50	8.5			0.022	T11

High Power TRIACS — Disc Type

Features

- Integrated 2-antiparallel thyristors (2-gates)
- Amplifying gate structure
- High blocking voltage
- High di/dt

Model	V_{DRM} V_{RRM} V	V_{DSM} V_{RSM} V	$I_{T(AV)}$ @T_C= 65℃ A	I_{TSM} @10 ms kA	I_{DRM} I_{RRM} mA	dv/dt V/μs	I^2t kA²s	V_{TM} V	@I_{TM} A	di/dt A/μs	P_{GM} W	I_{GT} mA	V_{GT} V	t_q @T_{vj} μs	dv/dt(c) V/μs	R_{thjc} ℃/W	T_{vj} ℃	Outline
KS200-65	4500	5400	200	2.3	≤5	≥2000	≤26.5	≤3.1	500	≤100	≤20	≤200	≤3.0	≥800	≤500	0.086	110	KT40 DT
	4900	5800																
	5100	6000																
	5600	6500																
KS400-65	4500	5400	400	4.5	≤5	≥2000	≤101	≤3.1	1000	≤100	≤20	≤200	≤3.0	≥800	≤500	0.043	110	KT55 DT
	4900	5800																
	5100	6000																
	5600	6500																
KS1800-52	4200	4800	1800	29	≤10	≥2000	≤4205	≤1.7	2000	≤250	≤20	≤400	≤3.0	≥700	≤500	0.011	125	KT115 DT
	4400	5000																
	4600	5200																
KS2430-28	2400	2500	2430	43	≤10	≥1000	≤9245	≤1.4	3000	≤250	≤20	≤400	≤3.0	≥400	≤500	0.011	125	KT115 DT
	2600	2700																
	2800	2900																

General Rectifier Diodes —Stud Type

Model	$I_{F(AV)}$ @T_C=105℃ A	V_{RRM} V	I_{FSM} @50Hz kA	I_{RRM} mA	V_{FM} V	@I_{FM} A	R_{thjc} ℃/W	T_{vj} ℃	Outline
ZP10/30	10	3000	0.2	≤10	≤1.5	30	1.50	150	D1
ZP20/20	20	2000	0.3			50			
ZP30/30	30	3000	0.6		≤1.5	100	0.60	150	D2
ZP50/20	50	2000	0.8			150			
ZP100/30	100	3000	2.0	≤15	≤1.5	300	0.30	150	D3
ZP150/20	150	2000	3.0			500			
ZP200/50	200	5000	4.0	≤30	≤1.8	600	0.18	150	D4
ZP300/40	300	4000	6.0		≤1.5	900			
ZP400/30	400	3000	8.0			1200			
ZP500/50	500	5000	6.0	≤40	≤1.8	1500	0.10	150	D5
ZP600/40	600	4000	9.0						

General Rectifier Diodes（1）
—Disc Type

Model	$I_{F(AV)}$ @T_C=105℃ A	V_{RRM} V	I_{FSM} @10ms kA	I_{RRM} mA	V_{FM} V	@I_{FM} A	R_{thjc} ℃/W	T_{vj} ℃	Outline
ZP300/32	300	4000	5.4	≤30	≤1.8	900	0.072	150	D6
ZP400/24	400	3000	7	≤40	≤1.6	1200			
ZP500/32	500	4000	9		≤1.6	1500	0.038	150	D7
ZP600/20	600	2000	10.8		≤1.4				
ZP500/65	500	6500	9	≤40	≤2.0	1500	0.031	150	D9
ZP600/50	600	5000	10			2000			
ZP800/40	800	4000	14	≤50	≤1.8	2400			
ZP1000/30	1000	3000	18		≤1.6	3000			
ZP2000/06	2000	600	20	≤100		6000			
ZP2000/30	2000	3000	36	≤100	≤1.6	6000	0.028	150	D10
ZP500/65	500	6500	10	≤120	≤2.4	1500	0.020	150	D11
ZP1000/50	1000	5000	18		≤1.8	3000			
ZP2000/30	2000	3000	26		≤1.6	6000			
ZP3000/20	3000	2000	35	≤150	≤1.4				
ZP4000/06	4000	600	60		≤1.2				D11
ZP4000/20	4000	2000	50	≤150	≤1.2	6000	0.018	150	D12
ZP1000/65	1000	6500	20	≤200	≤2.4	3000	0.015	150	D13
ZP2000/50	2000	5000	30		≤2.0	6000			
ZP4000/40	4000	4000	50		≤1.8				
ZP5000/20	5000	2000	60		≤1.5				
ZP6000/06	6000	600	80	≤200	≤1.2	6000	0.015	150	D12
ZP2000/65	2000	6500	30	≤200	≤2.4	6000	0.010	150	D14
ZP3000/50	3000	5000	40		≤2.1				
ZP4000/40	4000	4000	50		≤1.8				
ZP6000/20	6000	2000	75		≤1.5				
ZP8000/06	8000	600	90	≤200	≤1.2	6000	0.010	150	D13
ZP3000/65	3000	6500	40	≤200	≤2.2	6000	0.008	150	D15
ZP4000/50	4000	5000	50		≤1.8				
ZP5000/40	5000	4000	60		≤1.5				
ZP6000/30	6000	3000	70		≤1.3				
ZP4000/65	4000	6500	45	≤250	≤2.0	6000	0.006	150	D16
ZP6000/40	6000	4000	70		≤1.4				
ZP8000/30	8000	3000	85		≤1.2				

General Rectifier Diodes（2）
— Disc Type

Model **=V_{RRM}	$I_{F\ (AV)}$ @T_C		V_{RRM}	I_{FSM} @ 10ms	V_{FM} @ T_{vj}	@I_{FM}	V_{FO} @ T_{vj}	r_F @ T_{vj}	T_{vj}	R_{thjc}	Outline
	A	℃	V	kA	V	A	V	mΩ	℃	℃/W	
ZP_B6700-**	6730	90	1600-2200	78.0	≤1.09	6000	≤0.82	≤0.045	175	0.007	ZP_B
ZP_C7500-**	7570	90	1600-2200	94.0	≤1.03	6000	≤0.82	≤0.035	160	0.0057	ZH_C
ZP_D10000-**	10000	85	1600-2200	125.0	≤0.98	6000	≤0.77	≤0.035	160	0.004	ZH_D
ZP_B5500-**	5510	90	2400-3400	64.2	≤1.29	6000	≤0.80	≤0.082	175	0.007	ZP_B
ZP_C6800-**	6800	90	2400-3400	84.4	≤1.17	6000	≤0.75	≤0.070	160	0.0057	ZH_C
ZP_D9000-**	9000	85	2400-3400	118.0	≤1.06	6000	≤0.72	≤0.057	160	0.004	ZH_D
ZP_B4600-**	4630	90	3600-4500	59.4	≤1.50	6000	≤0.98	≤0.086	160	0.007	ZP_B
ZP_C5600-**	5600	90	3600-4500	79.0	≤1.32	6000	≤0.80	≤0.086	160	0.0057	ZH_C
ZP_D6200-**	6280	100	3600-4500	99.4	≤1.19	6000	≤0.80	≤0.065	150	0.004	ZH_D
$ZP_8$700-**	770	90	4600-5500	11.7	≤1.38	1000	≤0.89	≤0.487	160	0.0045	ZH_8
$ZP_9$1400-**	1460	90	4600-5500	24.0	≤1.22	1000	≤0.94	≤0.284	160	0.0022	ZH_9
ZP_A2000-**	2040	90	4600-5500	28.8	≤1.62	3000	≤0.96	≤0.220	160	0.0015	ZH_A
ZP_X2500-**	2580	90	4600-5500	35.0	≤1.59	3000	≤1.00	≤0.195	160	0.0011	ZH_X
ZP_B3400-**	3450	90	4600-5500	51.7	≤1.31	3000	≤0.90	≤0.135	160	0.009	ZH_B
ZP_C4700-**	4710	100	4600-5500	74.0	≤1.44	6000	≤0.82	≤0.104	160	0.0057	ZH_C
ZP_D5900-**	5930	100	4600-5500	93.6	≤1.26	6000	≤0.80	≤0.076	150	0.004	ZH_D
$ZP_8$500-**	500	100	4900-6000	9.1	≤1.84	1000	≤0.92	≤0.920	150	0.0045	ZH_8
$ZP_9$900-**	970	100	4900-6000	16.5	≤1.50	1000	≤1.05	≤0.450	150	0.0022	ZH_9
ZP_A1400-**	1470	100	4900-6000	25.7	≤1.87	3000	≤1.00	≤0.290	150	0.0015	ZH_A
ZP_X1900-**	1950	100	4900-6000	33.0	≤1.69	3000	≤1.00	≤0.230	150	0.0011	ZH_X
ZP_B2400-**	2470	100	4900-6000	47.2	≤1.59	3000	≤1.15	≤0.145	150	0.009	ZH_B
ZP_C3600-**	3640	100	4900-6000	56.6	≤1.84	6000	≤1.15	≤0.115	150	0.0057	ZH_C
ZP_D5100-**	5150	100	4900-6000	82.5	≤1.65	6000	≤1.15	≤0.083	150	0.004	ZH_D
ZP_D4900-**	4940	100	6100-6700	79.0	≤1.71	6000	≤1.15	≤0.094	150	0.004	ZH_D
ZP_D4600-**	4690	100	6900-8000	74.5	≤1.81	6000	≤1.15	≤0.110	150	0.004	ZH_D

Low loss Rectifier Diodes (welding diodes) — Disc Type

Model	$I_{F(AV)}$		V_{RRM}	I_{RRM}	I_{FSM}	V_{FM}		$V_{F(TO)}$	r_F	R_{thjc}	T_{vj}	Outline
		@T_C			@50Hz		@I_{FM}		@T_{vj}			
	A	℃	V	mA	kA	V	A	V	mΩ	℃/W	℃	
ZP7000/06	7100	85	600	60	55	1.1	5000	0.80	0.030	0.010	170	ZP7000
ZP9000/06	9100	85	600	60	60	0.92	5000	0.79	0.030	0.009	180	ZP9000
ZP12000/06	12000	85	600	60	85	0.95	8000	0.85	0.030	0.006	170	ZP12000
ZP13500/04	13500	85	400	80	85	0.93	8000	0.78	0.025	0.006	180	ZP13500
ZP16000/04	16000	85	400	100	110	1.01	8000	0.80	0.019	0.004	190	ZP16000
ZP18000/04	18000	85	400	100	135	1.08	12000	0.74	0.016	0.004	170	ZP18000

Fast Recovery Diodes — Stud Type

Model	$I_{F(AV)}$ @T_C=105℃	V_{RRM}	I_{FSM} @50Hz	I_{RRM}	V_{FM}		trr @T_{vj}	R_{thjc}	T_{vj}	Outline
						@I_{FM}				
	A	V	kA	mA	V	A	μs	℃/W	℃	
ZK50/12	50	1200	0.9	≤10		150	≤2.0	0.8		D1
ZK100/25	100	2500	1.3	≤15	≤2.2	300		0.3		D2
ZK200/25	200	2500	2.7	≤16		600	≤2.5	0.2	150	D3 D4 D5
ZK200/45	200	4500	4.0	≤16	≤3.2	600	≤5.0	0.2		D3 D4 D5
ZK300/16	300	1600	5.4	≤30		900	≤2.5	0.11		D3 D5
ZK400/25	400	2500	7.2	≤30	≤2.4	1200		0.095	150	D4 D5
ZK500/25	500	2500	9.0	≤40		1500	≤3.0	0.068		D4
ZK600/25	600	2500	9.8	≤50		1800		0.068		

Fast Recovery Diodes — Disc Type

Model	$I_{F(AV)}$ @T_C=105℃ A	V_{RRM} V	I_{FSM} @10ms kA	I_{RRM} mA	V_{FM} V	@I_{FM} A	trr @T_{vj} μs	R_{thjc} ℃/W	T_{vj} ℃	Outline
ZK300	300	400 ~ 3000	5.4	≤30	≤2.4	900	≤2.5	0.11	150	D6
ZK400	400		7.2			1200	≤3.0	0.095		D6 D7
ZK500	500		9.0	≤40		1500		0.068		D6 D7 D8
ZK600	600		9.8	≤50		1800		0.068		
ZK800	800	400 ~ 3000	11	≤40	≤2.6	2400	≤5.0	0.042	150	D7 D8 D9
ZK1000	1000		14	≤50		3000		0.034		D8 D9 D10
ZK1200	1200		17	≤60			≤6.0	0.021		D9 D10
ZK1600	1600		23	≤100				0.020		D9 D10 D11
ZK2000	2000		37	≤120	≤2.8	5000		0.015		D10 D11 D12
ZK2500	2500		47					0.010		D11 D12 D13
ZK3000	3000	500 ~ 2500	40	≤120	≤3.5	9000	≤2.0	0.010	150	D14
ZK2000	2000	2500 ~ 4500	25	≤120	≤3.5	6000	≤5.0	0.020		D11 D14

Soft Recovery Diodes — Disc Type

Model	$I_{F(AV)}$ @T_C=105℃ A	V_{RRM} V	I_{FSM} @50H_Z kA	V_{FM} V	@I_{FM} A	trr @T_{vj} μs	Qrr @T_{vj} μC	R_{thjc} ℃/W	T_{vj} ℃	Outline
ZR200/18	200	1800	2.5	≤2.0	600	≤1.0	≤70	0.080	150	D6
ZR300/25	300	2500	4.3	≤2.4	900	≤3.0	≤180			
ZR500/20	500	2000	4.5	≤2.4	1500	≤3.0	≤120	0.040		D7
ZR600/16	600	1600	9.5	≤1.8	1800	≤1.5	≤40			
ZR500/45	500	4500	7.5	≤3.2	1500	≤3.0	≤260	0.030		D9
ZR800/36	800	3600	10.0	≤2.6	2400		≤550			
ZR1000/25	1000	2500	14.0	≤2.4	3000	≤2.0	≤250			
ZR1000/45	1000	4500	13.0	≤3.0	3000	≤4.0	≤850	0.021		D11
ZR1200/36	1200	3600	16.4		3600	≤3.0	≤700			
ZR1500/25	1500	2500	20.0	≤2.6	4500	≤4.0	≤300			
ZR1500/45	1500	4500	20.0	≤3.2	4500	≤4.5	≤1550	0.015		D13
ZR2000/36	2000	3600	28.0	≤2.8	6000	≤8.5	≤2500			
ZR2500/40	2500	4000	30.0	≤3.2	6000	≤6.0	≤1500	0.010		D14

Freewheeling Diodes — Disc Type

Model	$I_{F(AV)}$ @T_C= 70℃ A	V_{RRM} V	I_{FSM} @10ms &T_{vj} kA	V_{FM} @T_C= T_{vj} V	@I_{FM} A	R_{thjc} ℃/W	R_{thch} ℃/W	I_{rr} @T_{vj} A	Q_{rr} @T_{vj} μC	F ± 10% kN	T_{vj} ℃	Outline
$ZK_8$500/25	500	2500	8.0	≤2.63	1500	0.035	0.008	≤470	≤840	15	125	ZP_8
$ZK_9$1000/25	1000		18.0	≤1.77		0.020	0.005	≤550	≤1200	22		ZP_9
$ZK_9$700/45	700	4500	13.0	≤2.90				≤600	≤1900			
ZK_X1100/45	1100	4500	20.0	≤3.80	2500	0.012	0.003	≤1520	≤5250	56		ZS_X
ZK_X900/60	950	6000	16.0	≤4.80				≤1300	≤3500			

Snubber Diodes — Disc Type

Model	$I_{F(AV)}$ @T_C= 70℃ A	V_{RRM} V	I_{FSM} @10ms &T_{vj} kA	V_{FM} @T_C= T_{vj} V	@I_{FM} A	R_{thjc} ℃/W	R_{thch} ℃/W	I_{rr} @T_{vj} A	Q_{rr} @T_{vj} μC	F ± 10% kN	T_{vj} ℃	Outline
$ZK_8$600/25	600	2500	8.5	≤2.18	1500	0.035	0.008	≤175	≤500	15	125	ZP_8
$ZK_8$400/45	400	4500	5.0	≤3.50	1000			≤200	≤1000			

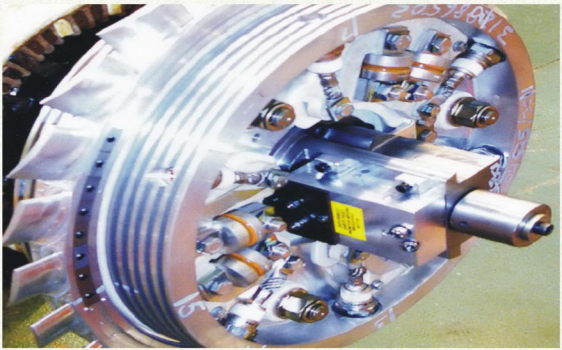
High Temperature Rectifier Diodes — Disc Type

Model	$I_{F(AV)}$ @T_C=105℃ A	V_{RRM} V	I_{FSM} @50H_Z kA	V_{FM} V	@I_{FM} A	R_{thjc} ℃/W	T_{vj} ℃	Outline
ZW200/04	200	400	4	≤1.2	600	0.072	230	D6
ZW300/04	300	400	6		900	0.038	230	D7
ZW500/04	500	400	10		1500	0.031	230	D9
ZW1000/04	1000	400	20		3000	0.020	230	D11
ZW2000/04	2000	400	40		6000	0.010	230	D14

Rotation Rectifier Diodes
— Stud Type

Features
- Can be worked under greater centrifugal force Applications
- Rectifying circuit
- Motor control

Model	$I_{F(AV)}$ @T_C=85℃ A	V_{RRM} V	V_{FM} V	@ I_{FM} A	I_{RRM} mA	I_{FSM} @50Hz kA	$R_{th jc}$ ℃/W	T_{jm} ℃	Centrifugal force kN	Outline
ZX16	16	100～1600	≤1.3	45	≤1	0.23	1.8	150	1.5～2.0	ZX1
ZX25	25			75		0.3	1.2			
ZX40	40			120	≤3	0.4	0.8		3.0～3.5	ZX2
ZX70	70			210	≤5	1.0	0.45			
ZX100	100	100～2800	≤1.6	300	≤7	1.5	0.30		12～14	ZX3
ZX200	200			600	≤12	3.0	0.20		15～17	ZX3、6
ZX300	300			900	≤20	4.5	0.11		15	ZX4、5、6、7
ZX400	400			1200	≤25	6.2	0.09			ZX8、9、10
ZX500	500			1500	≤30	7.5	0.068			ZX11
ZX860	1000			1800	≤40	13.0	0.065		15～22	ZX12



Rotation Thyristors
— Stud Type

Model	$I_{T(AV)}$ @T_C=85℃ A	V_{RRM} V_{DRM} V	V_{TM} V	@ I_{TM} A	I_{RRM} I_{DRM} mA	I_{GT} mA	V_{GT} V	I_{FSM} @50Hz kA	$R_{th jc}$ ℃/W	T_{jm} ℃	Outline
KX5	5.2	50～1600	≤2.0	15	≤4	≤50	≤2.5	0.064	3.0	150	KX1
KX20	24		≤1.85	60	≤5	≤80	≤2.5	0.21	1.0		KX2
KX50	55		≤1.6	150	≤10	≤150	≤2.5	1.0	0.46		KX5
KX100	100	100～1600	≤1.6	300	≤20	≤150	≤3.0	2.2	0.25		KX5
KX200	200	100～2800	≤2.0	600	≤30	≤250	≤3.0	2.5	0.11		KX6
KX300	300		≤1.85	900	≤30	≤250	≤3.5	3.8	0.073		KX4、6
KX500	500		≤2.7	1500	≤50	≤300	≤3.5	6.3	0.073		KX7

Avalanche Rectifier Diodes
— Stud Type

Features
- Hermetic metal-glass and metal-ceramic cases of press pack and stud design
- Guaranteed max. power dissipation in avalanche breakdown mode

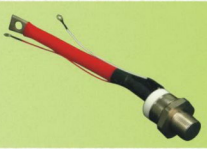
Applications
- Uncontrollable rectifier bridges
- High power drives for industry and transport
- Power supplies for traction

Type	V_{RRM} V	I_{RRM} mA	$I_{F(AV)}$ @T_C A	℃	I_{FRMS} A	I_{FSM} @10ms kA	i^2t 10^3A^2s	V_{FM} @I_{FM} V	A	V_{TO} V	r_T mΩ	P_{RSM} kW	T_{jmax} ℃	$R_{th(j-c)}$ ℃/W	Outline
DL161 -200	400-1800	25	200	115	280	7.5	280	1.40	628	0.92	0.68	16	150	0.130	SD6
DL171 -320	600-1800	25	320	115	600	10	500	1.40	1000	1.00	0.50	16	150	0.085	SD7

Avalanche Rectifier Diodes
— Disc Type

Type	V_{RRM}	I_{RRM}	$I_{F(AV)}$ @T_C		I_{FRMS}	I_{FSM} @10ms	i^2t	V_{FM} @I_{FM}		V_{TO}	r_T	P_{RSM}	T_{jmax}	$R_{th(j-c)}$	Outline
	V	mA	A	℃	A	kA	10^3A^2s	V	A	V	mΩ	kW	℃	℃/W	
DL123 -320	400-1600	25	320	113	770	5.5	151	1.65	1000	0.90	0.830	16	150	0.075	PD21
DL 133 -500	600-1600	25	500	123	1430	12	720	1.50	1570	0.85	0.410	16	150	0.040	PD32
DL 153 -800	4400-6000	100	800	90	2000	12	720	2.50	1500	1.31	0.740	16	140	0.020	PD53
DL 153 -1000	3800-5000	50	1250	100	2240	18	1620	3.00	3140	1.30	0.540	16	175	0.020	PD53
DL 153 -1250	2200-3200	50	1250	115	1740	26	3380	2.00	4000	1.10	0.350	16	175	0.020	PD53
DL 153 -1600	2200-3200	50	1600	100	2980	26	3380	2.00	5024	1.00	0.300	16	175	0.020	PD53
DL 253 -1600	2200-3600	50	1600	121	2512	32	5120	1.85	5024	0.90	0.189	20	175	0.020	PD53
DL 153 -2000	1600-2000	50	2000	100	2650	30	4500	0.80	6280	0.90	0.185	16	175	0.020	PD53
DL 253 -2000	1600-2800	50	2000	108	3140	35	6125	1.75	6280	0.83	0.162	20	175	0.020	PD53
DL 153 -2500	1600-2800	50	2500	100	3925	36	6480	1.65	7850	0.86	0.130	20	175	0.018	PD53
DL 173 -3200	2400-3200	100	3250	100	5760	45	10125	2.20	10053	1.10	0.124	16	175	0.011	PD73
DL 173 -4000	1600-2400	100	3860	100	6870	50	12500	2.20	12560	1.00	0.080	16	175	0.011	PD73

Avalanche Thyristors
— Stud Type

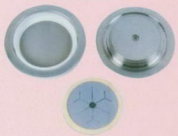


Type	V_{RRM} V_{DRM}	I_{RRM} I_{DRM}	$I_{T(AV)}$ @100 ℃	I_{TRMS}	I_{TSM} @10 ms	i^2t	V_{TM} @I_{TM}		$V_{T(TO)}$	r_T	V_{GT}	I_{GT}	P_{RSM}	$R_{th(j-c)}$	t_q (typ)	Outline
	V	mA	A	A	kA	10^3A^2s	V	A	V	mΩ	V	mA	kW	℃/W	μs	
TL371 -250	600-1200	35	250	393	6.0	180	1.90	785	1.00	0.95	3.5	250	16	0.100	250	ST7
TL371 -320	600-1200	35	320	500	8.5	360	1.62	1005	1.05	0.53	3.5	250	16	0.085	250	ST7

Avalanche Thyristors
— Disc Type

Type	V_{RRM} V_{DRM}	I_{RRM} I_{DRM}	$I_{T(AV)}$ @85 ℃	I_{TRMS} @70 ℃	I_{TSM} @10 ms	i^2t	V_{TM} @I_{TM}		$V_{T(TO)}$	r_T	V_{GT}	I_{GT}	P_{RSM}	$R_{th(j-c)}$	t_q (typ)	Outline
	V	mA	A	A	kA	10^3A^2s	V	A	V	mΩ	V	mA	kW	℃/W	μs	
TL253 -1250	1800	70	1270	2480	28	3920	1.60	3925	0.95	0.20	2.5	250	20	0.020	250	PT53

Light Triggered Thyristors,
Pulsed Power Light Triggered Thyristors



Features
- Light triggering
- Self-protection functions
- High interference resistance
- Isolated gate circuit
- Suitable for parallel and in series connection

Applications
- HVDC transmission equipment
- Reactive power compensators
- High voltage drives
- High power pulse generators
- Different DC and AC power equipment

Light Triggered Thyristors

Type	V_{BO}	V_{DRM}	V_{RRM}	$I_{T(AV)}$ @70℃	I_{TSM} @10ms	$V_{T(TO)}$ @T_{VJM}	r_T @T_{VJM}	$(di_T/dt)_{cr}$ @T_{VJM}	$(dv_D/dt)_{cr}$ @T_{VJM}	P_{LM}	t_q (typ)	$R_{th(j-c)}$	T_{VJM}	Outline
	V	V	V	A	kA	V	mΩ	A/μs	V/μs	mW	μs	℃/W	℃	
TL353-630	6200-6600	6000-6400	6000-7000	790	12	1.20	1.00	300	2000	40	630	0.0200	120	PTO54
TL273-1000	6200-6600	6000-6400	6000-7000	1360	24	1.20	0.55	300	2000	40	630	0.0120	120	PTO74
TL183-2000	6200-6600	6000-6400	6000-7000	2115	40	1.20	0.35	300	2000	40	630	0.0078	120	PTO84
TL193-2500	7000-7800	6800-7600	7200-8000	2620	55	1.22	0.28	300	2000	40	630	0.0067	120	PTO95

Pulsed Power Light Triggered Thyristors

Type	V_D V_R	V_{DRM}	V_{RRM}	I_{TRM} @sin180°el @700μs	I_{TRM} @sin180°el @10ms	$V_{T(TO)}$	r_T	$(di_T/dt)_{cr}$ @1Hz	$(di_T/dt)_{cr}$ @50Hz	t_q (typ)	$(dv_D/dt)_{cr}$	$R_{th(j-c)}$	F	Outline
	V	V	V	kA	kA	V	mΩ	A/μs	A/μs	μs	V/μs	℃/W	kN	
TLI193-2500	3000	4400-5000	4400-5000	100	30	1.15	0.16	5000	1000	630	1600-2000	0.0065	120	PTO95

Ultra High Power Light Triggered Thyristors (LTT)

Model	$I_{T(AV)}$ @T_C=85℃ 180°elsin	V_{BO}	V_{RRM}	I_{TRMS}	I^2t @10ms &T_{vj}	I_{TSM} @10ms &T_{vj}	V_{TM} @T_{vj}	@I_{TM}	V_{TO} @T_{vj}	r_T @T_{vj}	(di/dt)cr DIN IEC 747-6	tq typ.	(dv/dt)cr DIN IEC 747-6	R_{thjc} 180°el sin	T_{vj}
	A	V	V	A	10^3A^2s	kA	V	kA	V	mΩ	A/μs	μs	V/μs	℃/W	℃
KL06	550	6500	7000	1200	684	11.7	2.65	1.0	1.30	1.35	300	650	H= 2000	0.0200	120
KL18	1760	7500	7500~8000	3800	8000	40.0	3.00	4.0	1.24	0.44		550		0.0063	
KL26	2560	7500		5600	15700	56.0	2.95	6.0	1.28	0.28		550		0.0046	
KL38	3845	5200	5220	8130	50000	100.0	1.80	6.0	0.92	0.14		550		0.0046	

GTO (Gate turn-off thyristor)

GTO Thyristors - Asymmetric — Disc Type

Model	V_{DRM} V	V_{RRM} V	$I_{T(AV)}$ @85℃ A	I_{TCM} A	C_S μF	V_{TM} V	V_{TO} V	r_T mΩ	R_{thjc} ℃/W	Outline
CEG07E1300	1300	16	250	700	2	≤2.2			0.075	GTOE
CEG07E1800	1800	16	240	700	2	≤2.5			0.075	GTOE
CEG15F2500	2500	17	550	1500	3	≤2.5	≤1.5	≤0.63	0.027	GTOF
CEG20H2500	2500	17	830	2000	4	≤2.8	≤5.0	≤0.57	0.017	GTOH
CEG25H2500	2500	17	830	2500	6	≤3.1	≤1.6	≤0.57	0.017	GTOH
CEG30J2500	2500	17	1300	3000	5	≤2.5	≤6.0	≤0.33	0.012	GTOJ
CEG06D4500	4500	17	215	600	1	≤4.0	≤1.6	≤0.35	0.050	GTOD
CEG20H4500	4500	17	710	2000	4	≤3.5	≤6.0	≤0.85	0.017	GTOH
CEG30J4500	4500	17	930	3000	6	≤4.0	≤1.5	≤0.60	0.012	GTOJ
CEG40L4500	4500	17	1000	4000	6	≤4.4	≤1.8	≤0.58	0.011	GTOL

GTO Thyristors - Asymmetric — Stud Type

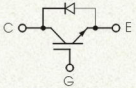
Model	V_{DRM} V	V_{RRM} V	$I_{T(AV)}$ A	I_{TSM} kA	I_{DRM} mA	V_{TM} V	$I_{G(ON)}$ A	I_T A	di_T/dt A/μs	dv_D/dt V/μs	$R_{th(j-hs)}$ ℃/W	Outline
CS-DGT304SE	1300	16	250	4.0	25	≤2.2	2.0	600	≤500	≤500	0.075	GTO03T
CS-DGT305SE	1800	16	240		50	≤2.5						

IGBT——Insulated Gate Bipolar Transistor

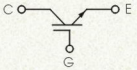
Features
- All electric contacts by pressure structure and airtight package
- Anti-parallel fast recovery diode in this package
- Enhancement mode IGBT

Applications
- High power switching
- Motor control

Equivalent circuit



CGF800/1700P$_C$S



CGD1100/1700P$_C$S

Parameters of CGF800/1700PCS

Type	V_{CES}	V_{GES}	I_C DC	I_{CP} 1ms	I_{GES} @V_{GE}= ±20V	I_{CES} @V_{CE}= 1700V V_{GE}=0	$V_{CE(sat)}$ @I_C=800A V_{GE}=15V	$V_{GE(th)}$ @V_{CE}=10V I_C=0.5A	t_{on} / t_{off} @Inductive load V_{CC}=1000V, I_C=800A, V_{GE}=±15V, R_G=5Ω		P_C	$R_{th(j-c)T}$	Outline
	V	V	A	A	μA	mA	V	V	μs	μs	W	℃/W	
CGF800/1700P$_C$S	1700	±20	800	1600	±5	≤250	≤6	≤10	≤2.5	≤3	4440	0.020	P$_C$S

Type	V_F @ I_F=800A, V_{GE}=0 V	t_{rr} @ I_F=800A, V_{GE}=0, di/dt=2000A/μs μs	$R_{th(j-c)D}$ ℃/W
CGF800/1700P$_C$S (diode)	≤3.5	≤1	0.050

Parameters of CGD1100/1700PCS

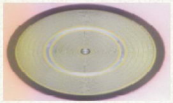
Type	V_{CES}	V_{GES}	I_C DC	I_{CP} 1ms	I_{GES} @V_{GE}= ±20V	I_{CES} @V_{CE}= 1700V V_{GE}=0	$V_{CE(sat)}$ @I_C=1100A V_{GE}=15V	$V_{GE(th)}$ @V_{CE}=10V I_C=0.5A	t_{on} / t_{off} @Inductive load V_{CC}=1000V, I_C=1100A, V_{GE}=±15V, R_G=5Ω		P_C	$R_{th(j-c)}$	Outline
	V	V	A	A	μA	mA	V	V	μs	μs	W	℃/W	
CGD1100/1700P$_C$S	1700	±20	1100	2200	±5	≤250	≤6	≤10	≤2.5	≤3	6216	0.020	P$_C$S

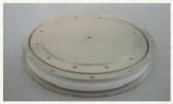
IGCT

Asymmetric Integrated Gate Commutated Thyristor (As-IGCT)

Features
- With self turn-off capacity
- Be fit for application in series

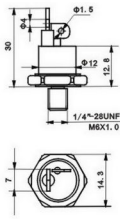
Applications
- General choppers
- General inverter
- PWM rectifiers
- Power system compensation
- Motor drives equipments
- Wind generating system
- Flexible AC transmission system
- Motor traction equipments





KIAc

Model	I_{TQGM} @T_{jm} A	$I_{T(AV)}$ @T_c= 85℃= A	V_{DRM} @T_{jm} V	I_{DRM} @T_{jm} mA	I_{TSM} @T_{jm} 10ms kA	V_{TM} @T_{jm} V	I_{TM} A	V_{TO} @T_{jm} V	r_T @T_{jm} mΩ	R_{thjc} DC K/W	R_{thch} DC K/W	Φ mm	T_{jm} ℃	F min max kN	Pkg
CA_C4000-45	4000	1700	4500	50	32.0	2.7	4000	1.40	0.325	0.085	0.003	91	125	36 44	CA_C
CA_C3000-60	3000	1300	6000	50	27.5	3.4	3000	1.50	0.650	0.085	0.003	91	125	36 44	CA_C



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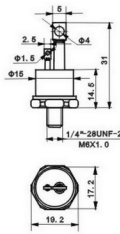

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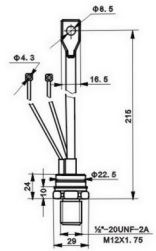

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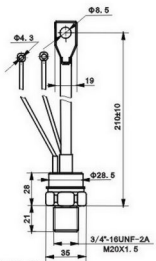

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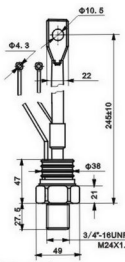

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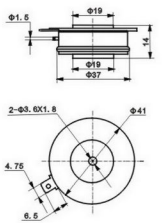

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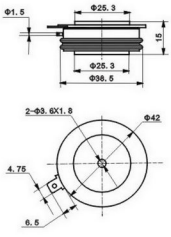

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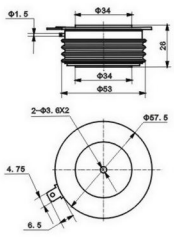

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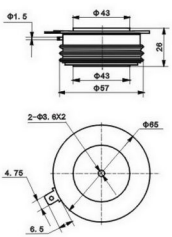

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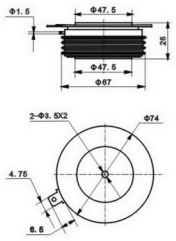

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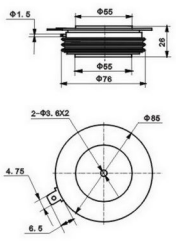

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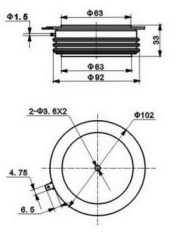

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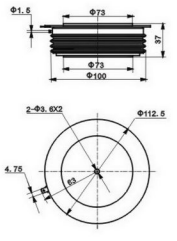

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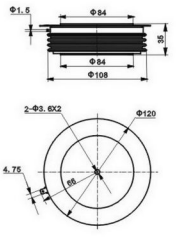

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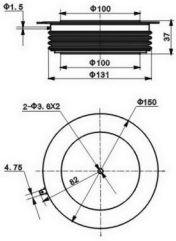

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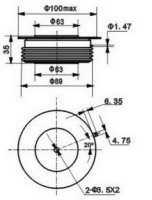

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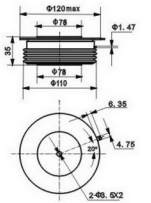

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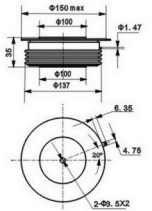

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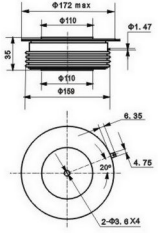

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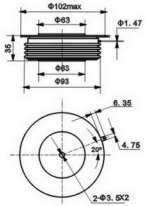

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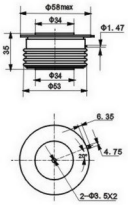

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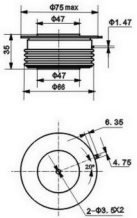

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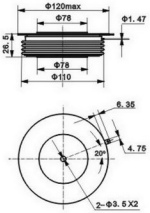

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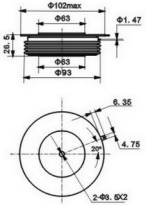

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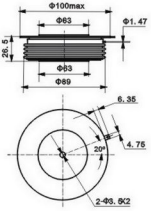

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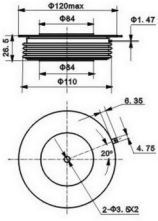

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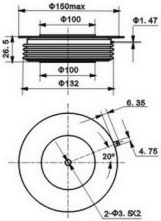

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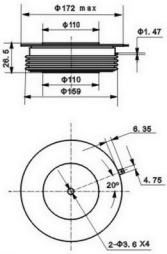

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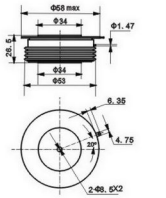

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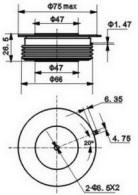

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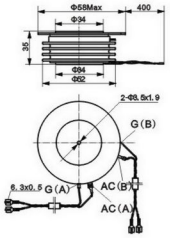

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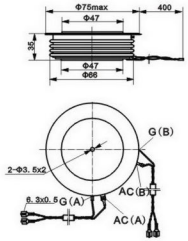

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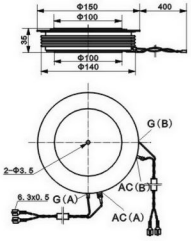

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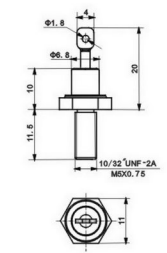

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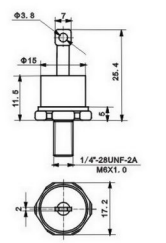

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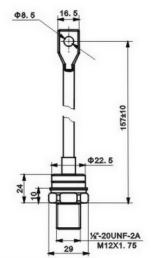

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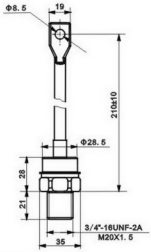

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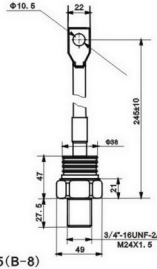
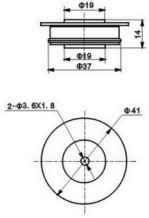
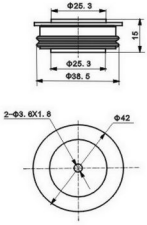


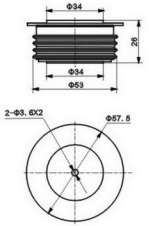
D5(B-8)



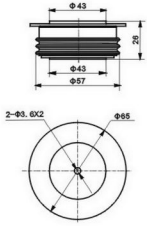
D6(DO200AA A-PUK)



D7(DO-200AD E-PUK)



D9(DO-200AB B-PUK)



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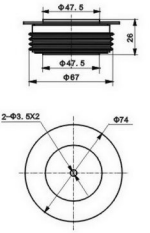

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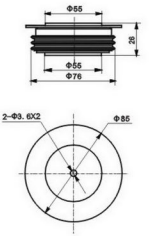

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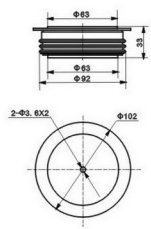

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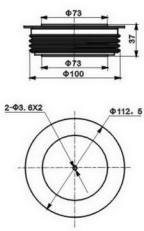
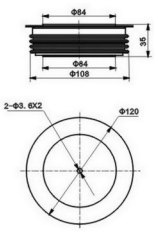


D14(B-44 R-PUK)



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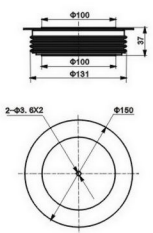

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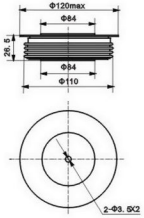

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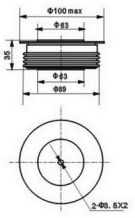

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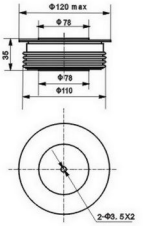

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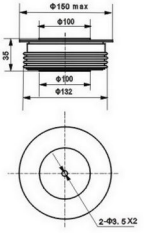

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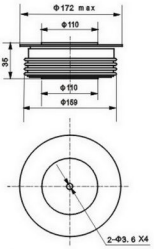

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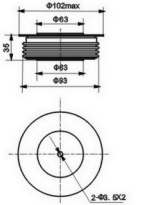

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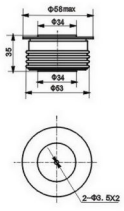

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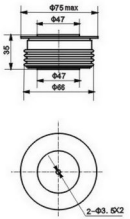

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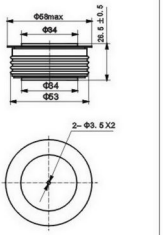

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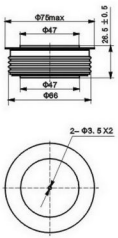

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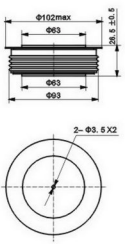

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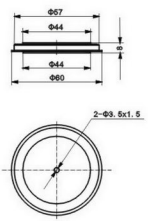

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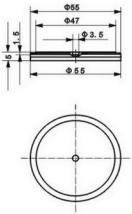

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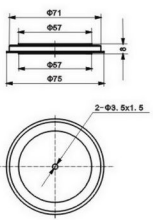

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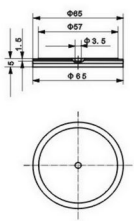

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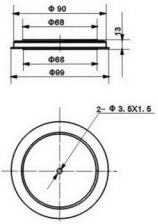

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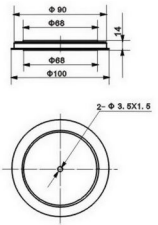

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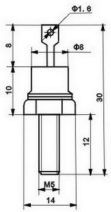

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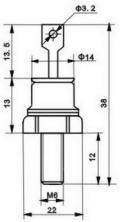

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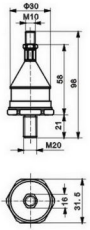

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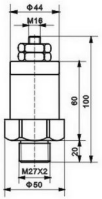

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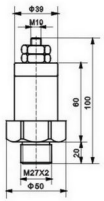

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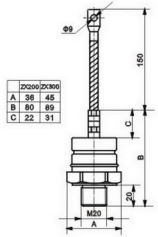
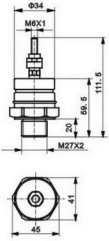


	ZX200	ZX300
A	36	45
B	80	89
C	22	31

ZX6



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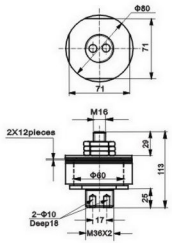

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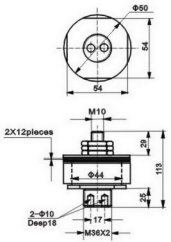

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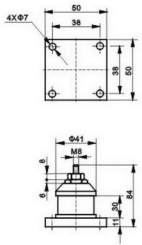

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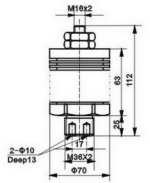

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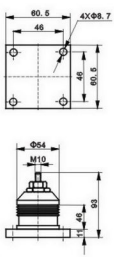

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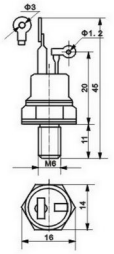

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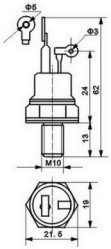

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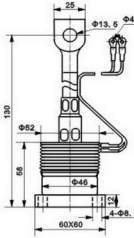

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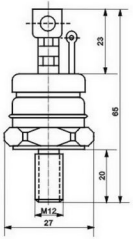

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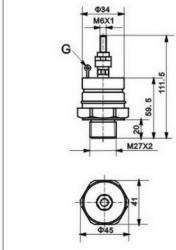

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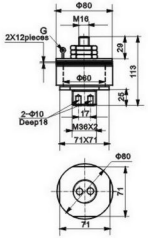

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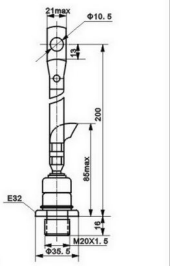

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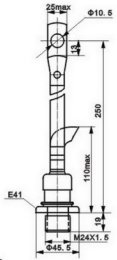

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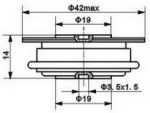

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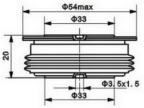

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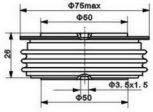
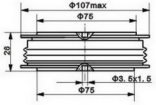


PD53



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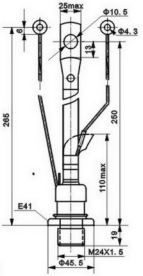

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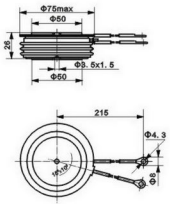

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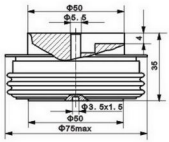

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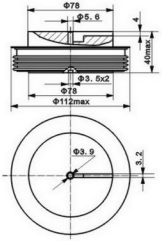

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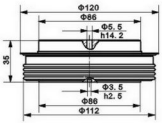

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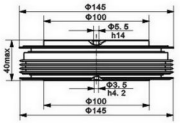

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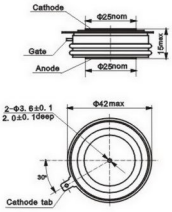

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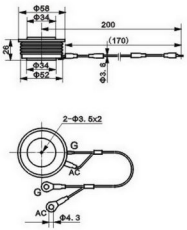

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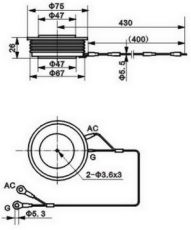

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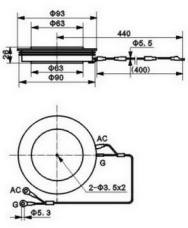

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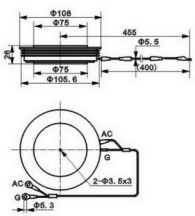

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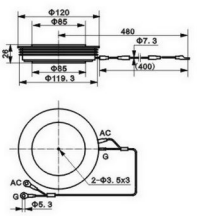

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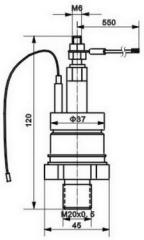

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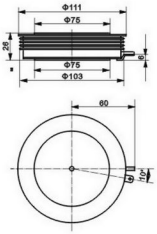

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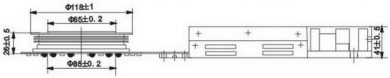
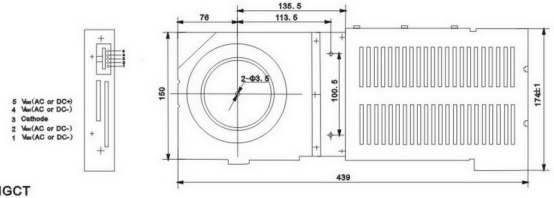


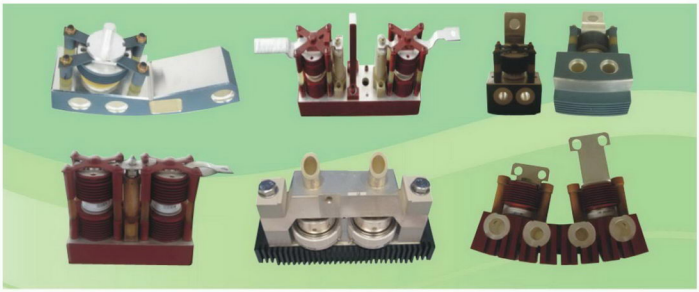


IGCT

Symbols and Definitions

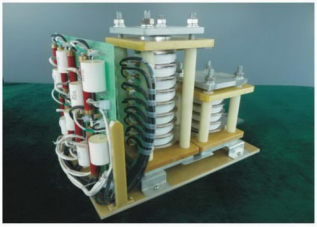
Symbol	Definition	Symbol	Definition
$I_{F(AV)}$	Mean forward current	V_{FM}	Peak forward voltage
I_{FSM}	Surge forward current	$V_{F(TO)}$	Forward threshold voltage
I_{FM}	Peak forward current	V_{DRM}	Repetitive peak off-state voltage
I_{RRM}	Repetitive peak reverse current	V_{RRM}	Repetitive peak reverse voltage
I_{DRM}	Peak off-state current	V_{DSM}	Non-repetitive peak off-state voltage
I_{rr}	Max. reverse recovery current	V_{RSM}	Non-repetitive peak reverse voltage
$I_{G(ON)}$	Gate turn-on current (GTO)	V_{GT}	Gate trigger voltage
$I_{T(AV)}$	Mean on-state current	V_{TM}	Peak on-state voltage
I_{TCM}	Max. repetitive controllable current (GTO)	V_{TO}	On-state threshold voltage
I_{TGQ}	Max. controllable peak on-state current(GTO)	V_D	Rated continuous (direct) output voltage
$I_{T(RMS)}$	RMS on-state current	V_{OV}	Overload current
I_{TSM}	Surge on-state current	di/dt	Critical rate of rise of on-state current
I_{TM}	Peak on-state current	dv/dt	Critical rate of rise of off-state voltage
I_{GT}	Gate trigger current	dv/dt(c)	Critical rate of rise of commutating voltage
I_H	Holding current	di_T/dt	Critical rate of rise of on-state current(GTO)
I_{rr}	Max. reverse recovery current	dv_D/dt	Critical rate of rise of off-state voltage(GTO)
I^2t	I^2t value	f_M	Max. operating frequency
I_O	Rated rectifier output current	F	Mounting force
Q_{rr}	Reverse recovery charge	M	Mounting torque
R_{thjc}	Thermal resistancejunction to case	m	Mass of the device
R_{thch}	Thermal resistancecase to heatsink		
R_{thjh}	Thermal resistancejunction to heatsink		
r_F	Forward slope resistance		
r_T	On-state slope resistance		
T_C	Case temperature		
T_{vj}	Virtual junction temperature		
t_{rr}	Reverse recovery time		
t_q	Circuit commutated turn-off time		
t_{gt}	Gate controlled turn-on time		
t_{gq}	Gate controlled turn-off time (GTO)		

Photos of semiconductor assemblies



Rotating excitation rectifier assemblies for large scale turbine generators

Rectification device for special welder



Pulse power supply

Series resonance medium frequency power supply

High voltage static Var compensator

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