



功率模块 Power Modules

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STANDARD THYRISTOR MODULE | 普通可控硅模块

Features

- Base & chip insulation AC voltage 2500V
- International standard packing
- Excellent temperature feature
- ≥300A could chose water-cool
- Easy to install

Applications

- AC DC motor control
- Motor soft start
- Industry heat-up control
- Rectificate power supply
- Welder
- Frequency transformer
- UPS power supply
- Battery charge & discharge

Ordering Information Table

Device Code **M T C 55 -12 ***

① ② ③ ④ ⑤ ⑥

- 1 -Power Module
- 2 -T=thy-thy D=dio-dio F=dio-thy
K=fast thy Z=fast dio H=fast thy-fast dio
- 3 -Circuit form:A=common positive pole
C=series commection K=common negative pole
X=reverse parallel connection
- 4 -Current Code=IT(AV)
- 5 -Voltage code=Code × 100=VRRM
- 6 -None: Air-cool * Means water-cool

Explanation

- I_{GT}, V_{GT}, I_H are all T_A=25℃ test data, others are all T_A=T_{jm} test data.
- I²t=I²_{TSM} × t_w/2; t_w=Half sine wave current, when at 50Hz,
I²t=0.005I²_{TSM}(A²S)
- When at 60Hz, I_{TSM}(8.3ms)=I_{TSM}(10ms) × 1.066, T_j=T_{jm}
I²t(8.3ms)=I²t(10ms) × 0.943, T_j=T_{jm}

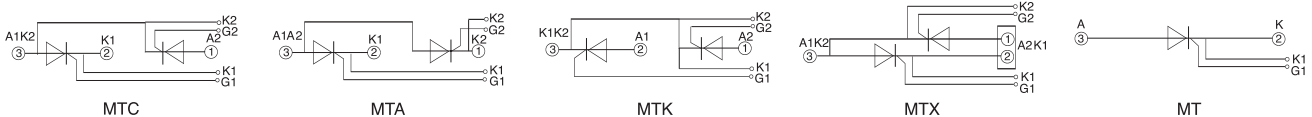


STANDARD THYRISTOR MODULE 普通可控硅模块 (MTC, MTK, MTA, MTX, MT)

Type	IT(AV)	V _{DRM} V _{RRM}	V _{TM} @ITM	I _{DRM} I _{RRM}	I _{GT}	V _{GT}	I _H	d _w /d _t	d _i /d _t	I _{TSM}	R _{jc}	T _{jm}	V _{iso}	Outline
	A	V	V A	mA	mA	V	mA	V/μs	A/μs	A × 10 ³	℃/W	℃	V(AC)	
MTX25A	25	400-2600	1.69 80	8	100	2.5	100	800	50	0.55	0.950	125	2500	M1/M2
MTX40A	40	400-2600	1.60 120	8	100	2.5	100	800	50	1.00	0.650	125	2500	M1/M2
MTX55A	55	400-2600	1.50 170	8	100	2.5	100	800	50	1.25	0.530	125	2500	M1/M2
MTX70A	70	400-2600	1.48 210	10	100	2.5	100	800	50	1.60	0.410	125	2500	M1/M2
MTX90A	90	400-2600	1.94 270	15	100	2.5	100	800	100	2.00	0.280	125	2500	M1/M2
MTX110A	110	400-2600	1.90 330	20	100	2.5	100	800	100	2.40	0.250	125	2500	M1/M2
MTX130A	130	400-2600	1.96 410	25	150	2.5	100	800	100	3.80	0.200	125	2500	M2/M3
MTX160A	160	400-2600	1.90 480	25	150	2.5	100	800	100	5.40	0.170	125	2500	M3
MTX200A	200	400-2600	1.90 600	30	180	2.5	100	800	100	7.20	0.140	125	2500	M3/M4
MTX250A	250	400-2600	1.73 750	30	180	2.5	100	800	100	8.50	0.120	125	2500	M4
MTX300A	300	400-2600	1.58 900	40	180	2.5	100	800	100	9.30	0.100	125	2500	M4
MTX350A	350	400-2600	1.45 1050	40	180	2.5	100	800	100	11.0	0.090	125	2500	M5
MTX400A	400	400-2600	1.44 1200	40	200	3.0	100	800	100	14.0	0.080	125	2500	M5
MTX500A	500	400-2600	1.44 1500	40	200	3.0	100	800	100	16.0	0.065	125	2500	M5
MTX300A*	300	400-2600	1.60 900	40	180	2.5	100	800	100	9.30	0.100	125	2500	M6
MTX500A*	500	400-2600	1.65 1500	40	200	3.0	100	800	100	11.0	0.087	125	2500	M7
MTX600A*	600	400-2600	1.70 1800	40	200	3.0	100	800	100	13.0	0.073	125	2500	M7/M8
MTX800A*	800	400-2600	1.75 2400	40	200	3.0	100	800	100	16.0	0.054	125	2500	M8
MTX1000A*	1000	400-2600	1.95 3000	40	200	3.0	100	800	100	20.0	0.050	125	2500	M9

*Means water-cool

Part number type & circuit



STANDARD DIODE MODULE | 整流二极管模块

Features

- Base & chip insulation AC voltage 2500V
- International standard packing
- Excellent temperature feature
- ≥300A could chose water-cool
- Easy to install

Applications

- AC DC motor control
- Motor soft start
- Industry heat-up control
- Rectificate power supply
- Welder
- Frequency transformer
- UPS power supply
- Battery charge & discharge

Ordering Information Table

Device Code	M	D	C	90	-12	*
	①	②	③	④	⑤	⑥
1	-Power Module					
2	-T=thy-thy D=dio-dio F=dio-thy K=fast thy Z=fast thy H=fast thy-fast dio					
3	-Circuit form:A=common positive pole C=series commection K=common negative pole X=reverse parallel connection					
4	-Current Code=IF(AV)					
5	-Voltage code=Code × 100=VRRM					
6	-None: Air-cool * Means water-cool					

Explanation

- $I^2t = I_{TSM}^2 \times t_w / 2$; t_w = Half sine wave current, when at 50Hz,
 $I^2t = 0.005 I_{TSM}^2 (A^2S)$
- When at 60Hz, $I_{TSM}(8.3ms) = I_{TSM}(10ms) \times 1.066$, $T_j = T_{jm}$
 $I^2t(8.3ms) = I^2t(10ms) \times 0.943$, $T_j = T_{jm}$

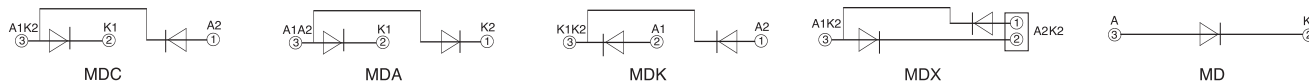


STANDARD DIODE MODULE 整流二极管模块 (MDC,MDK,MDA,MDX,MD)

Type	IF(AV)	VRRM	VFM@IFM		IRRM	IF(RMS)	IFMS	Rjc	Tjm	Viso	Outline
	A	V	V	A	mA	A	A × 10 ³	°C/W	°C	V(AC)	
MDX25A	25	400-2600	1.65	80	8	41	0.65	1.300	150	2500	M1/M2
MDX40A	40	400-2600	1.55	120	8	63	1.00	0.900	150	2500	M1/M2
MDX55A	55	400-2600	1.45	170	8	86	1.30	0.700	150	2500	M1/M2
MDX70A	70	400-2600	1.40	210	8	110	1.80	0.570	150	2500	M1/M2
MDX90A	90	400-2600	1.33	270	8	141	2.30	0.470	150	2500	M1/M2
MDX110A	110	400-2600	1.45	330	8	173	2.60	0.350	150	2500	M1/M2
MDX130A	130	400-2600	1.38	410	12	212	3.90	0.310	150	2500	M2/M3
MDX160A	160	400-2600	1.56	480	12	251	6.00	0.230	150	2500	M3
MDX200A	200	400-2600	1.38	600	12	314	8.00	0.210	150	2500	M3/M4
MDX250A	250	400-2600	1.43	750	20	393	11.0	0.140	150	2500	M4
MDX300A	300	400-2600	1.35	900	20	471	12.5	0.130	150	2500	M4
MDX350A	350	400-2600	1.50	1050	30	550	15.0	0.110	150	2500	M5
MDX400A	400	400-2600	1.35	1200	40	640	18.0	0.100	150	2500	M5
MDX500A	500	400-2600	1.35	1500	40	785	21.0	0.090	150	2500	M5
MDX300A*	300	400-2600	1.45	900	20	471	12.5	0.130	150	2500	M6
MDX500A*	500	400-2600	1.55	1500	40	785	12.0	0.130	150	2500	M7
MDX600A*	600	400-2600	1.60	1800	40	942	15.0	0.110	150	2500	M7/M8
MDX800A*	800	400-2600	1.65	2400	40	1256	18.0	0.080	150	2500	M8
MDX1000A*	1000	400-2600	1.70	3000	40	1560	22.0	0.078	150	2500	M9

*Means water-cool

Part number type & circuit



THYRISTOR-DIODE MODULE | 可控硅-二极管混合模块

Features

- Base & chip insulation AC voltage 2500V
- International standard packing
- Excellent temperature feature
- $\geq 300A$ could chose water-cool
- Easy to install

Applications

- AC DC motor control
- Motor soft start
- Industry heat-up control
- Rectificate power supply
- Welder
- Frequency transformer
- UPS power supply
- Battery change & discharge

Ordering Information Table

Device Code **M F C 160 -12 ***

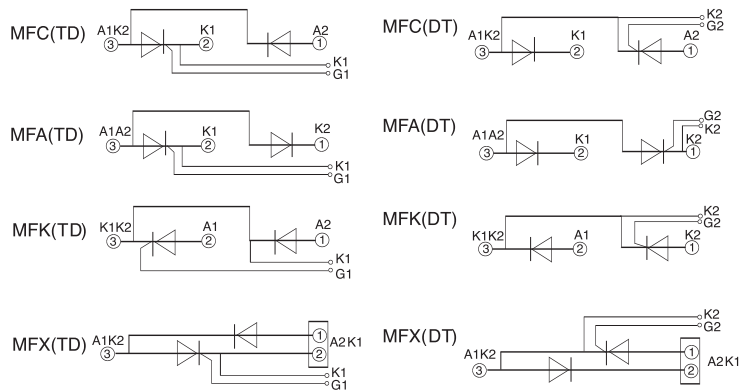
① ② ③ ④ ⑤ ⑥

- 1** -Power Module
- 2** -T=thy-thy;D=dio-dio;F=dio-thy;
K=fast thy;Z=fast dio;H=fast thy-fast dio
- 3** -Circuit form:A=common positive pole;
C=series connection;
K=common negative pole;
X=reverse parallel connection;
- 4** -Current Code= $I_{F(AV)}/I_{T(AV)}$
- 5** -Voltage code=Code $\times 100=V_{RRM}$
- 6** -None: Air-cool * Means water-cool

Explanation

- I_{GT}, V_{GT}, I_H are all $T_A=25^\circ C$ test data,others are all $T_A=T_{jm}$ test data.
- $I^2t=I_{TSM}^2 \times t_w/2$: t_w =Half sine wave current,when at 50Hz,
 $I^2t=0.005I_{TSM}^2(A^2S)$
- When at 60Hz, $I_{TSM}(8.3ms)=I_{TSM}(10ms) \times 1.066, T_j=T_{jm}$
 $I^2t(8.3ms)=I^2t(10ms) \times 0.943, T_j=T_{jm}$

Part number type & circuit



THYRISTOR-DIODE MODULE 可控硅-二极管混合模块 (MFC,MFK,MFA,MFX)

Type	$I_T(AV)$	$V_{DRM} V_{RRM}$	$V_{TM}@I_{TM}$		$I_{DRM} I_{RRM}$	I_{GT}	V_{GT}	I_H	d_w/d_t	d_f/d_t	I_{TSM}	R_{jc}	T_{jm}	V_{iso}	Outline
	A	V	V	A	mA	mA	V	mA	V/ μs	A/ μs	$A \times 10^3$	$^\circ C/W$	$^\circ C$	V(AC)	
MFX25A	25	400-2600	1.69	80	8	100	2.5	100	800	50	0.55	0.950	125	2500	M1/M2
MFX40A	40	400-2600	1.60	120	8	100	2.5	100	800	50	1.00	0.650	125	2500	M1/M2
MFX55A	55	400-2600	1.50	170	8	100	2.5	100	800	50	1.25	0.530	125	2500	M1/M2
MFX70A	70	400-2600	1.48	210	10	100	2.5	100	800	50	1.60	0.410	125	2500	M1/M2
MFX90A	90	400-2600	1.94	270	15	100	2.5	100	800	100	2.00	0.280	125	2500	M1/M2
MFX110A	110	400-2600	1.90	330	20	100	2.5	100	800	100	2.40	0.250	125	2500	M1/M2
MFX130A	130	400-2600	1.96	410	25	150	2.5	100	800	100	3.80	0.200	125	2500	M2/M3
MFX160A	160	400-2600	1.90	480	25	150	2.5	100	800	100	5.40	0.170	125	2500	M3
MFX200A	200	400-2600	1.90	600	30	180	2.5	100	800	100	7.20	0.140	125	2500	M3/M4
MFX250A	250	400-2600	1.73	750	30	180	2.5	100	800	100	8.50	0.120	125	2500	M4
MFX300A	300	400-2600	1.58	900	40	180	2.5	100	800	100	9.30	0.100	125	2500	M4
MFX350A	350	400-2600	1.45	1050	40	180	2.5	100	800	100	11.0	0.090	125	2500	M5
MFX400A	400	400-2600	1.44	1200	40	200	3.0	100	800	100	14.0	0.080	125	2500	M5
MFX500A	500	400-2600	1.44	1500	40	200	3.0	100	800	100	16.0	0.065	125	2500	M5
MFX300A*	300*	400-2600	1.60	900	40	180	2.5	100	800	100	9.30	0.100	125	2500	M6
MFX500A*	500*	400-2600	1.65	1500	40	200	3.0	100	800	100	11.0	0.087	125	2500	M7
MFX600A*	600*	400-2600	1.70	1800	40	200	3.0	100	800	100	13.0	0.073	125	2500	M7/M8
MFX800A*	800*	400-2600	1.75	2400	40	200	3.0	100	800	100	16.0	0.054	125	2500	M8
MFX1000A*	1000*	400-2600	1.95	3000	40	200	3.0	100	800	100	20.0	0.050	125	2500	M9

*Means water-cool

FAST THYRISTOR / DIODE MODULE | 快速二极管/可控硅模块

Features

- Base & chip insulation AC voltage 2500V
- International standard packing
- Excellent temperature feature
- ≥300A could chose water-cool
- Easy install

Applications

- AC DC motor control
- Motor soft start
- Industry heat-up control
- Rectificate power supply
- Welder
- Frequency transformer
- UPS power supply
- Battery charge & discharge

Ordering Information Table

Device Code **M** **K** **C** **200** **-12** *****

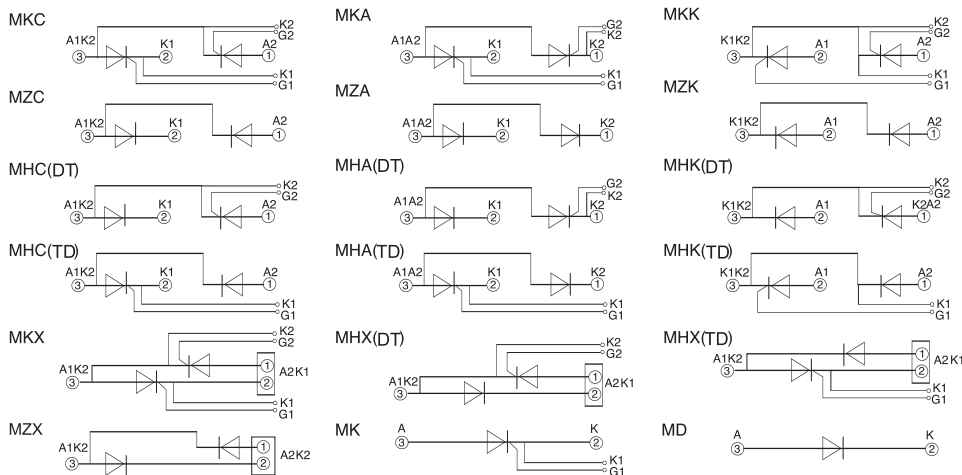
① ② ③ ④ ⑤ ⑥

- 1 -Power Module
- 2 -T=thy-thy;D=dio-dio;F=dio-thy;
K=fast thy;Z=fast dio;H=fast thy-fast dio
- 3 -Circuit form:A=common positive pole;
C=series connection;
K=common negative pole;
X=reverse parallel connection;
- 4 -Current Code=I_{F(AV)}/I_{T(AV)}
- 5 -Voltage code=Code × 100=V_{RRM}
- 6 -None: Air-cool * Means water-cool

Explanation

- I_{GT}, V_{GT}, I_H are all T_A=25 °C test data, others are all T_A=T_{jm} test data.
- I²t=I²_{TSM} × t_w/2; t_w=Half sine wave current, when at 50Hz,
I²t=0.005I²_{TSM}(A²S)
- When at 60Hz, I_{TSM}(8.3ms)=I_{TSM}(10ms) × 1.066, T_j=T_{jm}
I²t(8.3ms)=I²t(10ms) × 0.943, T_j=T_{jm}

Part number type & circuit



FAST THYRISTOR MODULE 快速可控硅模块 (MKC, MKA, MKK, MKX, MK)

FAST THYRISTOR-DIODE MODULE 快速可控硅-二极管混合模块 (MHC, MHA, MHK, MHX)

I _{T(AV)} @T _c		V _{DRM} V _{RRM}	V _{TM} @I _{TM}	I _{DRM} I _{RRM}	I _{GT}	V _{GT}	I _H	d _v /d _t	d _i /d _t	t _q	I _{T(RMS)}	I _{TSM}	R _{jc}	T _{jm}	V _{iso}	Outline	
A	°C	V	V	A	mA	V	mA	V/μs	A/μs	μs	A	A × 10 ³	°C/W	°C	V(AC)		
150	85	600-1600	1.78	450	40	180	2.5	100	800	200	15-35	236	4.00	0.140	115	2500	M3
200	85	600-1600	1.77	600	50	180	2.5	100	800	200	15-35	314	5.60	0.100	115	2500	M4
300	85	600-1600	1.75	900	80	200	3.0	100	800	200	15-35	471	7.80	0.070	115	2500	M4
300*	55	600-1600	2.20	900	50	200	3.0	100	800	200	15-35	471	5.60	0.110	115	2500	M6
400*	55	600-1600	2.10	1200	80	200	3.0	100	800	200	15-35	628	7.80	0.087	115	2500	M7

FAST DIODE MODULE 快恢复二极管模块 (MZC, MZA, MZK, MZX, MZ)

I _{F(AV)} @T _c		V _{RRM}	V _{FM} @I _{FM}	I _{RRM}	I _{F(RMS)}	I _{FSM}	R _{jc}	T _{jm}	V _{iso}	Outline	
A	°C	V	V	A	A	A × 10 ³	°C/W	°C	V(AC)		
150	100	600-1600	1.60	450	30	236	4.30	0.210	140	2500	M3
200	100	600-1600	1.58	600	40	314	6.00	0.150	140	2500	M4
300	100	600-1600	1.55	900	70	471	8.30	0.100	140	2500	M4
300*	60	600-1600	2.05	900	40	471	6.00	0.160	140	2500	M6
400*	60	600-1600	1.90	1200	70	628	8.30	0.130	140	2500	M7

*Means water-cool

NON-INSULATION POWER MODULE | 非绝缘型模块(电焊机专用模块)

Features

- Non-insulation
- Baseplate communal electrode
- International standard packing
- Excellent temperature feature
- High $I_{FSM}(I_{TSM})$
- Low $V_{FM}(V_{TM})$

Applications

- Welding Power
- DC Power
- Frequency transformer

Explanation

- I_{GT}, V_{GT}, I_H are all $T_A=25^\circ\text{C}$ test data, others are all $T_A=T_{jm}$ test data.
- $I^2t = I_{TSM}^2 \times t_w / 2$: Half sine wave current, when at 50Hz, $I^2t = 0.005 I_{TSM}^2 (\text{A}^2\text{S})$
- When at 60Hz, $I_{TSM}(8.3\text{ms}) = I_{TSM}(10\text{ms}) \times 1.066, T_j = T_{jm}$
 $I^2t(8.3\text{ms}) = I^2t(10\text{ms}) \times 0.943, T_j = T_{jm}$

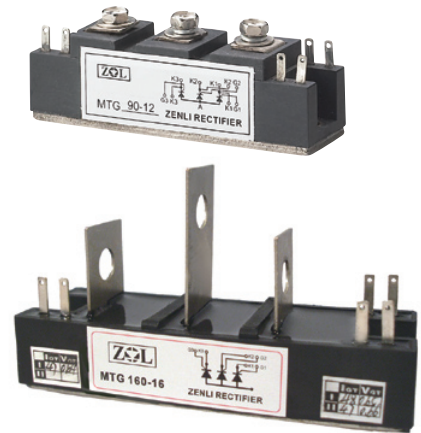
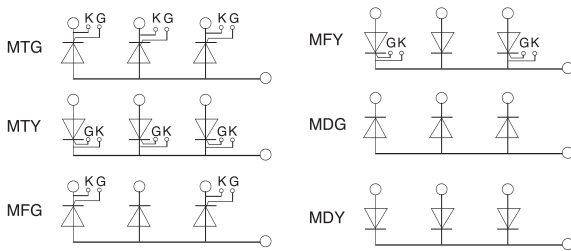
Ordering Information Table

Device Code **M T G AA 100 - 04**

① ② ③ ④ ⑤ ⑥

- 1 -Power Module
- 2 -T=thy-thy-thy D=dio-dio-dio F=thy-dio-thy
- 3 -Circuit form:G=3-phase common positive pote Y=3-phase common negative pole
- 4 -None: standard type AA: welder class
- 5 -Current Code= $I_{F(AV)}/I_{T(AV)}$
- 6 -Voltage code=Code $\times 100 = V_{RRM}$

Part number type & circuit



Non-insulation Thyristor Module 非绝缘型可控硅模块

MTG(AA),MTY(AA) Welder Class 电焊机等级

Type	$I_{T(AV)}$	V_{RRM}	$V_{FM}@I_{FM}$		I_{RRM}	I_{GT}	V_{GT}	I_H	d_v/d_t	d_f/d_t	I_{TMS}	R_{jc}	T_{jm}	Outline
	A	V	V	A	mA	mA	V	mA	V/ μs	A/ μs	$\text{A} \times 10^3$	$^\circ\text{C}/\text{W}$	$^\circ\text{C}$	
MTX80	80	200-600	1.35	240	8	100	2.5	100	800	100	2.70	0.280	125	M10/M13
MTX100	100	200-600	1.40	300	8	100	2.5	100	800	100	3.40	0.250	125	M10/M13
MTX150	150	200-600	1.40	450	12	100	2.5	100	800	100	5.60	0.160	125	M11/M14
MTX200	200	200-600	1.39	600	12	150	2.5	100	800	100	7.00	0.130	125	M11/M14
MTX250	250	200-600	1.40	750	12	150	2.5	100	800	100	8.60	0.100	125	M12/M15
MTX300	300	200-600	1.45	900	15	150	2.5	100	800	100	9.80	0.080	125	M12/M15

MTG, MTY Standard Class 普通等级

MTX80	80	800-2600	1.60	250	12	100	2.5	100	800	100	2.60	0.280	125	M10/M13
MTX100	100	800-2600	1.67	300	12	100	2.5	100	800	100	3.20	0.250	125	M10/M13
MTX150	150	800-2600	1.67	450	12	100	2.5	100	800	100	5.10	0.160	125	M11/M14
MTX200	200	800-2600	1.62	600	20	150	2.5	100	800	100	6.50	0.130	125	M11/M14
MTX250	250	800-2600	1.65	750	20	150	2.5	100	800	100	8.50	0.100	125	M12/M15
MTX300	300	800-2600	1.58	900	25	150	2.5	100	800	100	9.60	0.080	125	M12/M15

Non-Insulation Thyristor-diode Module 非绝缘型混合模块

MFG(AA),MFY(AA) Welder Class 电焊机等级

Type	$I_{T(AV)}$	V_{RRM}	$V_{FM}@I_{FM}$		I_{RRM}	I_{GT}	V_{GT}	I_H	d_v/d_t	d_f/d_t	I_{TMS}	R_{jc}	T_{jm}	Outline
	A	V	V	A	mA	mA	V	mA	V/ μs	A/ μs	$\text{A} \times 10^3$	$^\circ\text{C}/\text{W}$	$^\circ\text{C}$	
MFX80	80	200-600	1.35	240	8	100	2.5	100	800	100	2.70	0.280	125	M10/M13
MFX100	100	200-600	1.40	300	8	100	2.5	100	800	100	3.40	0.250	125	M10/M13
MFX150	150	200-600	1.40	450	12	100	2.5	100	800	100	5.60	0.160	125	M11/M14
MFX200	200	200-600	1.39	600	12	150	2.5	100	800	100	7.00	0.130	125	M11/M14
MFX250	250	200-600	1.40	750	12	150	2.5	100	800	100	8.60	0.100	125	M12/M15
MFX300	300	200-600	1.45	900	15	150	2.5	100	800	100	9.80	0.080	125	M12/M15

MFG, MFY Standard Class 普通等级

Type	$I_{T(AV)}$	V_{RRM}	$V_{FM@IFM}$		I_{RRM}	I_{GT}	V_{GT}	I_H	d/d_t	d/d_t	I_{TMS}	R_{jc}	T_{jm}	Outline
	A	V	V	A	mA	mA	V	mA	V/ μ s	A/ μ s	$A \times 10^3$	$^{\circ}C/W$	$^{\circ}C$	
MFX80	80	800-2600	1.60	250	12	100	2.5	100	800	100	2.60	0.280	125	M10/M13
MFX100	100	800-2600	1.67	300	12	100	2.5	100	800	100	3.20	0.250	125	M10/M13
MFX150	150	800-2600	1.67	450	12	100	2.5	100	800	100	5.10	0.160	125	M11/M14
MFX200	200	800-2600	1.62	600	20	150	2.5	100	800	100	6.50	0.130	125	M11/M14
MFX250	250	800-2600	1.65	750	20	150	2.5	100	800	100	8.50	0.100	125	M13/M15
MFX300	300	800-2600	1.58	900	25	150	2.5	100	800	100	9.60	0.080	125	M13/M15

Non-insulation Diode Module 非绝缘型二极管模块

MDG(AA),MDY(AA) Welder Class 电焊机等级

Type	$I_{F(AV)}$	V_{RRM}	$V_{FM@IFM}$		I_{RRM}	$I_{F(RMS)}$	I_{FMS}	R_{jc}	T_{jm}	Outline
	A	V	V	A	mA	$A \times 10^3$	$A \times 10^3$	$^{\circ}C/W$	$^{\circ}C$	
MDX80A	80	400-2600	1.32	250	8	125	3.40	0.410	150	M10/M13
MDX100A	100	400-2600	1.35	300	8	157	4.10	0.380	150	M10/M13
MDX150A	150	400-2600	1.35	450	12	236	6.00	0.240	150	M11/M14
MDX200A	200	400-2600	1.39	600	15	314	8.20	0.200	150	M11/M14
MDX250A	250	400-2600	1.35	750	12	393	9.90	0.150	150	M13/M15
MDX300A	300	400-2600	1.40	900	15	471	12.00	0.130	150	M13/M15

MDG, MDY Standard Class 普通等级

MDX80A	80	400-2600	1.50	250	12	125	3.20	0.410	150	M10/M13
MDX100A	100	400-2600	1.57	300	12	157	3.90	0.380	150	M10/M13
MDX150A	150	400-2600	1.57	450	12	236	5.80	0.240	150	M11/M14
MDX200A	200	400-2600	1.50	600	20	314	8.00	0.200	150	M11/M14
MDX250A	250	400-2600	1.53	750	20	393	9.80	0.150	150	M13/M15
MDX300A	300	400-2600	1.50	900	25	471	11.50	0.130	150	M13/M15

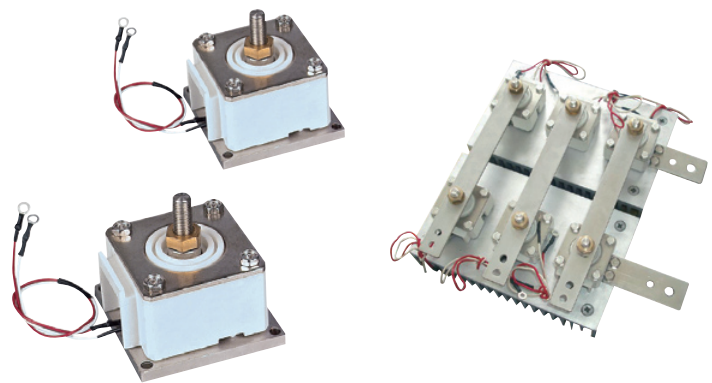
CAPSULE VERSION POWER MODULE & MOUNTING CLAMP | 平板式模块及安装夹具

Features

- Big power, small size, easy to install
- Could use at anti-abreast, rectify circuit and other control area.
- Mounting clamp could be sell directly.

Applications

Insulation capsule type power module could install capsule type thyristor or diode on baseplate or heatsink,use one side cooled, air-cooled & water-cooled all could use.



Type	Device QTY	Device outline	$R_{th(c-p)}$	$R_{th(p-hs)}$	Outline
			$^{\circ}C/W$	$^{\circ}C/W$	
MP25A-XXX	1	E1/E2	0.095	0.012	M24
MP33A-XXX	1	E4/E5	0.090	0.010	M25

All MP25A-XXX,XXX means device part number.Like MP25A-ST300C16.

BRIDGE RECTIFIER MODULE | 桥式整流器模块

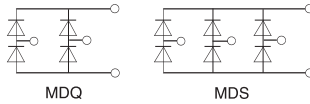
Features

- Base & chip insulation AC voltage 2500V
- International standard packing
- Excellent temperature feature
- Easy to install
- Popular size
- Low V_{FM}

Applications

- Instrument's DC power supply
- PWM frequency transformer
- Input rectificate power supply
- DC motor field power supply
- Switch power supply input rectificate

Part number type & circuit



Ordering information Table

Device Code	M	D	S	100	-12	B
	①	②	③	④	⑤	⑥
1	-Power Module					
2	-D=diode modules T=thyristor modules F=diode-thyristor modules H=with free wheel diode modules					
3	-S=three phase Q=single phase					
4	-Current Code= $I_{F(AV)}/I_{T(AV)}$					
5	-Voltage code=Code $\times 100=V_{RRM}$					
6	-None=Fuji type B=Sanrex type C=IR type D=IXYS type					



THREE-PHASE BRIDGE RECTIFIER MODULES 三相整流桥模块 (MDS)

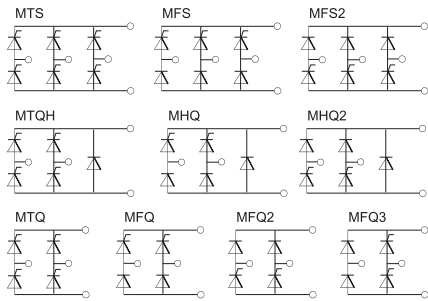
Type	$I_d@T_c$		V_{RRM}	$V_{FM}@I_{FM}$		I_{RRM}	$I_{F(AV)}$	$I_{F(RMS)}$	I_{FMS}	R_{jc}	T_{jm}	V_{iso}	Outline
	V	°C		V	A								
MDS60	60	100	600-2000	1.55	60	8	20	39	0.75	0.55	150	2500	M16/
MDS80	80	100	600-2000	1.47	80	8	25	47	1.00	0.32	150	2500	M17/
MDS100	100	100	600-2000	1.53	100	10	33	51	1.50	0.24	150	2500	M18
MDS150	150	100	600-2000	1.50	150	10	50	71	2.50	0.15	150	2500	M19/
MDS200	200	100	600-2000	1.47	200	10	75	105	2.50	0.15	150	2500	M20
MDS250	250	100	600-2000	1.47	250	10	100	157	2.75	0.14	150	2500	M21
MDS300	300	100	600-2000	1.48	300	9	125	200	2.90	0.14	150	2500	M21
MDS400	400	100	600-2000	1.45	400	10	150	240	2.95	0.13	150	2500	M21
MDS500	500	100	600-2000	1.49	500	10	200	320	3.15	0.12	150	2500	M22
MDS600	600	100	600-2000	1.49	600	10	250	400	3.50	0.10	150	2500	M22

SINGLE-PHASE BRIDGE RECTIFIER MODULES 单相整流桥模块 (MDQ)

Type	$I_d@T_c$		V_{RRM}	$V_{FM}@I_{FM}$		I_{RRM}	$I_{F(AV)}$	$I_{F(RMS)}$	I_{FMS}	R_{jc}	T_{jm}	V_{iso}	Outline
	V	°C		V	A								
MDQ60	60	100	600-2000	1.55	60	8	30	60	0.75	0.55	150	2500	M16/
MDQ80	80	100	600-2000	1.47	80	8	40	70	1.00	0.32	150	2500	M17/
MDQ100	100	100	600-2000	1.53	100	10	50	86	1.50	0.24	150	2500	M18
MDQ150	150	100	600-2000	1.47	150	10	75	106	2.00	0.15	150	2500	M19/
MDQ200	200	100	600-2000	1.50	200	10	100	157	2.50	0.15	150	2500	M20
MDQ250	250	100	600-2000	1.48	250	8	125	200	2.75	0.14	150	2500	M21
MDQ300	300	100	600-2000	1.50	300	10	150	240	2.90	0.13	150	2500	M21
MDQ400	400	100	600-2000	1.50	400	9	200	320	3.20	0.12	150	2500	M22
MDQ500	500	100	600-2000	1.53	500	10	250	400	3.50	0.10	150	2500	M22

SINGLE PHASE.3 PHASE FULL CONTROL/HALF CONTROL THYRISTOR BRIDGE MODULE 单相、三相全控/半控模块

Part number type & circuit



Three-phase Full Control/Half Control Thyristor Bridge Modules 三相半控/全控模块 (MTS、MFS)

I_d	$I_{T(AV)}$	$V_{DRM} V_{RRM}$	$I_{DRM} I_{RRM}$	V_{TM}/I_{TM}	I_{GT}	V_{GT}	I_H	d_v/d_t	d_i/d_t	T_{jm}	V_{iso}	Outline
A	A	V	mA	V A	mA	V	mA	V/ μ s	A/ μ s	$^{\circ}$ C	V(AC)	
60	20	400-2600	8	1.45 60	100	2.5	100	800	50	125	2500	M16
90	30	400-2600	15	1.45 90	100	2.5	100	800	100	125	2500	M16
130	44	400-2600	25	1.45 130	150	2.5	100	800	100	125	2500	M20
150	50	400-2600	25	1.50 150	180	2.5	100	800	100	125	2500	M20
200	67	400-2600	30	1.50 200	180	2.5	100	800	100	125	2500	M20
300	100	400-2600	40	1.50 300	180	2.5	100	800	100	125	2500	M21
450	150	400-2600	40	1.50 450	200	3.0	100	800	100	125	2500	M22

Single-phase Full Control/Half Control Thyristor Bridge Modules 单相半控/全控模块 (MTQ、MFQ、MTQH、MHQ)

I_d	$I_{T(AV)}$	$V_{DRM} V_{RRM}$	$I_{DRM} I_{RRM}$	V_{TM}/I_{TM}	I_{GT}	V_{GT}	I_H	d_v/d_t	d_i/d_t	T_{jm}	V_{iso}	Outline
A	A	V	mA	V A	mA	V	mA	V/ μ s	A/ μ s	$^{\circ}$ C	V(AC)	
60	30	400-2600	8	1.45 90	100	2.5	100	800	50	125	2500	M16
90	45	400-2600	15	1.45 135	100	2.5	100	800	100	125	2500	M16
130	65	400-2600	25	1.45 195	150	2.5	100	800	100	125	2500	M20
150	75	400-2600	25	1.50 225	180	2.5	100	800	100	125	2500	M20
200	100	400-2600	30	1.50 300	180	2.5	100	800	100	125	2500	M20
300	150	400-2600	40	1.50 450	180	2.5	100	800	100	125	2500	M21
450	225	400-2600	40	1.50 675	200	3.0	100	800	100	125	2500	M22

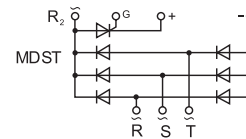
THREE-PHASE BRIDGE RECTIFIER OUTPUT CONTROLLABLE MODULE 三相整流桥输出可控模块

Typical Applications

- For AC/DC motor controls
- Rectifying power supplies
- Welder, frequency converters
- UPS power supply
- Battery charge and discharge

Features

- $I_d@T_c100^{\circ}$: 30A-300A
- V_{RRM} : 600-2000V
- Welding technique under the production of vacuum and hydrogen gas
- Electrical insulation class:chips and baseboard 2500VAC voltage



Connecting Program

Apply three-phase AC input and DC output. Terminals R2 and R share single-phase current and conduce the energy in double sides. Terminal G use 5-24V DC which may conduct curent from transformer terminal.

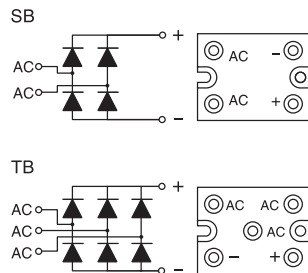
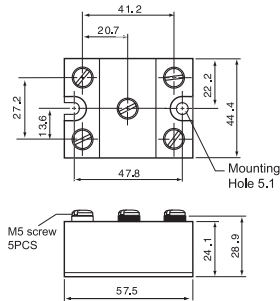
Type	$I_d@T_c$		$I_{F(AV)}$	V_{RRM}	I_{RRM}	I_{GT}	V_{GT}	d_v/d_t	d_i/d_t	V_{TM}/I_{TM}	T_{jm}	V_{iso}	
	A	$^{\circ}$ C	A	V	mA	mA	V	V/ μ s	A/ μ s	V A	$^{\circ}$ C	V(AC)	
MDST30	30	100	10	600-2000	8	100	0.8-1.5	800	50	1.45	30	150	2500
MDST60	60	100	20	600-2000	8	100	0.8-1.5	800	100	1.45	60	150	2500
MDST100	100	100	35	600-2000	10	150	0.8-1.5	800	100	1.45	100	150	2500
MDST150	150	100	50	600-2000	10	180	0.8-1.5	800	100	1.50	150	150	2500
MDST200	200	100	68	600-2000	10	180	0.8-1.5	800	100	1.50	200	150	2500
MDST300	300	100	100	600-2000	10	180	0.8-1.5	800	100	1.50	300	150	2500

BRIDGE RECTIFIER MODULE (CRYDOM Type) 桥式整流器模块 (CRYDOM型)

Applications

Single-phase and three-phase diode circuits incorporate highly efficient thermal management to provide high surge capability, extended life, and reliable performance. Available in five circuits, all models come in an industry standard package, provide 2500 V_{RMS} from all terminals to the baseplate.

Part number type & circuit



Ordering information Table

Device Code	M50	100	TB	1200
	①	②	③	④
1	-Outline number			
2	-Current Code=I _{F(AV)}			
3	-TB=Three phase bridge SB=Single phase bridge			
4	-Voltage code=V _{RRM}			



Electrical Specifications

Type	M50 60	M50 100	
I _D	Maximum DC output current @ T _c =85 °C (A)	60	100
V _{FM}	Maximum voltage drop @ amps peak	1.35 @ 60A	1.2 @ 100A
T _J	Operating junction temperature range	-40 °C to +125 °C	-40 °C to +125 °C
d/d _t	Critical rate of rise of on-state current @ T _J =125 °C (A/ μ s)	100	100
d _v /d _t	Critical rate of rise of off-state voltage	500	500
V _{RMS}	Repetitive peak reverse voltage (AC line input voltage)	400(120Vac) 600(240Vac) 800(280Vac) 1000(380Vac) 1200(480Vac) 1400(530Vac) 1600(600Vac)	
I _{TSM}	Maximum non-repetitive surge current (A) [1/2 cycle, 60Hz]	800	1500
I ² T	Maximum I ² T for fusing (A2sec)[t=8.3ms]	2650	9350
R _{θJC}	Maximum thermal resistance junction to ceramic base per chip	0.45 °C/W	0.3 °C/W
V _{ISO}	Isolation voltage	2500V _{RMS}	2500V _{RMS}

SCHOTTKY/SUPER FAST RECOVERY DIODE MODULE | 肖特基/超快恢复二极管模块

Features

- Double diode
- Low leak
- Low forward voltage drop
- Max T_c=175 °C
- RoHs criterion ,green product

Performance

- Plastic Cover+High Temp Epoxy Resin
- Max Mounting Power 3.4~4.5N/m
- Weight ≅ 80g

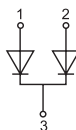
Applications

- Big Power Switch Power Supply
- Inversion Weld Power Supply
- Frequency Converter

Ordering information Table

Device Code	MURP	200	40	CT
	①	②	③	④
1	MURP=super fast recovery diode module MBRP=schottky barrier diode module			
2	Current Code=I _{F(AV)}			
3	Voltage code=Code × 100=V _{RRM}			
4	Device code			

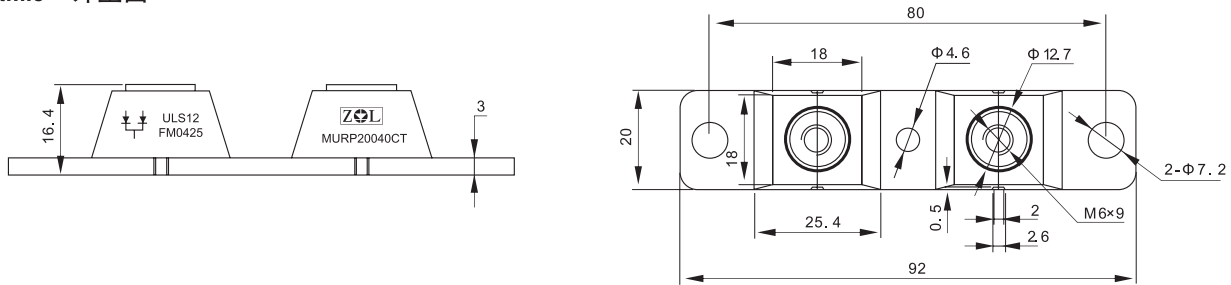
Part number type & circuit



Type	Normal value						Thermal	Electrical						
	IF(AV)		IFRM	IFSM	Tj	Tstg		R _{o(jc)}	V _{FM}			I _r	T _{rr}	
	A		A	A	°C	°C	°C/W	V			μA	ns		
	Full module	Each diode	T _c =95°C	T _c =95°C			Each diode	T _c =25°C			Rated voltage	IF=2.0A di/dt=50A/s		
MURP 200*CT	T _c =130°C T _c =100°C		200	800	-55°C ~+175°C	-55°C ~+150°C	Max. 0.45	IF=100A IF=200A IF=100A			T _c =25°C		50 75 90	
	200	100						200V	1.0	1.3	0.95	150		1000
								400V	1.3	1.75	1.15	100		1000
MURP 300**CT	T _c =130°C T _c =100°C		300	1200	-55°C ~+175°C	-55°C ~+150°C	Max. 0.45	IF=150A IF=300A IF=150A			T _c =25°C		50 75 90	
	300	150						200V	1.0	1.3	0.95	150		1000
								400V	1.3	1.75	1.15	100		1000
MBRP 300 45CT	T _c =140°C T _c =140°C		300	2500	-55°C ~+175°C	-55°C ~+150°C	Max. 0.45	IF=150A IF=300A IF=150A			T _c =25°C		0.8mA 75mA	
	300	150						45V	0.83	0.95	0.83			
MBRP 400 100CT	T _c =100°C T _c =100°C		400	2500	-55°C ~+175°C	-55°C ~+150°C	Max. 0.45	IF=200A IF=400A IF=200A			T _c =25°C		6mA 80mA	
	400	200						100V	0.69	0.97	0.82			

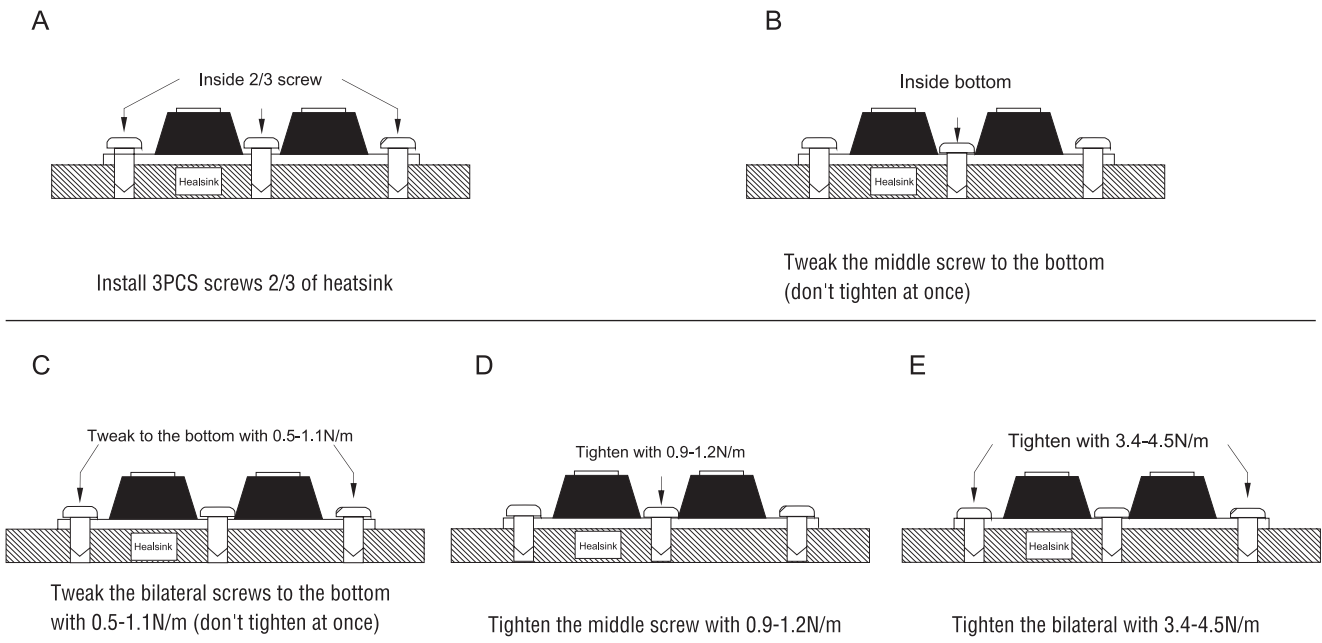
*Pulsetest: pulse width 300 μs, duty cycle ≤ 2.0%

Outline 外型图



Tighting order 安装工序(请按以下图示步骤安装以减小热阻)

Please follow the tightening order to decline the thermal resistance (between semiconductor and heatsink)



MODULE VERSION OUTLINE | 模块外形图

<p>M1</p>	<p>M2</p>	<p>M3</p>
<p>25-110A POWER MODULE</p>	<p>25-130A POWER MODULE</p>	<p>130-200A POWER MODULE</p>
<p>M4</p>	<p>M5</p>	<p>M6</p>
<p>200-300A POWER MODULE</p>	<p>350-500A POWER MODULE</p>	<p>200-300A POWER MODULE water-cool</p>
<p>M7</p>	<p>M8</p>	<p>M9</p>
<p>350-500A POWER MODULE water-cool</p>	<p>600-800A POWER MODULE water-cool</p>	<p>800-1000A POWER MODULE water-cool</p>

MODULE VERSION OUTLINE | 模块外形图

<p>M10</p> <p>40-100A POWER MODULE non-insulation, SANREX type</p>	<p>M11</p> <p>150-200A POWER MODULE non-insulation, SANREX type</p>	<p>M12</p> <p>250-300A POWER MODULE non-insulation, SANREX type</p>
<p>M13</p> <p>40-100A POWER MODULE non-insulation, MITSUBITION type</p>	<p>M14</p> <p>150-200A POWER MODULE non-insulation, MITSUBITION type</p>	<p>M15</p> <p>250-300A POWER MODULE non-insulation, MITSUBITION type</p>
<p>M16</p> <p>40-100A BRIDGE MODULE FUJI type</p>	<p>M17</p> <p>40-100A BRIDGE MODULE SANREX type</p>	<p>M18</p> <p>40-100A BRIDGE MODULE IXYS type</p>

STUD VERSION SEMICONDUCTOR
CAPSULE VERSION SEMICONDUCTOR
POWER MODULES
BRIDGE RECTIFIER
SOLID STATE RELAY & PRESS-FIT DIODE
SEMICONDUCTOR SUBASSEMBLY & HEATSINK

MODULE VERSION OUTLINE | 模块外形图

<p>M19</p>	<p>M20</p>	<p>M21</p>
<p>150-200A BRIDGE MODULE IXYS type</p>	<p>150-200A BRIDGE MODULE SANREX type</p>	<p>300-400A BRIDGE MODULE</p>
<p>M22</p>	<p>M23</p>	<p>M24</p>
<p>500-600A BRIDGE MODULE</p>	<p>10-60A Half control bridge modules (DBC plant)</p>	<p>MP25 CAPSULE TYPE MODULE</p>
<p>M25</p>	<p>M26</p>	<p>M27</p>
<p>MP35 CAPSULE TYPE MODULE</p>	<p>50-100A SINGLE MODULE</p>	<p>150-200A SINGLE MODULE</p>

IGBT MODULE | IGBT模块

General Description

Zenli IGBT Power Module provides ultra low conduction loss as well as short circuit ruggedness. It's designed for the applications such as SMPS and UPS.

Features

- High short circuit capability, self limiting to $6 \cdot I_{cnom}$
- Ultra low loss IGBT technology
- Low inductance case
- Fast & soft reverse recovery anti-parallel FWD
- Latch-up free
- Isolated copper baseplate using DCB Direct Copper Bonding technology

Typical Applications

- Switching mode power supplies
- DC servo and robot drives
- AC motor speed control
- UPS
- General power switching applications
- Inverters and DC Choppers
- Electronic welders at fSW up to 20kHz

Ordering Information Table

Device Code **ZG 200 HF L 60 C2 S**

① ② ③ ④ ⑤ ⑥ ⑦

- 1 -ZG=IGBT module
- 2 -Nominal current I_c (@ $T_c=80^\circ\text{C}$) as e. g. 200=200A
- 3 -Circuit form:
SG=single device HF=half bridge FF=full 3-phase bridge
CE=common emitter CU=chopper diode up side CL=chopper diode low side
HB=half bridge plus brake HT=tri-pack HH=h-bridge
FB=full 3-phase bridge plus brake
PI=input diode bridge + brake + full bridge
- 4 -Die characteristics:
K=standard IGBT U=ultra fast IGBT L=low loss and fast IGBT
T=trench IGBT, low loss W=trench IGBT, fast
- 5 -Voltage/10 e. g. 60=600V
- 6 -Package type:
C1=94mmx34mmx30m, Cu base C2=106mmx62mmx30m, Cu base
C3=140mmx130mmx38m, Cu base A3=140mmx130mmx38m, AlSiC base
- 7 -Screening level:
P=unscreened, 25 °C electrical test (not for qualification)
S=screened for industrial applications
H=screened for high reliability applications



Single Device IGBT Module 单开关IGBT模块

Type	I_c @	I_c @	V_{CE}	$V_{CE(sat)}$ @	(Eon+Eoff)	$R_{th(j-c)}$	Circuit type
	$T_c=25^\circ\text{C}$	$T_c=80^\circ\text{C}$	V	25 °C typ	@125 °C typ.	K/W	

Standard series 标准系列

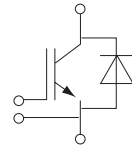
ZG600SGK60C2S	800	600	600	2.35	33.5	0.080
ZG200SGK120C2S	300	200	1200	2.20	48	0.080
ZG300SGK120C2S	430	300	1200	2.40		0.050
ZG400SGK120C2S	550	400	1200	2.10		0.450
ZG800SGK120A3S	1000	800	1200	2.10	250	0.023
ZG1200SGK120A3S	1400	1200	1200	2.40	360	0.016

Low loss and fast series 低损快速系列

ZG200SGL120C2S	370	200	1200	1.80	44	0.0800
ZG300SGL120C2S	570	300	1200	1.80	64	0.0550
ZG400SGL120C2S	625	400	1200	1.80	85	0.0500
ZG600SGL120C2S	910	600	1200	1.90	151	0.0410
ZG800SGL120C3S	1300	800	1200	1.90	248	0.0220
ZG1200SGL120C3S	1900	1200	1200	1.90	360	0.0160
ZG1600SGL120C3S	2450	1600	1200	1.90	470	0.0125
ZG1800SGL120C4S	2850	1800	1200	1.90	525	0.1100
ZG2400SGL120C4S	3700	2400	1200	1.90	720	0.0084
ZG300SGL170C2S	570	300	1700	1.80	225	0.0500
ZG400SGL170C2S	800	400	1700	1.90	305	0.0400
ZG800SGL170C3S	1300	800	1700	1.90	625	0.0260
ZG1200SGL170C3S	1900	1200	1700	1.90	810	0.0130

Ultra fast series 超快系列

ZG400SGU120C2S	510	400	1200	3.15	51	0.0500
ZG600SGU120C2S	700	600	1200	3.15	68	0.0320
ZG800SGU120A3S	1200	800	1200	3.15	134	0.0165



Half Bridge IGBT Modules 半桥IGBT模块

Type	Ic @	Ic @	VCE	VCE(sat) @	(Eon+Eoff)	Rth(J-C)	Circuit type
	Tc=25℃	Tc=80℃		25℃ typ	@125℃ typ.		
	A	A	V	V	mJ	K/W	

Standard series 标准系列

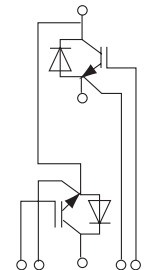
ZG35HFK120C1S	50	35	1200	2.10		0.440
ZG50HFK120C1S	78	50	1200	2.10	14.00	0.300
ZG75HFK120C1S	105	75	1200	2.10	16.50	0.210
ZG100HFK120C1S	145	100	1200	2.10	22.00	0.150
ZG100HFK120C2S	150	100	1200	2.10	19.00	0.150
ZG150HFK120C2S	210	150	1200	2.10	33.00	0.100
ZG200HFK120C2S	290	200	1200	2.10	44.00	0.080

Low loss and fast series 低损快速系列

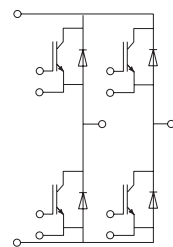
ZG50HFL60C1S	75	50	600	1.60	1.50	0.440
ZG75HFL60C1S	100	75	600	1.60	3.10	0.350
ZG100HFL60C1S	130	100	600	1.60	3.90	0.280
ZG150HFL60C2S	180	150	600	1.70	6.90	0.210
ZG200HFL60C2S	230	200	600	1.60	10.90	0.170
ZG300HFL60C2S	375	300	600	1.70	17.50	0.100
ZG35HFL120C1S	75	35	1200	1.80	8.80	0.400
ZG50HFL120C1S	115	50	1200	1.80	12.60	0.270
ZG75HFL120C1S	170	75	1200	1.80	16.50	0.180
ZG100HFL120C1S	200	100	1200	1.80	22.00	0.160
ZG100HFL120C2S	300	150	1200	1.80	35.00	0.160
ZG150HFL120C2S	300	150	1200	1.80	35.00	0.100
ZG200HFL120C2S	420	200	1200	1.80	45.00	0.080
ZG300HFL120C2S	625	300	1200	1.90	71.00	0.050
ZG400HFL120C3S	650	400	1200	1.80	130.00	0.044
ZG600HFL120C3S	950	600	1200	1.90	190.00	0.032
ZG800HFL120C3S	1250	800	1200	1.90	250.00	0.025
ZG100HFL170C2S	200	100	1700	1.80	80.00	0.130
ZG150HFL170C2S	300	150	1700	1.80	116.00	0.100
ZG200HFL170C2S	400	200	1700	1.80	155.00	0.075
ZG400HFL170C3S	650	400	1700	1.90	330.00	0.038
ZG600HFL170C3S	975	600	1700	1.90	490.00	0.026
ZG800HFL170C3S	1300	800	1700	1.90	625.00	0.020

Ultra fast series 超快系列

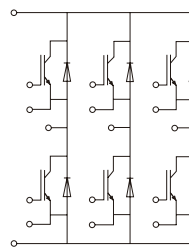
ZG100HFU60C1S	150	100		2.80	7.0	0.270
ZG200HFU60C2S	275	200		2.80	18.5	0.140
ZG50HFU120C1S	100	50		3.50	10.5	0.350
ZG75HFU120C1S	160	75		3.41	11.9	0.250
ZG100HFU120C1S	150	100		3.46	4.1	0.100
ZG100HFU120C2S	150	100		3.15	17.20	0.160
ZG150HFU120C2S	225	150		3.15	25.50	0.100
ZG200HFU120C2S	275	200		3.15	34	0.090
ZG300HFU120C2S	370	300		3.15	40	0.064



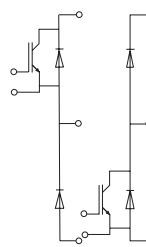
Un-standard IGBT module request, pls contact ZENLI 如需以下非标电路IGBT, 请联系正力。



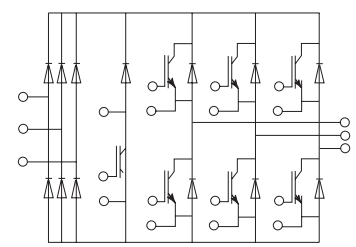
Single-phase bridge
单相桥



3-phase bridge
三相桥



Chopper
斩波器



PIM module
PIM模块

Famous Brand IGBT Replace Part Number 对应替代型号

		Ic at 80℃	Zenli rectifier	Semikron	Infineon
Half bridge	Low loss	50A	ZG50HFL120C1S	SKM75GB128DN	BSM50GB120DLC
		75A	ZG75HFL120C1S	SKM100GB128DN	BSM75GB120DLC
		100A	ZG100HFL120C1S	SKM145GB128DN	BSM100GB120DLCK
		100A	ZG100HFL120C2S	SKM150GB128DN	FF100R12KS4
		150A	ZG150HFL120C2S	SKM200GB128DN	FF150R12KE3G
	Ultra fast	200A	ZG200HFL120C2S	SKM300GB128DN	FF200R12KE3
		300A	ZG300HFL120C2S	SKM400GB128DN	FF300R12KE3
		50A	ZG50HFU120C1S		BSM50GB120DN2
		75A	ZG75HFU120C1S	SKM100GB125DN	BSM75GB120DN2
		100A	ZG100HFU120C2S	SKM150GB125DN	BSM100GB120DN2
	150A	ZG150HFU120C2S	SKM200GB125DN	BSM150GB120DN2	
	200A	ZG200HFU120C2S	SKM300GB125DN	BSM200GB120DN2	
	300A	ZG300HFU120C2S	SKM400GB125DN	FF300R12KS4	

IGBT Modules Version Outline IGBT模块外型

