Ruttonsha International Rectifier Ltd.

RUTTONSHA

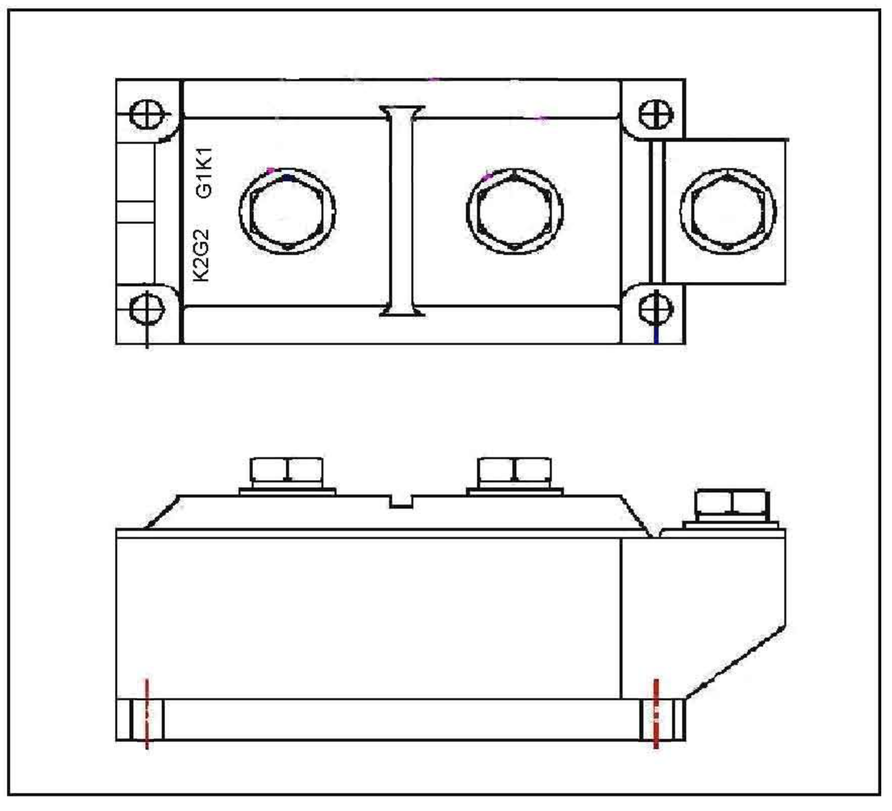
POWER MODULES

IRK.435 SERIES
High Voltage Diode /Diode

Type:- IRK 435

FEATURES

- *Electrically isolated base plate.*
- *3000 V_{RMS} isolating voltage.*
- *Industrial standard package.*
- *Simplified mechanical designs, rapid assembly.*
- *High surge capability.*
- *Large creepage distances.*
- *Aluminum Nitride*



DESCRIPTION

These IRK series of Power Modules use power diodes in Three basic configurations. The semiconductors are electrically isolated from the metal base, allowing common heatsinks and compact assemblies to be built. They can be interconnected to form single phase or three phase bridges.

These modules are intended for general purpose applications such as battery chargers, welders and plating equipment.

MAJOR RATINGS & CHARACTERISTICS

Parameters		IRK 435	Units
$I_{F(AV)}$	@ T_C = 85^{0}C	435	A
$I_{F(RMS)}$		683	A
I_{FSM}	@ 50 Hz	12000	A
I^2t	@ 50 Hz	720	kA^2s
V_{RRM}		3000 to 4200	V
T_J		-40 to 135	^{0}C

IRK .435 SERIES

ELECTRICAL SPECIFICATION

VOLTAGE RATINGS

Type Number	Voltage Code	V_{RRM} max. repetitive peak reverse and off-state voltage blocking voltage V	V_{RSM}, max. non- repetitive peak reverse voltage V	I_{DRM} / I_{RRM} max. @ 150 °C mA
IRK. 435	30	3000	3100	80
	32	3200	3300	
	34	3400	3500	
	36	3600	3700	
	38	3800	3900	
	40	4000	4100	
	42	4200	4300	

ON-STATE CONDUCTION

	Parameters	IRK. 435	Units	Conditions	
$I_{F(AV)}$	Max. average forward current	435	A	180° conduction, half sine wave	
	@ Case temperature	85	°C		
$I_{F(RMS)}$	Max. RMS forward current	683	A	as AC switch	
I_{FSM}	Max. peak, one cycle forward non-repetitive surge current	12000	A	t = 10ms	T_{VJ}= 45°C
I^2t	Maximum I^2t for fusing	720	kA^2s	t = 10ms	
V_{TO}	threshold voltage	0.85	V	T_J =T_J max.	
r_t	Slope resistance	0.33	mΩ		
V_{FM}	Max. forward voltage drop	2.30	V	I_F= 2100A, T_{VJ} =25°	

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BLOCKING

	Parameter	IRK. 435	Units	Conditions
I_{RRM}	Max. peak reverse leakage current	80	mA	T_J = 150°C,
V_{INS}	RMS isolation voltage	3000	V	50Hz,Circuit to base, all terminal shorted, t=1sec

THERMAL AND MECHANICAL SPECIFICATION

	Parameter	IRK. 435	Units	Conditions
T_J	Junction operating temperature	-40 to 135	°C	
T_{stg}	Max. storage temperature range	-40 to 140		
R_{thJ-C}	Thermal resistance, junction to case DC current	0.065	K/W	Per thyristor / per module
T	Mounting tourque, Module to heatsink Busbar to module	4 to 6 8 to 10	Nm Nm	A module compound is recommended and the torque should be rechecked after a period about 3 hours to allow for the spread of the compound.
R_{cs}	Thermal resistance, case to heatsink	0.02	K/W	Mounting surface flat smooth an and greased.
W_T	Approximate Wight	810	g	

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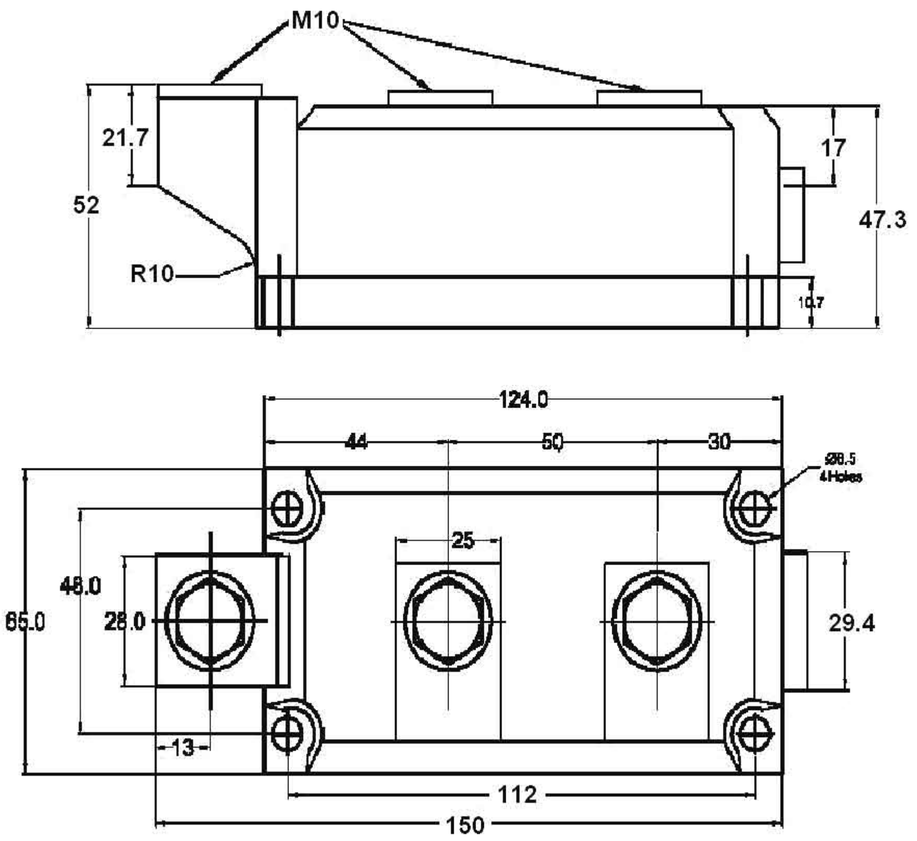
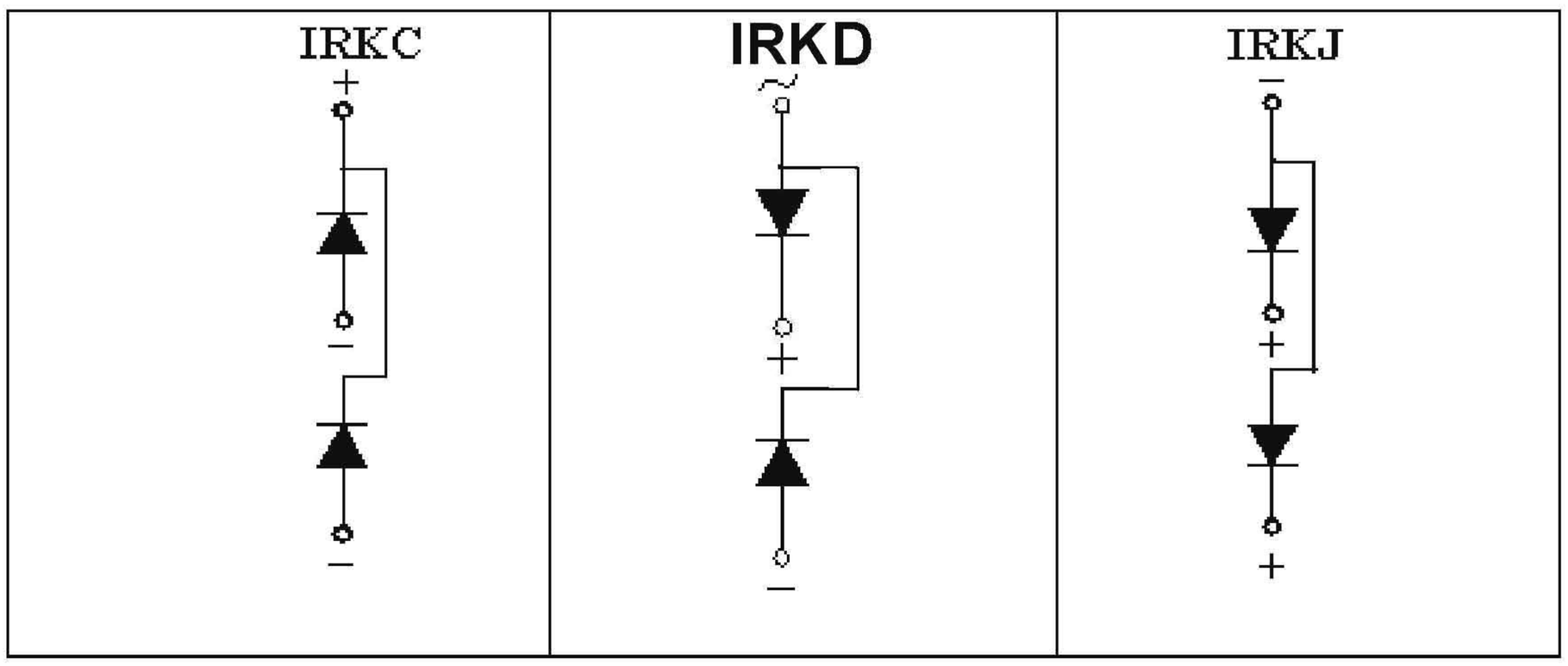
OUTLINE DIAGRAM



Circuit Configuration Table



Ordering Information Table

IRK	D	435	/	42
①	②	③		④

① - **Module type**
② - Circuit configuration (See Circuit Configuration table)
③ - Current Code
④ - Voltage Code (See Voltage Ratings table)