Ruttonsha International Rectifier Ltd.

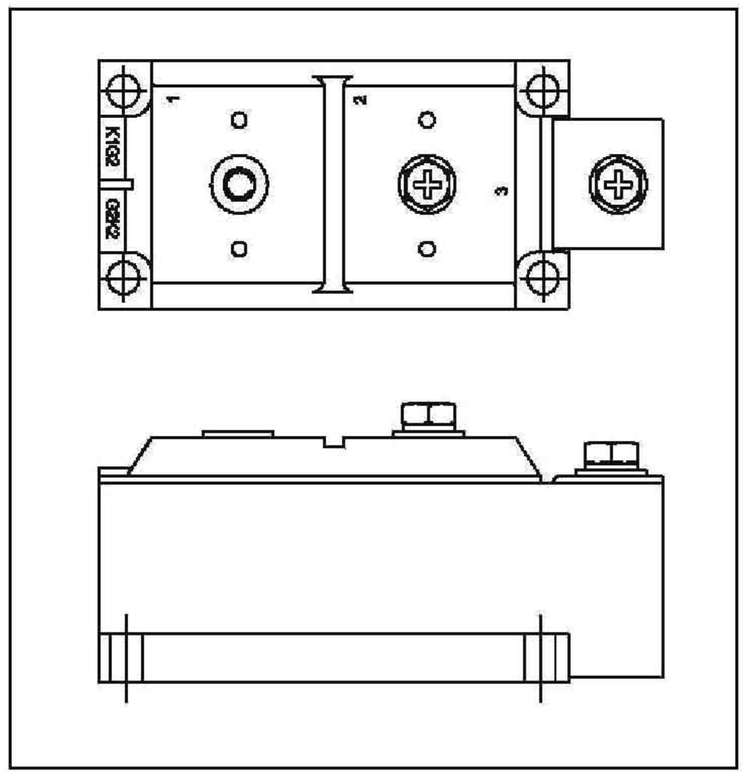
POWER MODULES

IRKD 1000 SERIES

High Voltage Diode Diode Module

FEATURES

- *High voltage.*
- *Electrically isolated base plate.*
- *3500 V_{RMS} isolating voltage.*
- *Industrial standard package.*
- *Simplified mechanical designs, rapid assembly.*
- *High surge capability.*
- *Large creepage distances.*
- *Aluminum Nitride*



DESCRIPTION

This IRKD series of Power Modules uses power 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		IRKD 1000	Units
$I_{F(AV)}$	@ $T_C = 100^0C$	1000	A
$I_{IF(RMS)}$		1570	A
I_{FSM}	@ 50 Hz	31000	A
I^2t	@ 50 Hz	4810	kA^2s
V_{DRM} - V_{RRM}		400 to 1600	V
T_J		-40 to135	^0C

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ELECTRICAL SPECIFICATION

VOLTAGE RATINGS

Type Number	Voltage Code	V_{RRM} , max. repetitive peak reverse voltage blocking voltage V	V_{RSM}, max. non-repetitive peak reverse voltage V	I_{RD} max. @ 135 ^{0}C mA
IRKD 1000	04	400	500	75
	08	800	900	75
	12	1200	1300	75
	16	1600	1700	75

FORWARD CONDUCTION

	Parameters	IRKD 1000	Units	Conditions	
$I_{F(AV)}$	Max. average on- state current	1000	A	180^0 conduction, half sine wave	
	@ case temperature	100	^{0}C		
$I_{F(RMS)}$	Max. RMS on- state current	1570	A		
I_{FSM}	Max. peak, one cycle on- state non-repetitive surge current	31000	A	t = 10ms	
I^2t	Maximum I^2t for fusing	4810	kA^2s	t = 10ms	
$V_{F(TO)}$	Threshold voltage	0.85	V	$T_J = T_J$ max.	
r_f	Slope resistance	0.15	mΩ	$T_J = T_J$ max.	
V_{FM}	Max. voltage drop	1.41	V	I_F = 4000, $T_J = T_J$ max.	
V_{INS}	Isolation Voltage	3000/3500	V	1min /1sec. All terminals shorted	

IRKD 1000 SERIES

THERMAL AND MECHANICAL SPECIFICATION

	Parameter	IRKD 1000	Units	Conditions
T_J	Max. operating temperature range	-40 to 135	^{0}C	
T_{stg}	Max. storage temperature range	-40 to 150		
R_{thJ-C}	Thermal resistance, Junction to case Per module	0.042	^{0}C/W	
R_{thC-H}	Thermal resistance, case to sink	0.02		
T	Mounting tourque, ±10%	9 (18)	Nm	To heatsink and (to terminals)
W	Approx Wt.	3500	gm	

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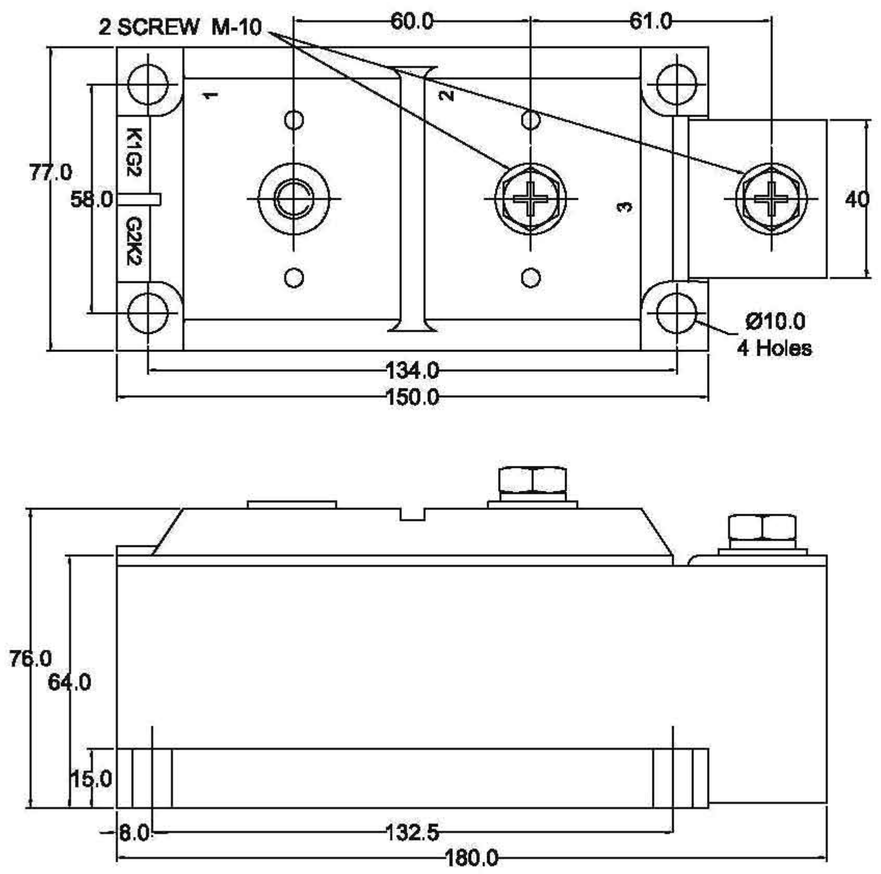
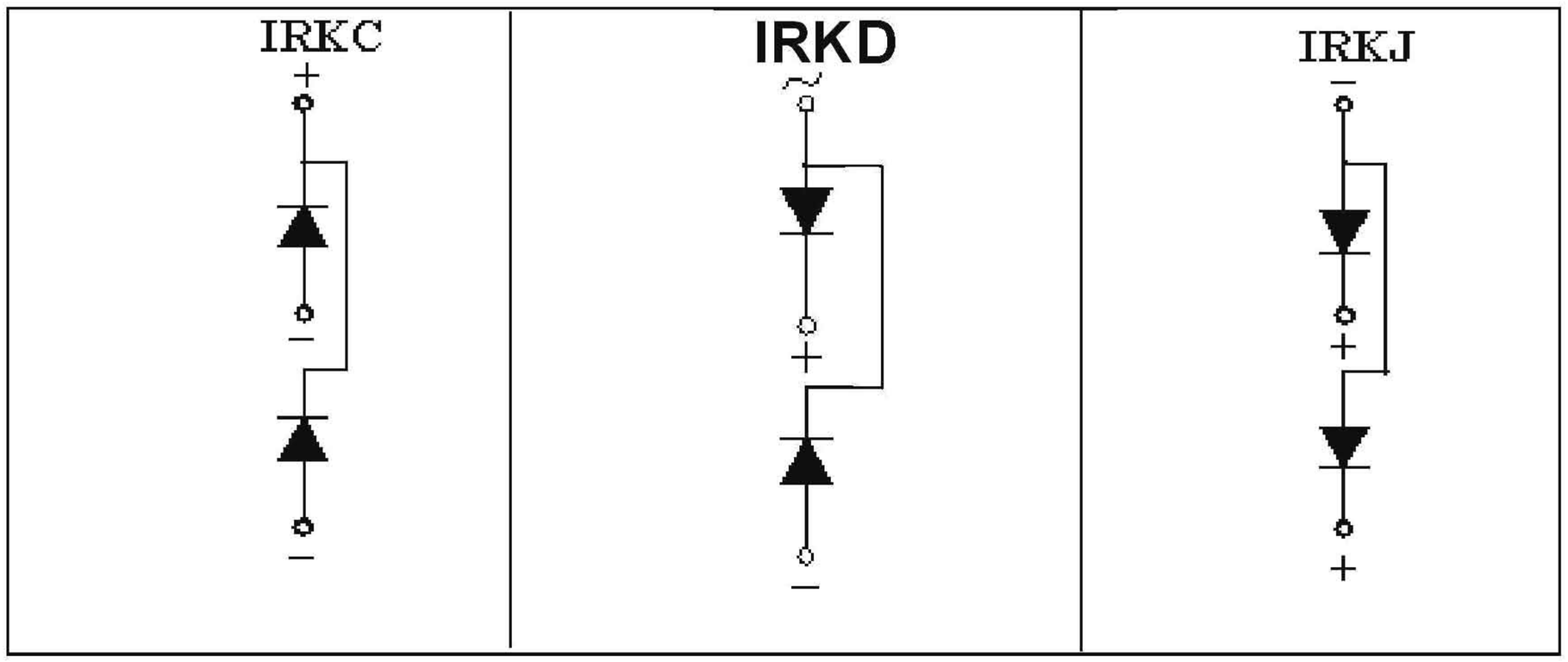
OUTLINE DIAGRAM



ALL DIM. ARE IN MM.

Circuit Configuration Table



Ordering Information Table

IRK	D	1000	/	16
①	②	③		④

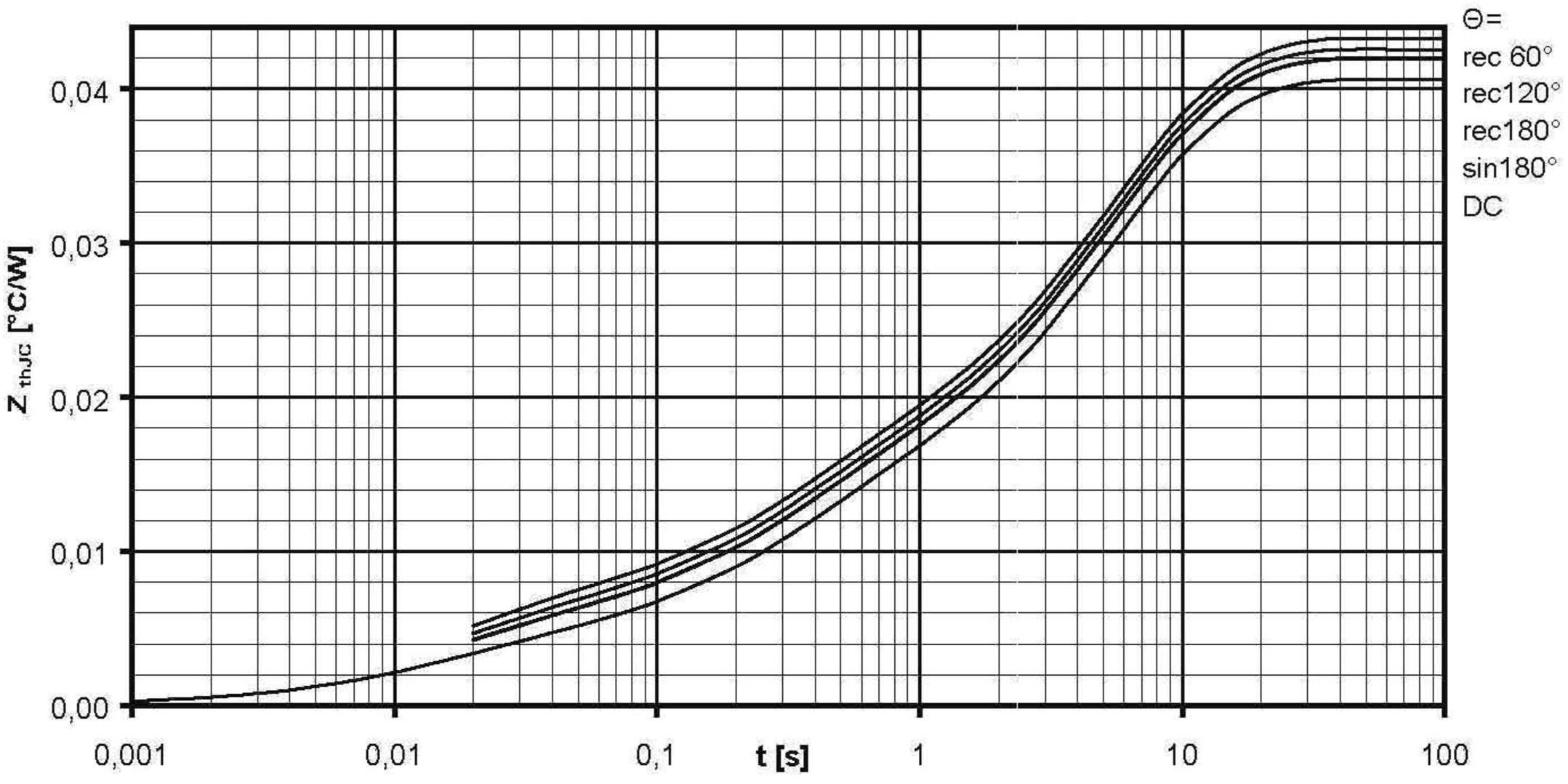
① - **Module type**

② - Circuit configuration (See Circuit Configuration table)

③ - Current Code

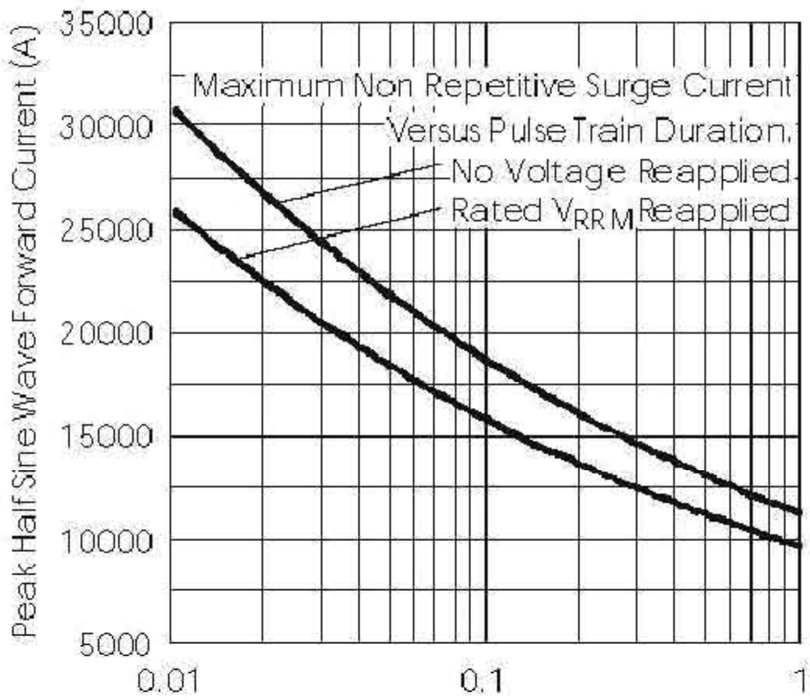
④ - Voltage Code (See Voltage Ratings table)

IRKD 1000 SERIES



Transient thermal impedance per arm Z_{thJC} = f(t)

Current conduction angle Θ



Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

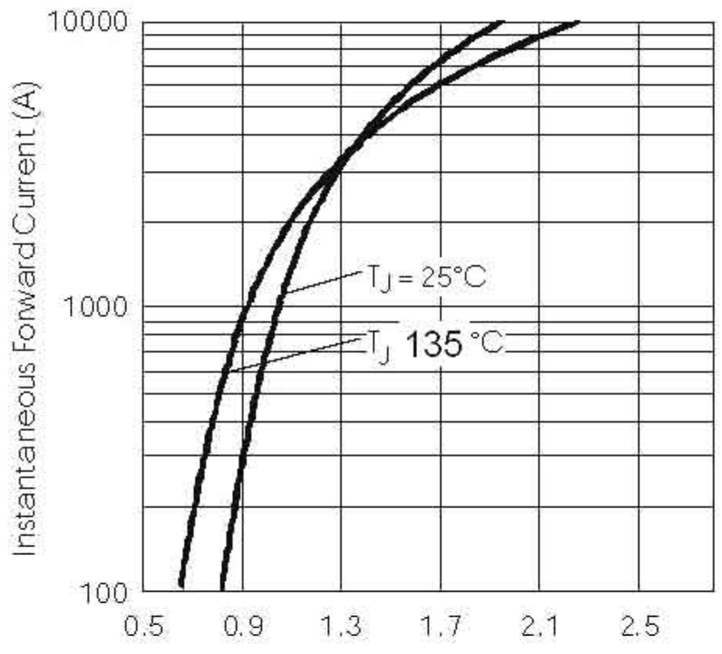


Fig. 9 - Forward Voltage Drop Characteristics