RUTTONSHA

Ruttonsha International Rectifier Ltd.

POWER MODULES

IRKHT 530
High Voltage Single Thyristor Module

FEATURES

 # Electrically isolated base plate.
 # 3500Vrms isolated voltage.
 # Industrial standard package.
 # Simplified mechanical designs, rapid assembly.
 # High surge capability.
 # Aluminum Nitride

DESCRIPTION

These IRK series of Power Modules use power Thyristor/Diodes in four basic configurations. The semiconductors are electrically isolated from the metal base, allowing common heat inks and compact assemblies to be built. They can be interconnected to form single phase or three phase bridges. or AC-Switch when modules are connected in anti-parrallel.
These modules are intended for general purpose applications such as battery chargers. welders and plating equipment.

MAJOR RATING & CHARACTERISTICS

Parameters	IRKHT 530	Units
$I_{T(AV)}$ @Tc-85°C	530	A
$I_{T(RMS)}$	1500	A
I_{TSM} @ 50Hz	22000	A
I^2t @ 50Hz	2420000	A^2S
V_{DRM} V_{RRM}	2600 to 3600	V
T_J	-40 to 125	°C

IRKHT 530 Series

ELECTRICAL SPECIFICATION

VOLTAGE RATINGS

Type Number	Voltage Code	V_{RRM} max. repetitive peak reverse and off-state blocking voltage V	V_{RSM} max.Non-repetitive peak reverse voltage V	I_{DRM} / I_{RRM} max. @ 125°C Max. mA
IRKHT 530	26	2600	2700	250
	28	2800	2900	
	30	3000	3100	
	32	3200	3300	
	34	3400	3500	
	36	3600	3700	

ON-STATE CONDUCTION

	Parameter	IRKHT 530	Unit	Conditions	
$I_{T(AV)}$	Max, average on-state current @ Case temperature	530	A	180° conduction, half sine wave	
		85	°C		
$I_{T(RMS)}$	Max, RMS on-state current	1500	A	as AC switch	
I_{TSM}	Max, peak, one cycle on-state non-repetitive surge current	22000	A	t = 10ms	Sinusoidal half wave. Initial T_j = T_j max.
I^2t	Maximum I^2t for fusing	2420000	A^2s	t = 10ms	
$V_{T(TO)}$	Threshould voltage	1.05	V		
r_t	On state Slope resistance	0.57	mΩ		
V_{TM}	Max, on-state voltage drop	2.78	V	I_T = 3000Amps, 25°C	
I_H	Maximum holding current	500	mA		
I_L	Maximum latching current	1500	mA	T_J = 25°C, RG=33Ω.	

BLOCKING

	Parameter	IRKHT 530	Unit	Conditions
t_{gd}	Delay Time	4.0	µs	T_j = 25°C, gate current = 1A dIg/dt = 1A/µs. Vd = 0.67% V_{DRM}
t_q	Turn-off Time	400	µs	T_j = T_j Max. I_{tm} = I_T avg, V_R = -100V, di/dt = 10A/µs

IRKHT 530 Series

BLOCKING

	Parameter	IRKHT 530		Unit Conditions
dv/dt	Maximum critical rate of rise off-state voltage	1000	V/µs	Tj = 125°C, exponential to 67% rated V_{DRM}
I_{RRM} I_{DRM}	Max. peak reverse and off-state leakage current	250	mA	Tj = 125°C, rated V_{DRM} /V_{RRM} applied
di/dt	Repetitive Critical rate of rise of turned-on current	80	A/µs	Tj = 125°C

TRIGGERING

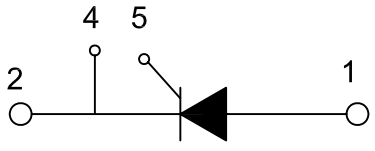
	Parameter	IRKHT 530	Unit	Conditions
I_{GT}	DC gate current required to trigger	250	mA	VD = 12V.
V_{GT}	DC gate voltage for to trigger	3.0	V	VD = 12V.
V_{GD}	DC gate voltage not to trigger	0.25	V	Tj = 125°C Max. gate current/voltage not to trigger the max, value which will not trigger any unit with rated V_{DRM} anode-to-cathode applied
I_{GD}	DC gate current not to trigger	10.0	mA	Tj = 125°C
V_{INS}	RMS isolation voltage	3.5	kV	50Hz, Circuit to base, all terminal shorted. 25°C. t = 60 Sec

THERMAL AND MECHANICAL SPECIFICATION

	Parameter	IRKHT 530	Unit	Conditions
T_J	Max, operating temperature range	-40 to 125	°C	
T_{stg}	Max, storage temperature range	-40 to 130		
R_{thJ-C}	Max, thermal resistance, junction to case	0.045	K/W	Per Thyristor / per Module
T	Mounting tourque, ±15%	6	Nm	
W t	Approximate Weight	2000	g	

CIRCUIT CONFIGURATION TABLE

IRKHT



IRKHT 530 Series

CIRCUIT CONFIGURATION TABLE

IRK	HT	530	/	36
①	②	③		④

1). - Module Type
2). - Circuit configuration (See Circuit Configuration table)
3). - Current Code
4). - Voltage Code (See Voltage Rating Table)

OUTLINE DIAGRAM