RUTTONSHA

Ruttonsha International Rectifier Ltd.

SILICON CONTROL RECTIFIER

High Power Thyristor
Hockey Puk Version Q-PUK
Series 6000PQ 60

FEATURES

 # Center amplifying gate.
 # Metal case with ceramic insulator.
 # High profile hokey - puk.

TYPICAL APPLICATION

 # DC Motor control (e.g. for machine tools).
 # Controlled rectifiers (e.g. for battery charging Uninterrupted power supply).
 # AC Controllers (e.g. for temperature control lights control).

MAJOR RATING & CHARACTERISTICS

Parameters		6000 PQ	Units
$I_{T(AV)}$	@ 55°C	6012	A
$I_{T(RMS)}$	@ 25°C	11795	A
I_{TSM}	@ 50Hz	65	kA
I^2t	@ 50Hz	21.13×10^6	A^2S
V_{DRM} -V_{RRM}		400 - 600	V
T_J		-40 to 140	°C

6000 PQ SERIES

ELECTRICAL SPECIFICATION

VOLTAGE RATINGS

Type Number	Voltage Code	V_{RMM} /V_{DRM} max. repetitive peak reverse voltage V	V_{RSM} max.Non-repetitive peak reverse voltage V	I_{DRM} / I_{RRM} max. @ 125°C Max. mA
6000 PQ	40	400	500	100
	60	600	700	

ON-STATE CONDUCTION

	Parameter	6000PQ	Unit	Conditions	
$I_{T(AV)}$	Max, average on-state current @ Case temperature	6012	A	180° conduction, half sine wave	
		55	°C		
$I_{T(RMS)}$	Max, RMS on-state current @25°C	11795	A	as AC switch	
I_{TSM}	Max, peak, one cycle on-state, non-repetitive surge current	65	kA	t = 10ms	Sinusoidall half wave, Initial Tj = Tj max.
I^2t	Maximum I^2t for fusing	21.13×10^6	A^2s	t = 10ms	Sinusoidall half wave, Initial Tj = Tj max.
$V_{T(TO)}$	Threshould voltage	0.853	V	Tj = Tj max.	
r_t	On-state slope resistance	0.029	mΩ	Tj = Tj max,	
V_{TM}	Max, on-state voltage drop	0.95	V	I_T = 4000Amps, 125°C	
I_H	Holding current	1000	mA	Anod supply = 12V, initial I_T = 30μs, Tj = 25°C	
I_L	Latching current	1	A	Anod supply = 12V, resistive load =1 Ω, gate pulse : 10V, 100μs, Tj = 25°C	
t_{rr}	Reverse recovery time	19	μs	I_{TM}=2000Amps, t_p = 2000μs. di/dt=μS. V_r=100V.	

BLOCKING

	Parameter	6000 PQ		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	100	mA	Tj = 125°C, rated V_{DRM} /V_{RRM} applied
di/dt	Repetitive Critical rate of rise of on-state current	200	A/μs	Itrm - 2000A, Tj = 125°C

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TRIGGERING

	Parameter	6000 PQ	Unit	Conditions
P_{GM}	Max, peak gate power	30	W	Tj = 125°C, tp = 100 µs
$P_{G(AV)}$	Maximum average gate power	4		Tj = 125°C, f = 50Hz, d% = 50
I_{GM}	Max, peak positive gate current	3.0	A	Tj = 125° C, tp ≤ 5ms
$+V_{GM}$	Max. peak positive gate voltage	20.0	V	Tj = 125°C tp ≤ 5ms
$-V_{GM}$	Max. peak negative gate voltage	5.0		
I_{GT}	DC gate current required to trigger	300	mA	VD = 12V.
V_{GT}	DC gate voltage for to trigger	3.0	V	VD = 12V.
I_{GD}	DC gate current not to trigger	10	mA	Tj = Tj max.
V_{GD}	DC gate voltage not to trigger	0.25	V	

THERMAL AND MECHANICAL SPECIFICATION

	Parameter	6000 PQ	Unit	Conditions
T_J	Max, operating temperature range	-40 to 140	°C	
T_{stg}	Max, storage temperature range	-40 to 150		
R_{thJ-h}	Max, thermal resistance, junction to heat sink	0.011	K/W	Double side cooled.
F	Mounting force ±10%	36 to 44	kN	
W t	Approximate Weight	1200	g	
	Case style	Q-PUK		

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OUTLINE DIAGRAM

Q-PUK