



Ruttonsha International Rectifier Ltd.

SILICON CONTROLLED RECTIFIER

High Power Thyristor
Hockey Puk Version
V-PUK Series 5900PV
Type:- 5900PV

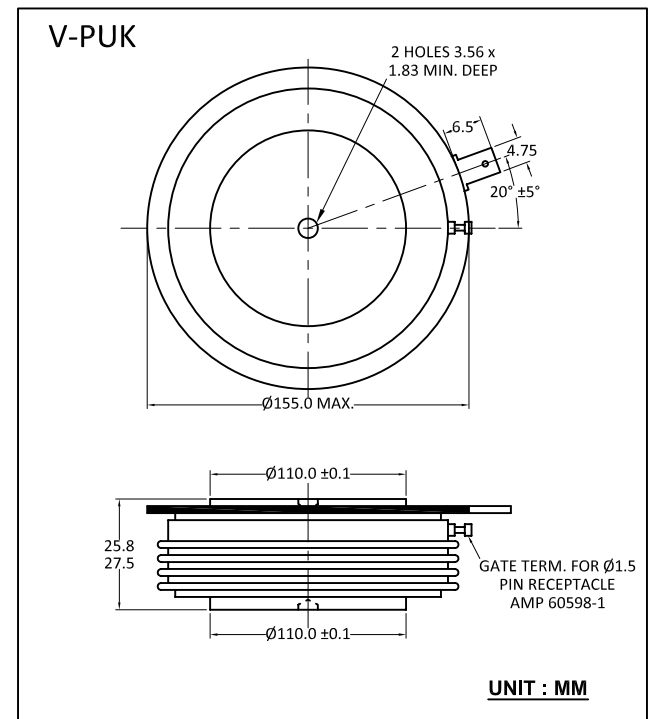
FEATURES

- * Center Amplifying gate.
- * Lower spreading losses with high dv/dt withstand.
- * High profile -puk.

TYPICAL APPLICATION

- * Dc motor control (e.g. for machine tools)
- * Controlled rectifiers
- * HVDC Valves.
- * Static VAR Compensator.
- * Synchronous motor drives.

OUT LINE DIAGRAM



MAJOR RATING & CHARACTERISTICS

Parameters	5900PV	Units
$I_{T(AV)}$	5900	A
@ T_{hs}	55	°C
$I_{T(RMS)}$	9263	A
@ T_{hs}	55	°C
I_{TSM}	@ 50Hz	75 KA
I^2t	@ 50Hz	$28.1 \times 10^6 A^2s$
V_{DRM}/V_{RRM}	2000 to 3000	V
t_q	@ $T_j = 115^\circ C$	400 μs
T_j	115	°C

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ELECTRICAL SPECIFICATION VOLTAGE RATINGS

Type Number	Voltage Code	V_{DRM}/V_{RRM} max. repetitive peak reverse voltage V	V_{DSM}/V_{RSM} max.Non-repetitive peak reverse voltage	I_{DRM}/I_{RRM} max. @ $T_J = T_J$ Max. mA
5900PV	200	2000	2100	300
	220	2200	2300	
	240	2400	2500	
	260	2600	2700	
	280	2800	2900	
	300	3000	3100	

FORWARD CONDUCTION

Parameter	5900PV	Unit	Conditions
$I_T(AV)$ Max, average on-state current @ Heatsink temperature	5900	A	180° conduction, half sine wave Double side cooled
	55	°C	
$I_{T(RMS)}$ Max, RMS on-state current	9263	A	DC @ 25°C heat sink temperature double side cooled
I_{TSM} Max, peak, one-cycle non-repetitive surge current	75	KA	t - 10ms Sinusoidal half wave, Initial $T_J = T_J$ max,
I^2t Max, I^2t for fusing	28.1×10^6	A ² s	
$V_{T(TO)}$ Threshold voltage	0.80	V	$T_J = T_J$ max,
r_t On-state slop resistance	0.15	mΩ	$T_J = T_J$ max,
V_{TM} Max, on state voltage	1.55	V	$I_{PK} = 4000A$, $T_J = T_J$ max, $t_p = 10ms$ sine pulse
I_H Max, holding current	1000	mA	$I_J = 25^\circ C$, anode supply 12V resistive load
I_L Typical Latching Current	1000	mA	$I_J = 25^\circ C$, anode supply 12V resistive load

Switching

Parameter	5900PV	Unit	Conditions
di/dt Max, non-repetitive rate of rise of turned-on current	100	A/μs	Gate drive 20V, 20Ω, $t_r \leq 1\mu s$ $T_J = T_J$ max. anode voltage $\leq 80\% V_{DRM}$
T_q Typical turn-off time	400	μs	$I_{TM} = 1000A$, $T_J = T_J$ max. di/dt 5A/μs, $V_R = 100V$, $dv/dt = 20V/\mu s$ up to 2000V, $t_p = 500\mu s$

Blocking

Parameter	5900PV	Unit	Conditions
dv/dt Max, Critical rate of rise of off-state voltage	1000	V/μs	$T_J = T_J$ max. linear to 67% rated V_{DRM}
I_{RRM} I_{DRM} Max, peak reverse and off-state leakage current	300	mA	$T_J = T_J$ max. rated V_{DRM}/V_{RRM} applied

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Triggering

Parameter	5900PV	Unit	Conditions
P _{GM} Maximum peak gate power	16	W	T _j = T _j max. t _p ≤ 5 ms
P _{G(AV)} Maximum average gate power	5	W	T _j = T _j max. f = 50Hz, d% = 50
I _{GM} Max. peak positive gate current	3	A	T _j = T _j max. t _p ≤ 5 ms
+V _{GM} Max. peak positive gate voltage	20	V	T _j = T _j max. t _p ≤ 5 ms
-V _{GM} Max. peak negative gate voltage	5.0	V	T _j = T _j max. t _p ≤ 5 ms
I _{GT} DC gate current required to trigger	300	mA	T _j = 25°C Max, required gate trigger/current/voltage are the Lowest value witch will trigger all units 12V anode-to-cathode applied.
V _{GT} DC gate voltage required to trigger	4.0	V	
I _{GD} DC gate current not to trigger	20	mA	T _j = T _j max. Max, gate current/voltage not to trigger is the max. value witch will not trigger any unit with rated V _{DRM} anode-to-cathode applied
V _{GD} DC gate voltage not to trigger	0.25	V	

Thermal and Mechanical specification

Parameter	5900PV	Unit	Conditions
T _J Max. operation temperature range	115	°C	
T _{STG} Max. storage temp. range	130	°C	
R _{thJ-hs} Max. thermal resistance junction to heatsink	0.0047	K/W	DC operation double side cooled
F Mounting force, ±10%	100 - 110	KN	
wt Approximate weight	2500	g	
Case Style	V-PUK		See outline table