Ruttonsha International Rectifier Ltd.

SILICON CONTROLLED RECTIFIERS

RUTTONSHA

High Power Thyristor
Hockey Puk Version
A-PUK Series 340PA

Types : 340PA 120 to 340PA 180

FEATURES

- *Center amplifying gate.*
- *International standard case TO-200AB (A-PUK)*

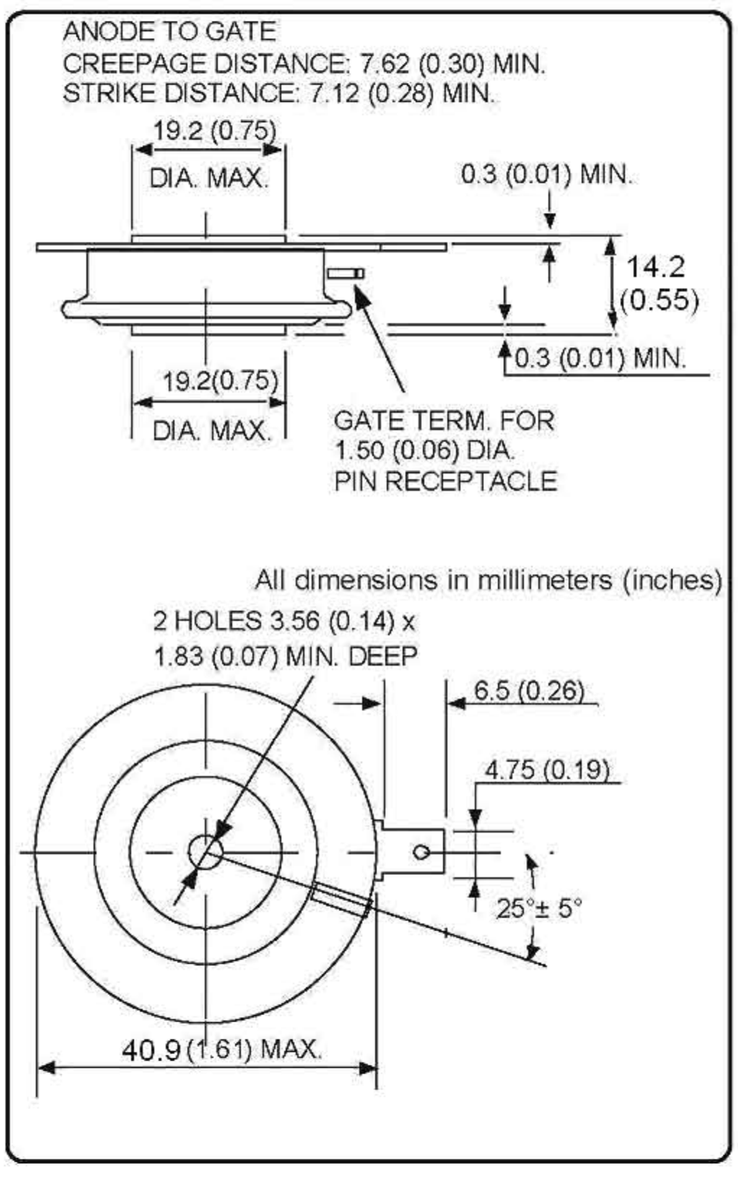
TYPICAL APPLICATIONS

- *DC motor control (e.g. for machine tools).*
- *Controlled rectifiers (e.g. for battery charging, UPS).*
- *AC controllers (e.g. for temperature control, lights control).*

340 PA ...

MAJOR RATINGS & CHARACTERISTICS

Parameters		340 PA	Units
$I_{T(AV)}$		323	A
	@ T_{hs}	85	^{0}C
$I_{T(RMS)}$		507	A
	@ T_{hs}	85	^{0}C
I_{TSM}	@ 50 Hz	5700	A
I^2t	@ 50 Hz	163	KA^2s
V_{DRM} / V_{RRM}		1200 to 1800	V
t_q	typical	50 - 150	µs
T_J		-40 to 125	^{0}C



SILICON CONTROLLED RECTIFIERS

340PA

ELECTRICAL SPECIFICATION

VOLTAGE RATINGS

Type Number	Voltage Code	V_{RRM} / V_{DRM}, max. repetitive peak and off-state voltage V	V_{RSM}, max. non-repetitive peak voltage V	I_{DRM} / I_{RRM} max. @ 125°C mA
340PA	120	1200	1300	40
	140	1400	1500	
	160	1600	1700	
	180	1800	1900	

ON-STATE CONDUCTION

	Parameter	340PA	Units	Conditions
$I_{T(AV)}$	Max. average on-state current	323	A	180° conduction, half sine wave
	@ heat sink temperature	85	°C	double side cooled
$I_{T(RMS)}$	Max. RMS on-state current	507		@85°C heat sink temperature double side cooled
I_{TSM}	Max. peak , one cycle non-repetitive surge current	5700	A	t = 10ms
I^2t	Maximum I^2t for fusing	163	kA^2s	t = 10ms
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	1630	$kA^2\sqrt{s}$	t = 0.1 to 10ms. No voltage reapplied.
$V_{T(TO)}$	Threshold voltage	1.0	V	$T_J = T_J$ max.
r_t	On state slope resistance	0.85	mΩ	$T_J = T_J$ max.
V_{TM}	Max. on state voltage typ/max.	1.9	V	I_{pk} =1000A, T_J = 25°C, t_p = 10ms sine pulse
I_H	Maximum holding current	150 - 400	mA	T_J = 25°C, anode supply 12V resistive load
I_L	Latching current	600		

SWITCHING

	Parameter	340PA	Units	Conditions
di/dt	Max. non-repetitive rate of rise of turned-on current	100	A/µs	Gate drive 20V, 20Ω, tr ≤ 1 µs T_J = 125°C, I_F = 2A tr ≤ 0.5 µs
t_d	Typical delay time	1.0	µs	Gate current 1A, di_g/dt = 1A/µs V_d = 0.67% V_{DRM}, T_J = 25°C
t_q	Typical turn-off time	50 - 150		I_{TM} = 300A, T_J = 125°C, di/dt = 20A/µs, V_R = 50V dv/dt = 20V/µs, Gate 0V 100Ω, t_p = 500µs

SILICON CONTROLLED RECTIFIERS

340PA

BLOCKING

	Parameter	340PA	Units	Conditions
dv/dt	Maximum critical rate of rise of off-state voltage	500	V/µs	T_J = 125°C, linear to 80% rated V_{DRM}
I_{RRM} I_{DRM}	Max. peak reverse and off-state leakage current	40	mA	T_J = 125°C, rated V_{DRM} /V_{RRM} applied

TRIGGERING

	Parameter	340PA	Units	Conditions	
		MAX.			
I_{GT}	DC gate current required to trigger	150	mA	T_J = 25°C	Max. required gate trigger/current / voltage are the lowest value which will trigger all units 12V anode-to-cathode applied.
V_{GT}	DC gate voltage required to trigger	3.0	V	T_J = 25°C	
I_{GD}	DC gate current not to trigger	10	mA	T_J = 125°C	Max. gate current / voltage not to trigger is the max. value which 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	340PA	Units	Conditions
T_J	Max. operating temperature range	-40 to 125	°C	
T_{stg}	Max. storage temperature range	-40 to 130		
$R_{thJ\text{-}hs}$	Max. thermal resistance, junction to heat sink	0.074	K/W	DC operation double side cooled
F	Mounting force, ±10%	4900 (500)	N (kg)	
wt	Approximate weight	50	g	
	Case style	To - 200AB (A-PUK)		See outline