Ruttonsha International Rectifier Ltd.

SILICON CONTROLLED RECTIFIERS

High Power Thyristor
Hockey Puk Version
E-PUK Series 550PE

Types : 550PE 80 to 550PE 160

FEATURES

- *Center amplifying gate.*
- *International standard case TO-200AB (E-PUK)*
- *High profile hockey - puk.*

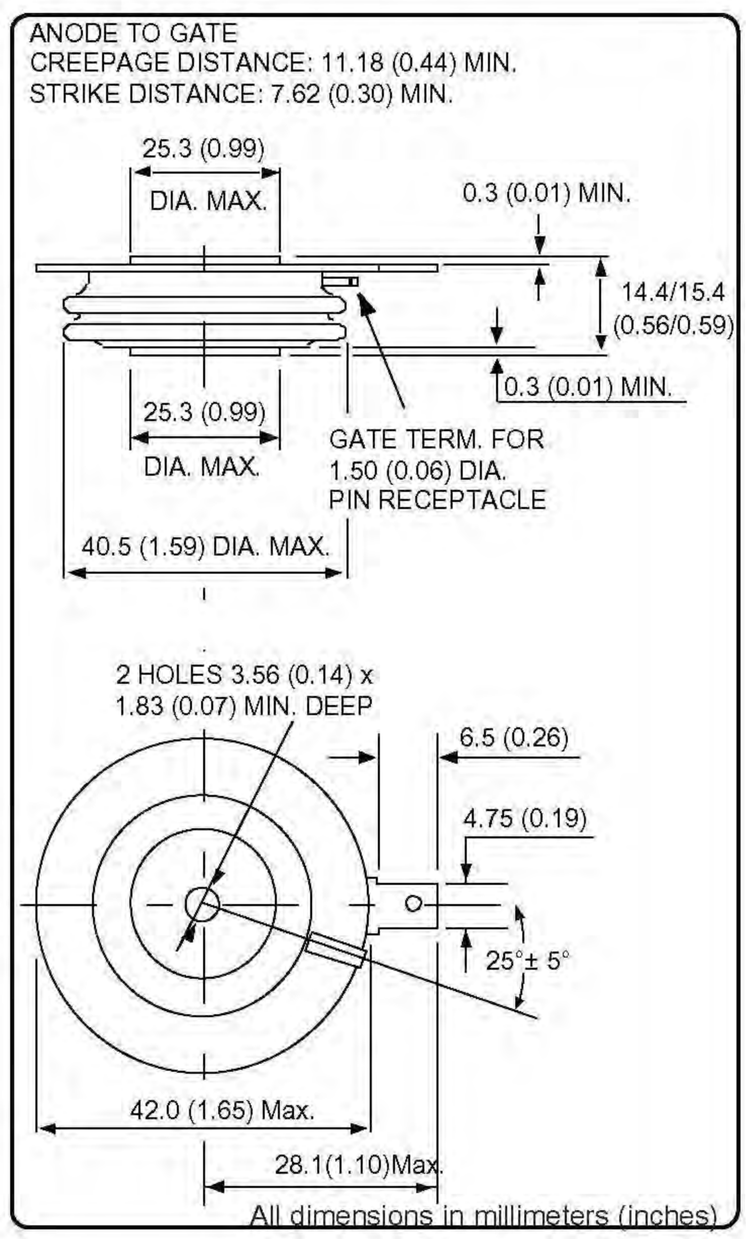
TYPICAL APPLICATIONS

- *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).*

550PE...

MAJOR RATINGS & CHARACTERISTICS

Parameters		550PE	Units
$I_{T(AV)}$		550	A
	@ T_{hs}	85	^{0}C
$I_{T(RMS)}$		863	A
	@ T_{hs}	55	^{0}C
I_{TSM}	@ 50 Hz	9000	A
I^2t	@ 50 Hz	405	KA^2s
V_{DRM} / V_{RRM}		800 to 1600	V
t_q	typical	50 - 150	µs
T_J		-40 to 125	^{0}C



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550PE

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
550PE	80	800	900	50
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	
	160	1600	1700	

ON-STATE CONDUCTION

	Parameter	550PE	Units	Conditions	
$I_{T(AV)}$	Max. average on-state current	550	A	180° conduction, half sine wave	
	@ heat sink temperature	85	°C	double side cooled	
$I_{T(RMS)}$	Max. RMS on-state current	863		@55°C heat sink temperature (double side cooled)	
I_{TSM}	Max. peak one cycle non-repetitive surge current	9000	A	t = 10ms	Sinusodial half wave, Initial T_J = 25°C
I^2t	Maximum I^2t for fusing	405	kA^2s	t = 10ms	
$I^2\sqrt{t}$	Maximum I^2t for fusing	4050	$kA^2\sqrt{s}$	t = 0.1 to 10ms. No voltage reapplied.	
$V_{T(TO)}$	Threshold voltage	0.925	V	T_J = T_J max.	
r_T	High level value of on state slope resistance	0.45	mΩ	T_J = T_J max.	
V_{TM}	Max. on state voltage	1.65	V	I_{pk} = 1500A, T_J = 125°C, t_p = 10ms sine pulse	
I_H	Maximum holding current typ/max.	150/500	mA	T_J = 25°C, anode supply 12V resistive load	
I_L	Latching current typ/max.	500/2000			

SWITCHING

	Parameter	550PE	Units	Conditions
di/dt	Max. non-repetitive rate of rise of turned-on current	125	A/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		T_J = 125°C,

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BLOCKING

	Parameter	550PE	Units	Conditions
I_{RRM} I_{DRM}	Max. peak reverse and off-state leakage current	50	mA	T_J = 125°C, rated V_{DRM} /V_{RRM} applied
dv/dt	Max. critical rate of rise of off-state voltage	500	V/µs	Tj -Tj max. linear to 80%rated V_{DRM} applied

TRIGGERING

	Parameter	550PE	Units	Conditions	
I_{GT}	DC gate current required to trigger	MAX. 250	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	550PE	Units	Conditions
T_J	Max. operating temperature range	-40 to 125	°C	
T_{stg}	Max. storage temperature range	-40 to 130		
R_{thJ-hs}	Max. thermal resistance, junction to heat sink	0.059	K/W	DC operation double side cooled
F	Mounting force, ±10%	9800 (1000)	N (kg)	
wt	Approximate weight	83	g	
	Case style	To - 200AB (E-PUK)		See outline