Ruttonsha International Rectifier Ltd.

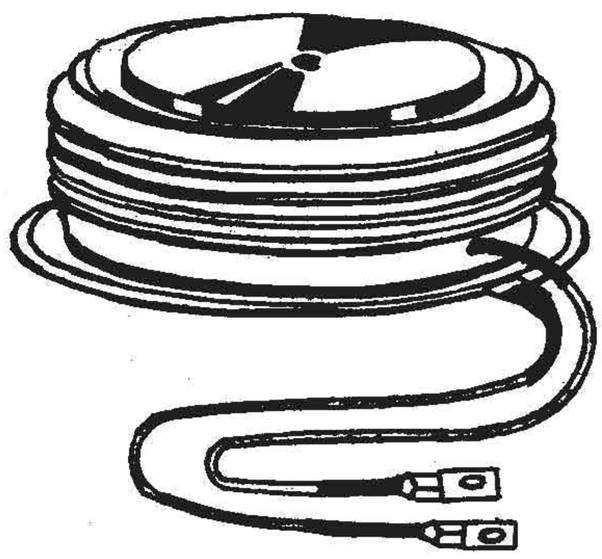
SILICON CONTROLLED RECTIFIERS

High Power Thyristor
Hockey Puk Version
Q/R-PUK Series 2800PQ/PR

Types : 2800PQ/PR 180 to 360

FEATURES

- *Center amplifying gate.*
- *Metal case with ceramic insulator*
- *High profile hockey - puk.*



TYPICAL APPLICATIONS

- *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 Ratings and Characteristics

Parameter		2800PQ/PR	Units
$I_{T(AV)}$		2824	A
	@ T_{hs}	55	℃
$I_{T(RMS)}$		4433	A
	@ T_{hs}	55	℃
I_{TSM}	@ 50 Hz	40	kA
I^2t	@ 50 Hz	8000	KA^2s
V_{DRM}/V_{RRM}		1800 to 3600	V
t_q	typical	400	µs
T_J		-40 to 125	℃

ELECTRICAL SPECIFICATIONS

2800PQ/PR Series

Voltage Ratings

Type number	Voltage Code	V_{DRM}/V_{RRM}, max repetitive peak and off-state voltage V	V_{RSM},maximum non-repetitive peak voltage V	I_{DRM}/I_{RRM} max. @ $T_J = T_J$ max. mA
2800PQ/PR	180	1800/1800	1900	250
	220	2200/2200	2300	
	260	2600/2600	2700	
	300	3000/3000	3100	
	340	3400/3400	3500	
	360	3600/3600	3700	

On - state Conduction

	Parameter	2800PQ/PR	Units	Conditions		
$I_{T(AV)}$	Max. average on-state current	2824	A	180° conduction, half sine wave		
	@ Heatsink temperature	55	°C	double side cooled		
$I_{T(RMS)}$	Max RMS on-state current	4433	A	DC@55°C heatsink temperature double side cooled		
I_{TSM}	Max. peak, one-cycle non-repetitive surge current	40	KA	t = 10 ms		Sinusoidal half wave, Initial T_J=25°C
I^2t	Maximum I^2t for fusing	8000	KA^2s	t = 10 ms		
$V_{T(TO)}$	Threshold voltage	0.97	V	T_J=T_J max		
r_t	On-state slope resistance	0.16	mΩ	T_J=T_J max.		
V_{TM}	Max. on state voltage	1.87	V	I_{PK} = 4000 A,T_J=T_J max, t_P = 10 ms sine pulse		
I_H	Maximum holding current	400	mA	T_J = 25°C , anode supply 12 V resistive load		
I_L	Maximum latching current	1000	mA	T_J = 25°C , anode supply 12 V resistive load		

2800PQ/PR Series

Switching

	Parameter	2800PQ/PR	Units	Conditions
di/dt	Max. non-repetitive rate of rise of turned-on current	100	A/μs	F=50$_{HZ}$ I_{GM} = 1.6A dig/dt=1.6A/μs
t_q	Typical turn-off time	400	μs	T_J=T_J max. I_{TM} = I_{TAVM} V_{RM} 100V V_{DM} = 0.67 V_{DRM} dv/dt = 20 v/μs -di/dt = 10 A/μs

Blocking

	Parameter	2800PQ/PR	Units	Conditions
dv/dt	Maximum critical rate of rise of off-state voltage	500	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	250	mA	T_J = T_J max. rated V_{DRM} /V_{RRM} applied

*Higher dv/dt is available on request

Triggering

	Parameter	2800PQ/PR	Units	Conditions	
t_{GD}	Gate controlled delay time max.	3.0	μs	T_J = 25°C I_{GM} = 1.6A dic/dt = 1.6A/ μs	
		MAX.			
I_{GT}	DC gate current required to trigger	250	mA	T_J = 25°C	Max.required gate trigger/ current/voltage are the lowest value which will trigger all units 12 V 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 = T_J max.	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		

PHASE CONTROL THYRISTORS

Types : 2800PQ/PR

Thermal and Mechanical Specifications

	Parameter	2800PQ/PR	Units	Conditions
T_J	Max.operating temperature range	-40 to 125	°C	
T_{stg}	Max.storage temperature range	-40 to 150		
R_{thJ-hs}	Max. thermal resistance, junction to heatsink	0.012	K/W	DC operation double side cooled
F	Mounting force, ± 10%	40	KN	
wt	Approximate weight	1050/1500	g	
	Case style	Q/R-PUK		See Outline Table