

PASSIVATED ASSEMBLED CIRCUIT ELEMENTS

Features

- Glass passivated junctions for greater reliability
- Electrically isolated base plate
- Available up to 1200 V_{RRM}, V_{DRM}
- High dynamic characteristics
- Wide choice of circuit configurations
- Simplified mechanical design and assembly
- UL E78996 approved 



Description

The P400 series of Integrated Power Circuits consists of power thyristors and power diodes configured in a single package. With its isolating base plate, mechanical designs are greatly simplified giving advantages of cost reduction and reduced size.

Applications include power supplies, control circuits and battery chargers.

Major Ratings and Characteristics

Parameters	P400	Units
I_D	40	A
@ T_C	80	°C
I_{FSM}	@ 50Hz	385 A
	@ 60Hz	400 A
I^2t	@ 50Hz	745 A ² s
	@ 60Hz	680 A ² s
$I^2\sqrt{t}$	7450	A ² √s
V _{RRM}	400 to 1200	V
V _{INS}	2500	V
T _J	- 40 to 125	°C

ELECTRICAL SPECIFICATIONS
Voltage Ratings

Type number	V_{RRM} maximum repetitive peak reverse voltage V	V_{RSM} maximum non-repetitive peak reverse voltage V	V_{DRM} maximum repetitive peak off-state voltage V	I_{RRM} max. @ T_J max. mA
P401, P421, P431	400	500	400	10
P402, P422, P432	600	700	600	
P403, P423, P433	800	900	800	
P404, P424, P434	1000	1100	1000	
P405, P425, P435	1200	1300	1200	

On-state Conduction

Parameter		P400	Units	Conditions			
I _D	Maximum DC output current	40	A	@ T _C = 80°C, full bridge circuits			
I _{TSM}	Max. peak one-cycle	385	A	t = 10ms	No voltage	Sinusoidal half wave, Initial T _J = T _J max.	
I _{FSM}	non-repetitive on-state or forward current	400		t = 8.3ms	reapplied		
		325		t = 10ms	100% V _{RRM}		
		340		t = 8.3ms	reapplied		
I ² t	Maximum I ² t for fusing	745	A ² s	t = 10ms	No voltage		
		680		t = 8.3ms	reapplied		
		530		t = 10ms	100% V _{RRM}		
		480		t = 8.3ms	reapplied		
I ² √t	Maximum I ² √t for fusing	7450	A ² √s	t = 0.1 to 10ms, no voltage reapplied I ² t for time tx = I ² √t · √tx			
V _{T(TO)1}	Low value of threshold voltage	0.83	V	(16.7% × π × I _{T(AV)}) < I < π × I _{T(AV)} , T _J = T _J max.			
V _{T(TO)2}	High value of threshold voltage	1.03		(I > π × I _{T(AV)}), T _J = T _J max.			
r _{t1}	Low level value of on-state slope resistance	9.61	mΩ	(16.7% × π × I _{T(AV)}) < I < π × I _{T(AV)} , T _J = T _J max.			
r _{t2}	High level value of on-state slope resistance	7.01		(I > π × I _{T(AV)}), T _J = T _J max.			
V _{TM} V _{FM}	Max. peak on-state or forward voltage drop	1.4	V	T _J = 25°C, I _{TM} = π × I _{T(AV)} T _J = 25°C, I _{TM} = π × I _{F(AV)}			
di/dt	Maximum non repetitive rate of rise of turned on current	200	A/μs	T _J = 125°C from 0.67 V _{DRM} I _{TM} = π × I _{T(AV)} , I _g = 500mA, tr < 0.5μs, tp > 6μs			
I _H	Maximum holding current	130	mA	T _J = 25°C anode supply = 6V, resistive load			
I _L	Maximum latching current	250	mA	T _J = 25°C anode supply = 6V, resistive load			