

PHASE CONTROL SCR



$$V_T < 1.45V @ 40A$$

$$I_{TSM} = 400A$$

$$V_R / V_D = 1200V$$

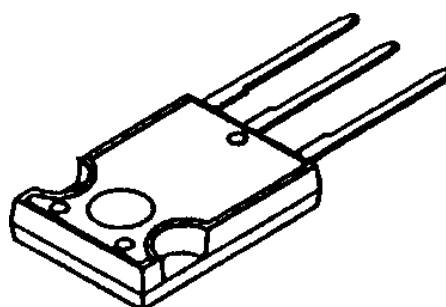
Description/Features

The 40TPS... new series of silicon controlled rectifiers are specifically designed for medium power switching and phase control applications. The glass passivation technology used has reliable operation up to 125° C junction temperature.

Typical applications are in input rectification (soft start) and these products are designed to be used with International Rectifier input diodes, switches and output rectifiers which are available in identical package outlines.

Major Ratings and Characteristics

Characteristics	40TPS...	Units
$I_{T(AV)}$ Sinusoidal waveform	35	A
I_{RMS}	55	A
V_{RRM} / V_{DRM}	800 and 1200	V
I_{TSM}	400	A
V_T @ 40 A, $T_J = 25^\circ C$	1.45	V
dv/dt	500	V/ μs
di/dt	150	A/ μs
T_J	-40 to 125	°C



TO-247AC

Voltage Ratings

Part Number	V_{RRM}/V_{DRM} , max. repetitive peak and off-state voltage V	V_{RSM} , maximum non repetitive peak reverse voltage V	I_{RRM}/I_{DRM} 125°C mA
40TPS08	800	900	5
40TPS12	1200	1300	

Absolute Maximum Ratings

Parameters		40TPS..	Units	Conditions		
I _{T(AV)}	Max. Average On-state Current	35	A	50% duty cycle @ T _C = 85° C, sinusoidal wave form		
I _{T(RMS)}	Max. Continuous RMS On-state Current. As AC switch	55				
I _{TSM}	Max. Peak One Cycle Non-Repetitive Surge Current	335	A ² s	10ms Sine pulse, rated V _{RRM} applied	Initial T _J = T _J max.	
		400		10ms Sine pulse, no voltage reapplied		
I ² t	Max. I ² t for fusing	560		10ms Sine pulse, rated V _{RRM} applied		
		800		10ms Sine pulse, no voltage reapplied		
I ² √t	Max. I ² √t for fusing	8000	A ² √s	t = 0.1 to 10ms, no voltage reapplied		
V _{T(TO)1}	Low level value of threshold Voltage	1.02	V	T _J = 125°C		
V _{T(TO)2}	High level value of threshold Voltage	1.23				
r _{t1}	Low level value of On-state slope resistance	9.74	mΩ			
r _{t2}	High level value of On-state slope resistance	7.50				
V _{TM}	Max. Peak On-state Voltage	1.85	V	@ 110A, T _J = 25°C		
di/dt	Max. rate of rise of turned-on Current	150	A/μs	T _J = 25°C		
I _H	Max. holding Current	200	mA			
I _L	Max. latching Current	400				
I _{RRM} /	Max. Reverse and Direct	0.5		T _J = 25°C	V _R = rated V _{RRM} /V _{DRM}	
I _{DRM}	Leakage Current	5.0		T _J = 125°C		
dv/dt	Max. rate of rise of off-state Voltage	500	V/μs	T _J = 125°C		

Triggering

Parameters		40TPS..	Units	Conditions		
P _{GM}	Max. peak Gate Power	10	W			
P _{G(AV)}	Max. average Gate Power	2.5				
I _{GM}	Max. peak Gate Current	2.5	A			
- V _{GM}	Max. peak negative Gate Voltage	10	V	Anode supply = 6V resistive load		
V _{GT}	Max. required DC Gate Voltage to trigger	4.0				T _J = - 40°C
		2.5				T _J = 25°C
		1.7				T _J = 125°C
I _{GT}	Max. required DC Gate Current to trigger	270	mA	T _J = - 40°C		
		150		T _J = 25°C		
		80		T _J = 125°C		
V _{GD}	Max. DC Gate Voltage not to trigger	0.25	V	T _J = 125°C, V _{DRM} = rated value		
I _{GD}	Max. DC Gate Current not to trigger	6	mA			

Thermal-Mechanical Specifications

Parameters			40TPS..	Units	Conditions
T _J	Max. Junction Temperature Range		- 40 to 150	°C	
T _{stg}	Max. Storage Temperature Range		- 40 to 150		
R _{thJC}	Max. Thermal Resistance Junction to Case		0.6	°C/W	DC operation
R _{thJA}	Max. Thermal Resistance Junction to Ambient		40		
R _{thCS}	Max. Thermal Resistance Case to Heatsink		0.2		Mounting surface, smooth and greased
wt	Approximate Weight		6 (0.21)	g (oz.)	
T	Mounting Torque	Min.	6 (5)	kg-cm	
		Max.	12 (10)	(lbf-in)	
Case Style			(TO-247)		

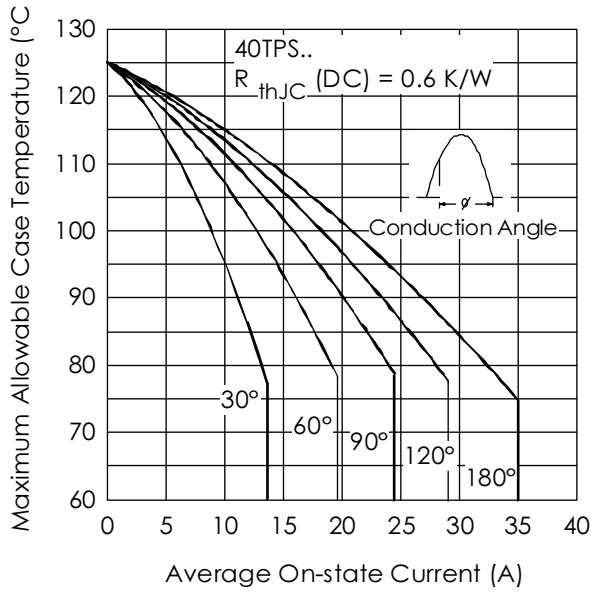


Fig. 1 - Current Rating Characteristics

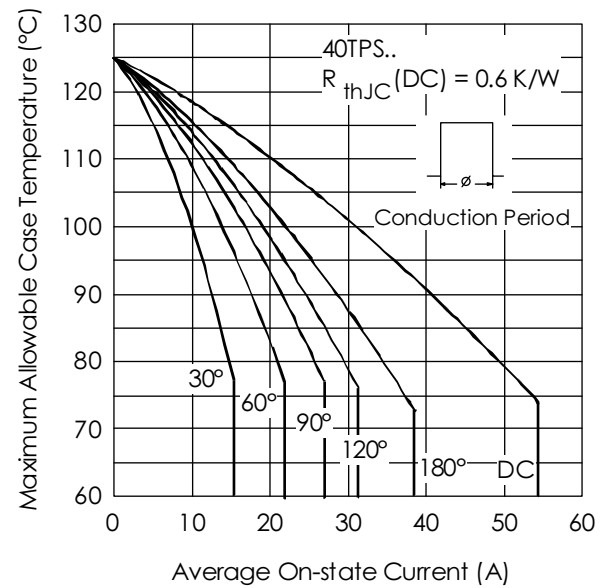


Fig. 2 - Current Rating Characteristics

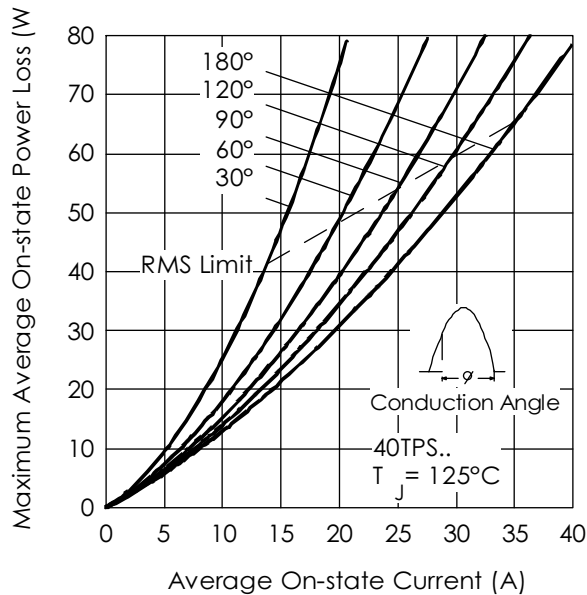


Fig. 3 - On-state Power Loss Characteristics

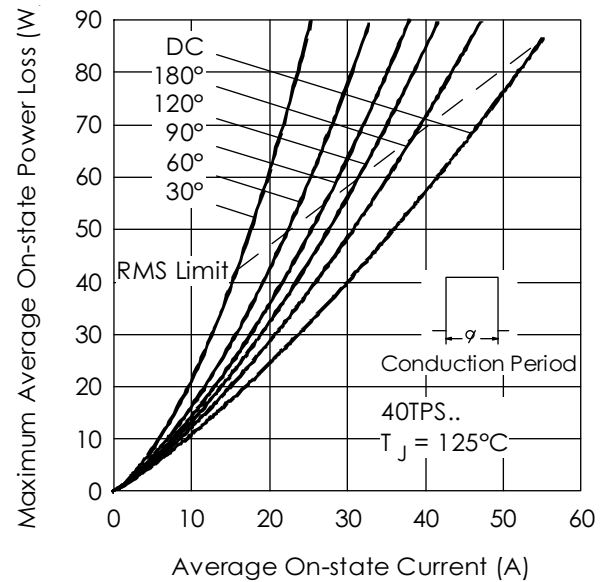


Fig. 4 - On-state Power Loss Characteristics

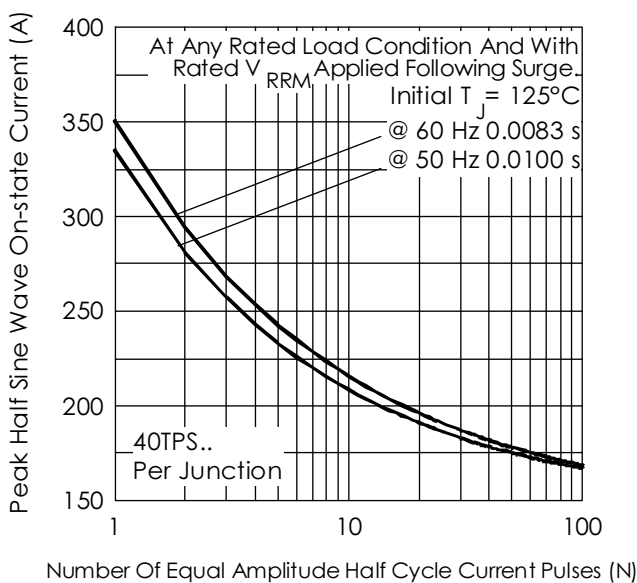


Fig. 5 - Maximum Non-Repetitive Surge Current

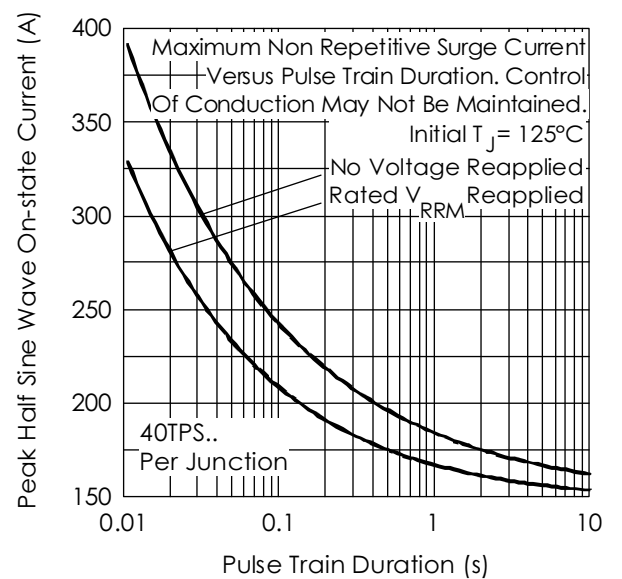


Fig. 6 - Maximum Non-Repetitive Surge Current

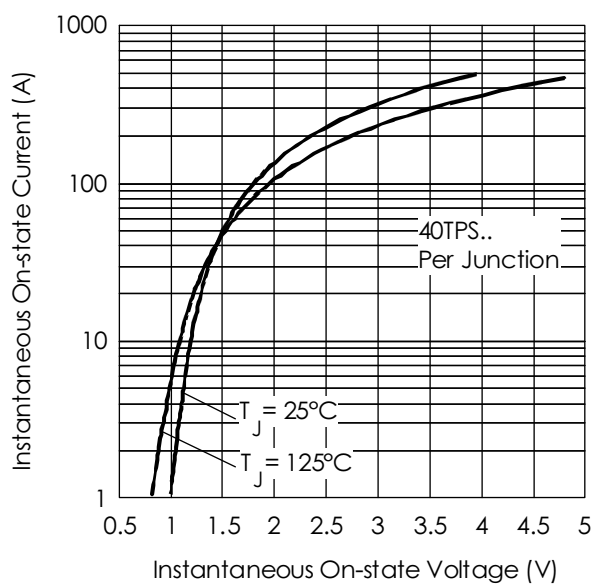


Fig. 7 - On-state Voltage Drop Characteristics

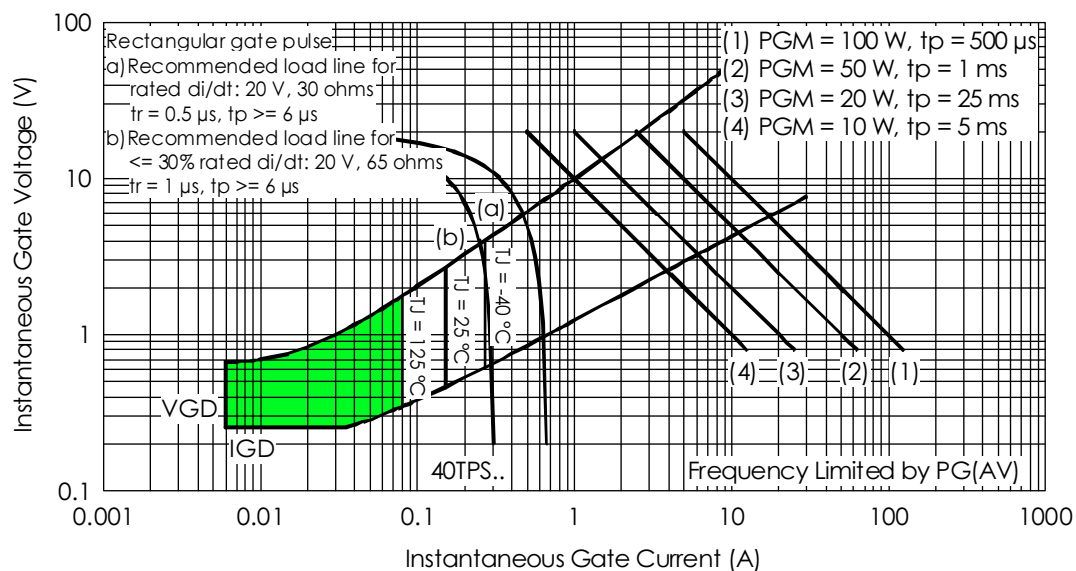
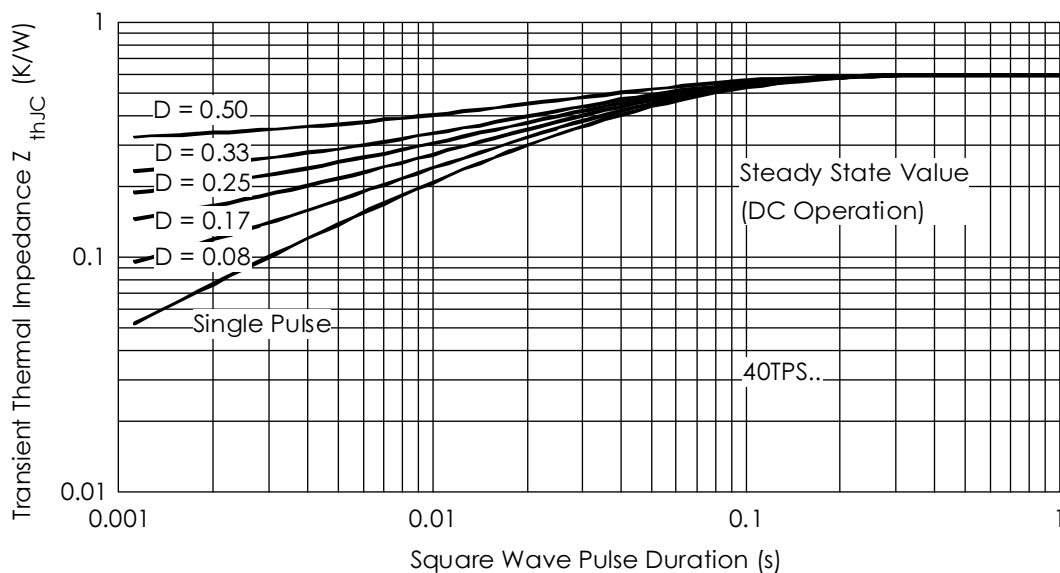
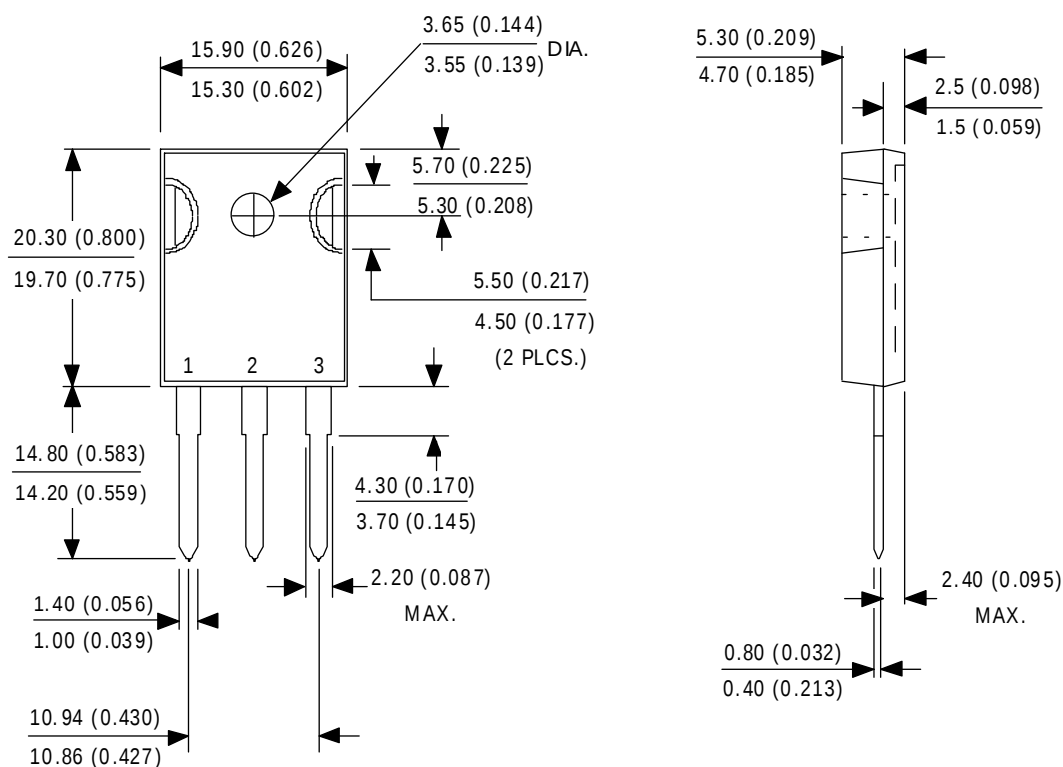


Fig. 8 - Gate Characteristics


Fig. 9 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Dimensions in millimeters and inches

Ordering Information Table

Device Code

40	T	P	S	12
①	②	③	④	⑤

- 1** - Current Rating
- 2** - Circuit Configuration
T = Thyristor
- 3** - Package
T = TO-247
- 4** - Type of Silicon
S = Standard Recovery Rectifier
- 5** - Voltage code: Code x 100 = V_{RRM}

08 = 800V
12 = 1200V

