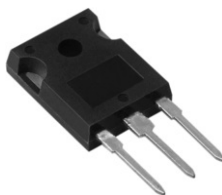
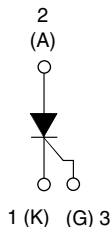


Phase Control SCR, 35 A



TO-247AC



DESCRIPTION/FEATURES

The 40TPS16 High Voltage 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. Low Igt parts available.

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

This product has been designed and qualified for industrial level.

PRODUCT SUMMARY

V_T at 40 A	< 1.45 V
I_{TSM}	500 A
V_{RRM}	1600 V

MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{T(AV)}$	Sinusoidal waveform	35	A
I_{RMS}		55	
V_{RRM}/V_{DRM}	Range ⁽¹⁾	1600	V
I_{TSM}		500	A
V_T	40 A, $T_J = 25\text{ °C}$	1.45	V
dV/dt		1000	V/μs
dI/dt		100	A/μs
T_J		- 40 to 125	°C

Note

⁽¹⁾ Contact factory

VOLTAGE RATINGS

PART NUMBER	V_{RRM}/V_{DRM} , MAXIMUM REPETITIVE PEAK AND OFF-STATE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM}/I_{DRM} AT 125 °C mA
40TPS16	1600	1700	10

40TPS16 High Voltage Series

Vishay High Power Products Phase Control SCR, 35 A



ABSOLUTE MAXIMUM RATINGS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum average on-state current	I _{T(AV)}	T _C = 79 °C, 180° conduction half sine wave		35	A	
Maximum continuous RMS on-state current as AC switch	I _{T(RMS)}			55		
Maximum peak, one-cycle non-repetitive surge current	I _{TSM}	10 ms sine pulse, rated V _{RRM} applied	Initial T _J = T _J maximum	500		A ² s
		10 ms sine pulse, no voltage reapplied		600		
Maximum I ² t for fusing	I ² t	10 ms sine pulse, rated V _{RRM} applied		1250	A ² /s	
		10 ms sine pulse, no voltage reapplied		1760		
Maximum I ² √t for fusing	I ² √t	t = 0.1 to 10 ms, no voltage reapplied		12 500	A ² √s	
Low level value of threshold voltage	V _{T(TO)1}	T _J = 125 °C		1.02	V	
High level value of threshold voltage	V _{T(TO)2}			1.23		
Low level value of on-state slope resistance	r _{t1}			9.74	mΩ	
High level value of on-state slope resistance	r _{t2}			7.50		
Maximum peak on-state voltage	V _{TM}	110 A, T _J = 25 °C		1.85	V	
Maximum rate of rise of turned-on current	di/dt	T _J = 25 °C		100	A/μs	
Maximum holding current	I _H			150	mA	
Maximum latching current	I _L			300		
Maximum reverse and direct leakage current	I _{RRM} /I _{DRM}	T _J = 25 °C	V _R = Rated V _{RRM} /V _{DRM}	0.5		
		T _J = 125 °C		10		
Maximum rate of rise of off-state voltage	dV/dt	T _J = T _J maximum, linear to 80 % V _{DRM} , R _g -k = Open		1000	V/μs	

TRIGGERING					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum peak gate power	P _{GM}			10	W
Maximum average gate power	P _{G(AV)}			2.5	
Maximum peak gate current	I _{GM}			2.5	A
Maximum peak negative gate voltage	- V _{GM}			10	V
Maximum required DC gate voltage to trigger	V _{GT}	T _J = - 40 °C	Anode supply = 6 V resistive load	4.0	
		T _J = 25 °C		2.5	
		T _J = 125 °C		1.7	
Maximum required DC gate current to trigger	I _{GT}	T _J = - 40 °C		270	mA
		T _J = 25 °C		150	
		T _J = 125 °C		80	
		T _J = 25 °C, for 40TPS08A		40	
Maximum DC gate voltage not to trigger	V _{GD}	T _J = 125 °C, V _{DRM} = Rated value		0.25	V
Maximum DC gate current not to trigger	I _{GD}			6	mA



40TPS16 High Voltage Series

Phase Control SCR, 35 A Vishay High Power Products

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range		T _J , T _{Stg}		- 40 to 125	°C
Maximum thermal resistance, junction to case		R _{thJC}	DC operation	0.6	°C/W
Maximum thermal resistance, junction to ambient		R _{thJA}		40	
Maximum thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased	0.2	
Approximate weight				6	g
				0.21	oz.
Mounting torque	minimum			6 (5)	kgf · cm (lbf · in)
	maximum			12 (10)	
Marking device			Case style TO-247AC	40TPS16	

40TPS16 High Voltage Series

Vishay High Power Products Phase Control SCR, 35 A

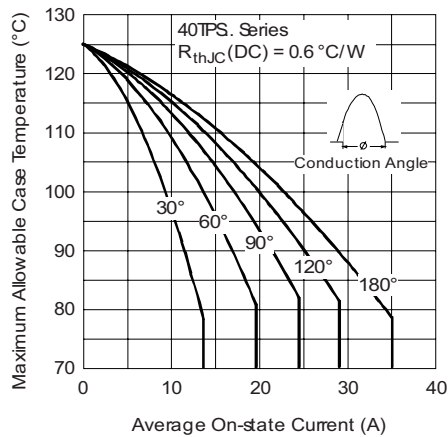


Fig. 1 - Current Rating Characteristics

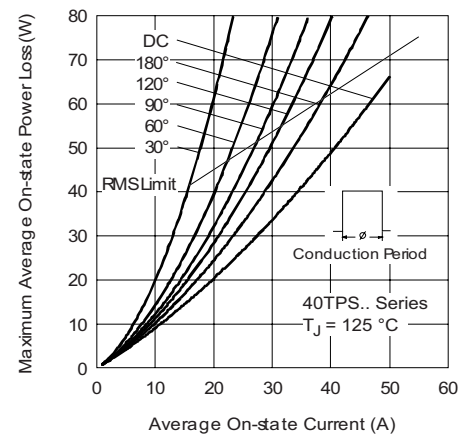


Fig. 4 - On-State Power Loss Characteristics

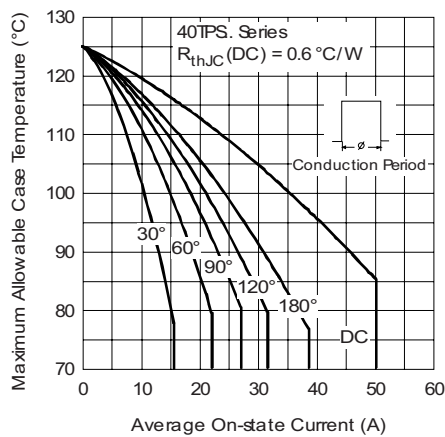


Fig. 2 - Current Rating Characteristics

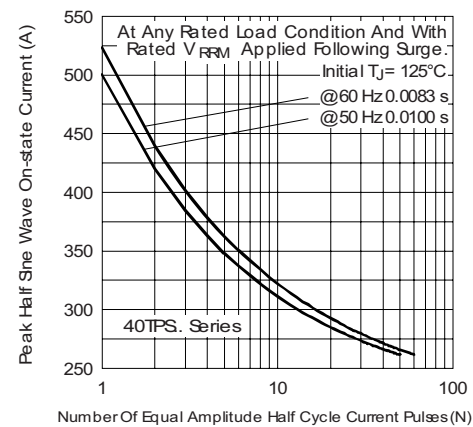


Fig. 5 - Maximum Non-Repetitive Surge Current

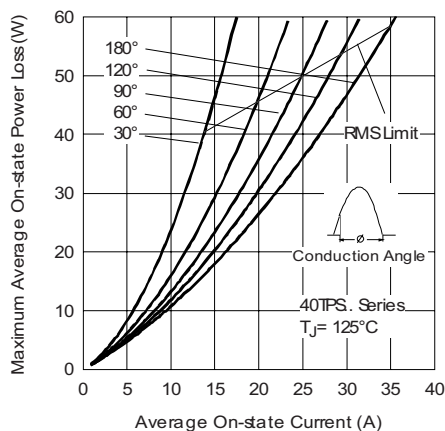


Fig. 3 - On-State Power Loss Characteristics

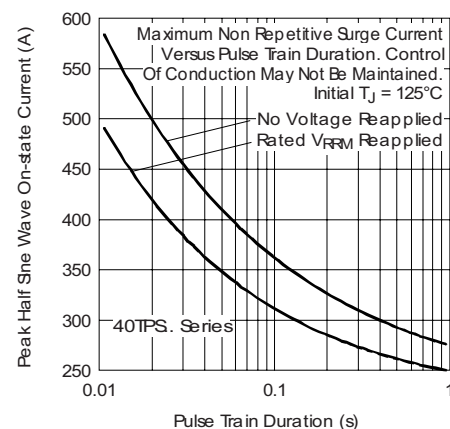


Fig. 6 - Maximum Non-Repetitive Surge Current

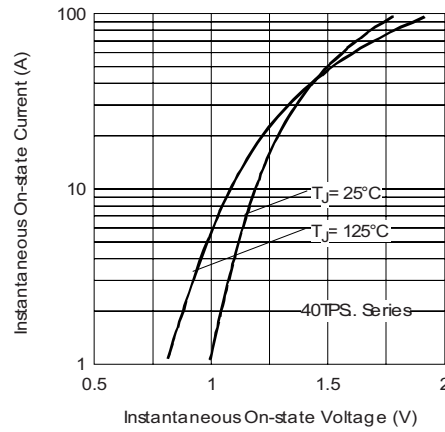


Fig. 7 - On-State Voltage Drop Characteristics

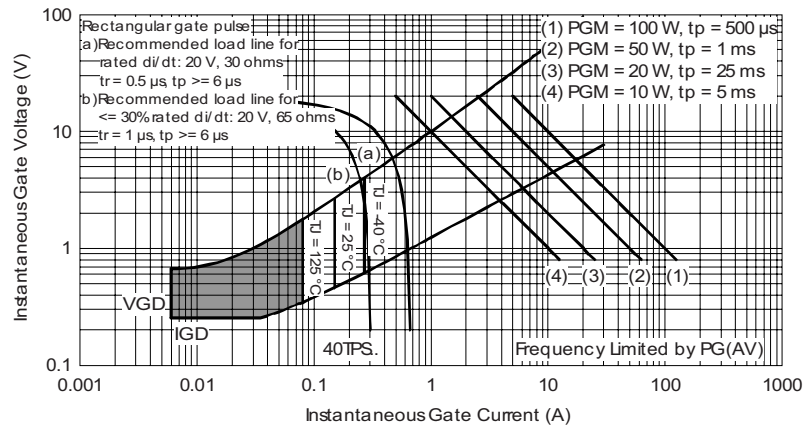


Fig. 8 - Gate Characteristics

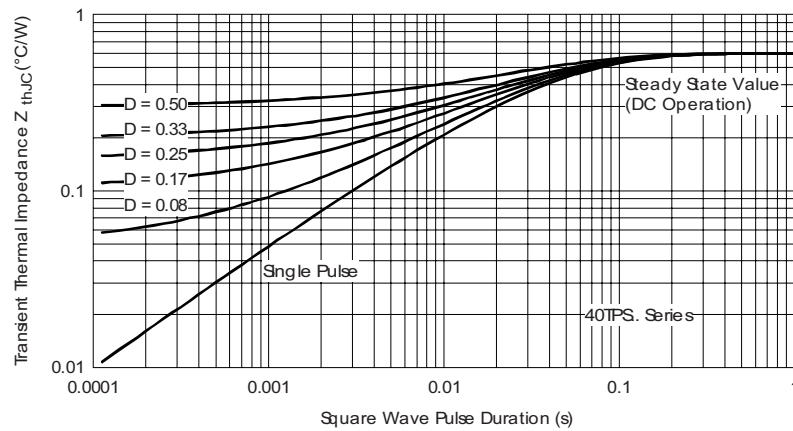


Fig. 9 - Thermal Impedance Z_{thJC} Characteristics

40TPS16 High Voltage Series

Vishay High Power Products Phase Control SCR, 35 A



ORDERING INFORMATION TABLE

Device code	40	T	P	S	16	-
	1	2	3	4	5	6
	1	- Current rating (40 = 40 A)				
	2	- Circuit configuration: T = Thyristor				
	3	- Package: P = TO-247				
	4	- Type of silicon: S = Standard recovery rectifier				
	5	- Voltage code x 100 = V_{RRM} (16 = 1600 V - contact factory)				
	6	- <ul style="list-style-type: none">• None = Standard production• PbF = Lead (Pb)-free				

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95024
Part marking information	http://www.vishay.com/doc?95226



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