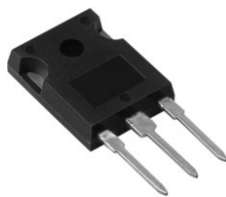
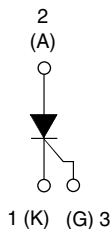


Phase Control SCR, 20 A



TO-247AC



DESCRIPTION/FEATURES

The 30TPS...PbF 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.



RoHS*
COMPLIANT

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 and lead (Pb)-free ("PbF" suffix).

PRODUCT SUMMARY

V_T at 20 A	< 1.3 V
I_{TSM}	300 A
V_{RRM}	800/1200 V

MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{T(AV)}$	Sinusoidal waveform	20	A
I_{RMS}		30	
V_{RRM}/V_{DRM}		800/1200	V
I_{TSM}		300	A
V_T	20 A, $T_J = 25\text{ °C}$	1.3	V
dV/dt		500	V/ μ s
dI/dt		150	A/ μ s
T_J		- 40 to 125	°C

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
30TPS08PbF	800	900	10
30TPS12PbF	1200	1300	

* Pb containing terminations are not RoHS compliant, exemptions may apply

30TPS...PbF High Voltage Series

Vishay High Power Products Phase Control SCR, 20 A



ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average on-state current	$I_{T(AV)}$	$T_C = 95\text{ }^{\circ}\text{C}$, 180° conduction half sine wave	20	A
Maximum RMS on-state current	I_{RMS}		30	
Maximum peak, one-cycle non-repetitive surge current	I_{TSM}	10 ms sine pulse, rated V_{RRM} applied	250	
		10 ms sine pulse, no voltage reapplied	300	
Maximum I^2t for fusing	I^2t	10 ms sine pulse, rated V_{RRM} applied	310	A^2s
		10 ms sine pulse, no voltage reapplied	442	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ to 10 ms, no voltage reapplied	4420	$A^2\sqrt{s}$
Maximum on-state voltage drop	V_{TM}	20 A, $T_J = 25\text{ }^{\circ}\text{C}$	1.3	V
On-state slope resistance	r_t	$T_J = 125\text{ }^{\circ}\text{C}$	12	$m\Omega$
Threshold voltage	$V_{T(TO)}$		1.0	V
Maximum reverse and direct leakage current	I_{RM}/I_{DM}	$T_J = 25\text{ }^{\circ}\text{C}$	0.5	mA
		$T_J = 125\text{ }^{\circ}\text{C}$	10	
Maximum holding current	I_H	Anode supply = 6 V, resistive load, initial $I_T = 1\text{ A}$	100	
Maximum latching current	I_L	Anode supply = 6 V, resistive load	200	
Maximum rate of rise of off-state voltage	dV/dt		500	$V/\mu s$
Maximum rate of rise of turned-on current	dI/dt		150	$A/\mu s$

TRIGGERING				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum peak gate power	P_{GM}		8.0	W
Maximum average gate power	$P_{G(AV)}$		2.0	
Maximum peak positive gate current	$+I_{GM}$		1.5	A
Maximum peak negative gate voltage	$-V_{GM}$		10	V
Maximum required DC gate current to trigger	I_{GT}	Anode supply = 6 V, resistive load, $T_J = -10\text{ }^{\circ}\text{C}$	60	mA
		Anode supply = 6 V, resistive load, $T_J = 25\text{ }^{\circ}\text{C}$	45	
		Anode supply = 6 V, resistive load, $T_J = 125\text{ }^{\circ}\text{C}$	20	
Maximum required DC gate voltage to trigger	V_{GT}	Anode supply = 6 V, resistive load, $T_J = -10\text{ }^{\circ}\text{C}$	2.5	V
		Anode supply = 6 V, resistive load, $T_J = 25\text{ }^{\circ}\text{C}$	2.0	
		Anode supply = 6 V, resistive load, $T_J = 125\text{ }^{\circ}\text{C}$	1.0	
Maximum DC gate voltage not to trigger	V_{GD}	$T_J = 125\text{ }^{\circ}\text{C}$, V_{DRM} = Rated value	0.25	mA
Maximum DC gate current not to trigger	I_{GD}		2.0	

SWITCHING				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Typical turn-on time	t_{gt}	$T_J = 25\text{ }^{\circ}\text{C}$	0.9	μs
Typical reverse recovery time	t_{rr}	$T_J = 125\text{ }^{\circ}\text{C}$	4	
Typical turn-off time	t_q		110	



30TPS...PbF High Voltage Series

Phase Control SCR, 20 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	0.8	°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 (JEDEC)	30TPS08	
			30TPS12	

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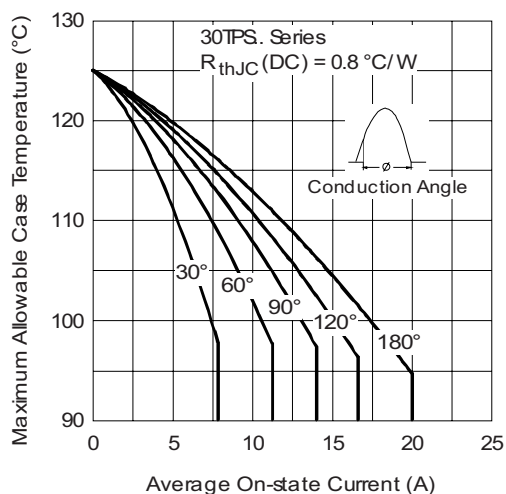


Fig. 1 - Current Rating Characteristics

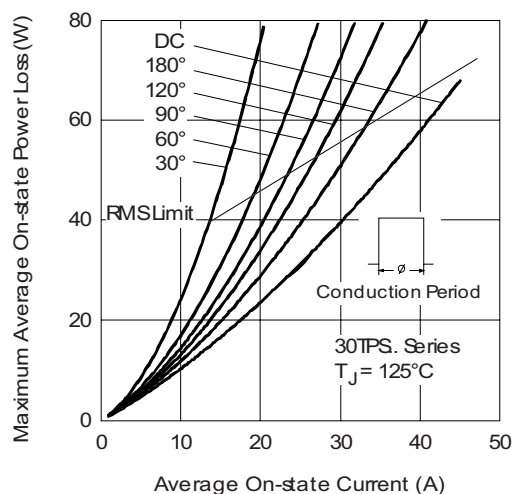


Fig. 4 - On-State Power Loss Characteristics

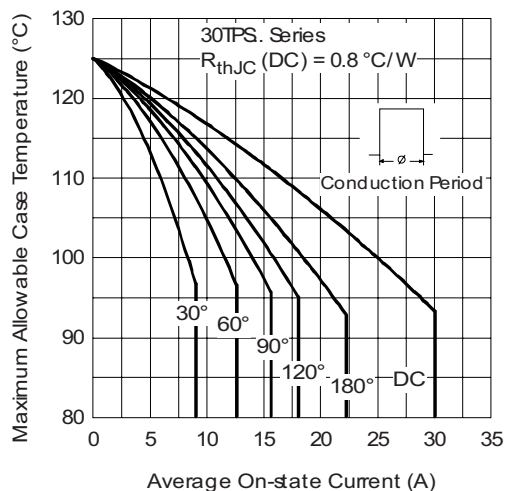


Fig. 2 - Current Rating Characteristics

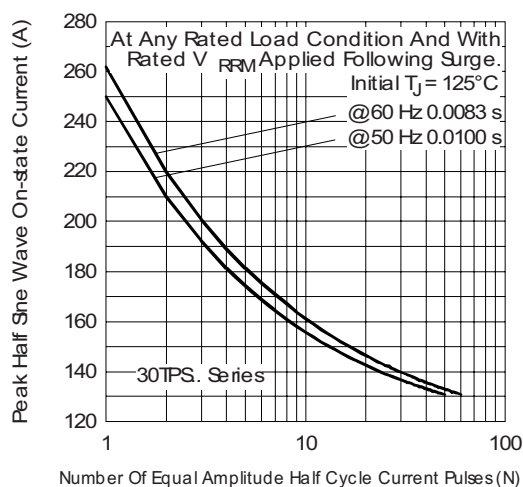


Fig. 5 - Maximum Non-Repetitive Surge Current

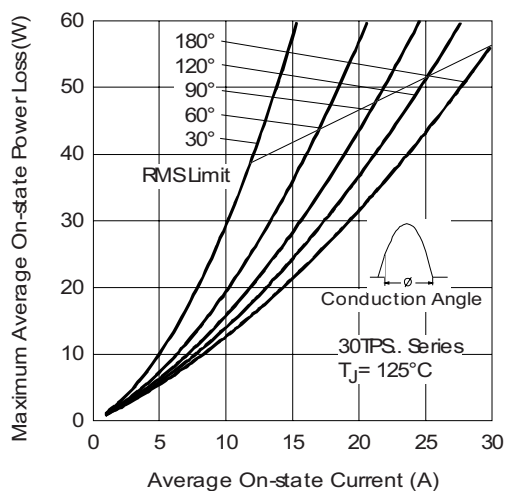


Fig. 3 - On-State Power Loss Characteristics

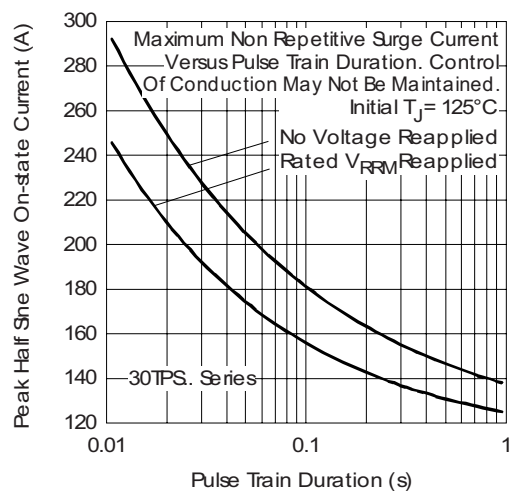


Fig. 6 - Maximum Non-Repetitive Surge Current

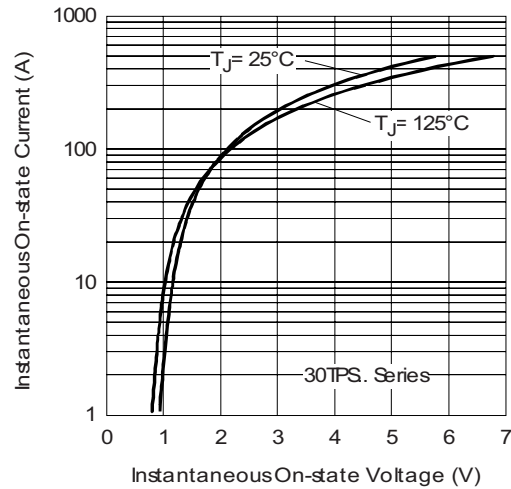


Fig. 7 - On-State Voltage Drop Characteristics

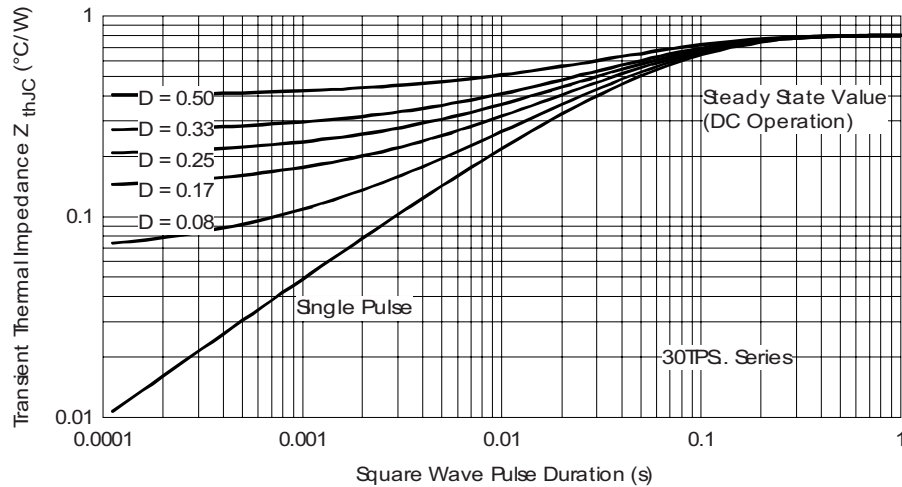


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

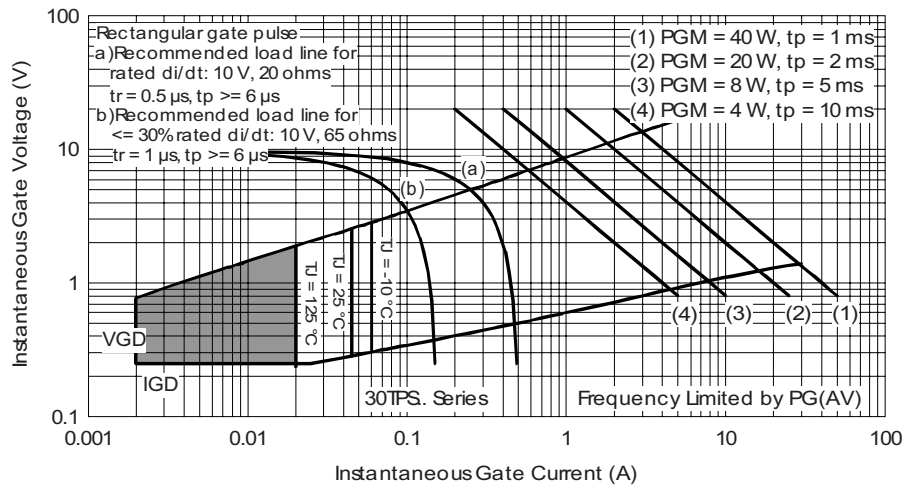


Fig. 9 - Gate Characteristics

30TPS...PbF High Voltage Series

Vishay High Power Products Phase Control SCR, 20 A



ORDERING INFORMATION TABLE

Device code	30	T	P	S	12	PbF
	1	2	3	4	5	6
1	- Current rating (30 = 30 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}					
6	- • None = Standard production • PbF = Lead (Pb)-free					

08 = 800 V
12 = 1200 V

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95223
Part marking information	http://www.vishay.com/doc?95226



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