


PHASE CONTROL SCR

Description/Features

The 10TTS08 **SAFEIR** 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 and crow-bar (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.

	$V_T < 1.15V @ 6.5A$ $I_{TSM} = 140A$ $V_{RRM} = 800V$
---	--

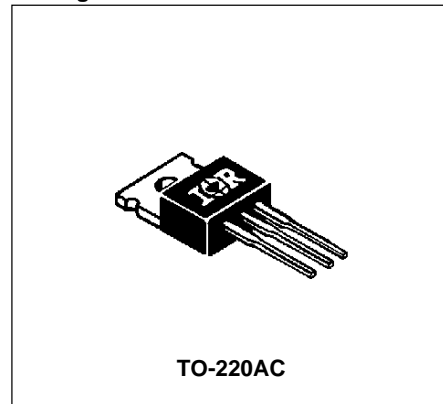
Output Current in Typical Applications

Applications	Single-phase Bridge	Three-phase Bridge	Units
Capacitive input filter $T_A = 55^\circ C, T_J = 125^\circ C,$ common heatsink of $1^\circ C/W$	13.5	17	A

Major Ratings and Characteristics

Characteristics	10TTS08	Units
$I_{T(AV)}$ Sinusoidal waveform	6.5	A
$I_{T(RMS)}$	10	A
V_{RRM}/V_{DRM}	800	V
I_{TSM}	140	A
$V_T @ 6.5A, T_J = 25^\circ C$	1.15	V
dv/dt	150	V/ μs
di/dt	100	A/ μs
T_J range	-40 to 125	$^\circ C$

Package Outline



Also available in SMD-220 package (series 10TTS08S)

Voltage Ratings

Part Number	V_{RRM} maximum peak reverse voltage V	V_{DRM} maximum peak direct voltage V	I_{RRM}/I_{DRM} 125°C mA
10TTS08	800	800	1.0

Absolute Maximum Ratings

Parameters	10TTS08	Units	Conditions
$I_{T(AV)}$ Max. Average On-state Current	6.5	A	@ $T_C = 112^\circ\text{C}$, 180° conduction half sine wave
$I_{T(RMS)}$ Max. RMS On-state Current	10		
I_{TSM} Max. Peak One Cycle Non-Repetitive Surge Current	120	A	10ms Sine pulse, rated V_{RRM} applied, $T_J = 125^\circ\text{C}$
	140		10ms Sine pulse, no voltage reapplied, $T_J = 125^\circ\text{C}$
I^2t Max. I^2t for fusing	72	A^2s	10ms Sine pulse, rated V_{RRM} applied, $T_J = 125^\circ\text{C}$
	100		10ms Sine pulse, no voltage reapplied, $T_J = 125^\circ\text{C}$
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	1000	$\text{A}^2\sqrt{\text{s}}$	$t = 0.1$ to 10ms, no voltage reapplied, $T_J = 125^\circ\text{C}$
V_{TM} Max. On-state Voltage Drop	1.15	V	@ 6.5A, $T_J = 25^\circ\text{C}$
r_t On-state slope resistance	17.3	$\text{m}\Omega$	$T_J = 125^\circ\text{C}$
$V_{T(TO)}$ Threshold Voltage	0.85	V	
I_{RM}/I_{DM} Max. Reverse and Direct Leakage Current	0.05	mA	$V_R = \text{rated } V_{RRM} / V_{DRM}$
	1.0		
I_H Typ. Holding Current	30	mA	Anode Supply = 6V, Resistive load, Initial $I_T = 1\text{A}$
I_L Max. Latching Current	50	mA	Anode Supply = 6V, Resistive load
dv/dt Max. rate of rise of off-state Voltage	150	$\text{V}/\mu\text{s}$	$T_J = 25^\circ\text{C}$
di/dt Max. rate of rise of turned-on Current	100	$\text{A}/\mu\text{s}$	

Triggering

Parameters	10TTS08	Units	Conditions
P_{GM} Max. peak Gate Power	8.0	W	
$P_{G(AV)}$ Max. average Gate Power	2.0		
$+I_{GM}$ Max. peak positive Gate Current	1.5	A	
$-V_{GM}$ Max. peak negative Gate Voltage	10	V	
I_{GT} Max. required DC Gate Current to trigger	20	mA	Anode supply = 6V, resistive load, $T_J = -65^\circ\text{C}$
	15		Anode supply = 6V, resistive load, $T_J = 25^\circ\text{C}$
	10		Anode supply = 6V, resistive load, $T_J = 125^\circ\text{C}$
V_{GT} Max. required DC Gate Voltage to trigger	1.2	V	Anode supply = 6V, resistive load, $T_J = -65^\circ\text{C}$
	1		Anode supply = 6V, resistive load, $T_J = 25^\circ\text{C}$
	0.7		Anode supply = 6V, resistive load, $T_J = 125^\circ\text{C}$
V_{GD} Max. DC Gate Voltage not to trigger	0.2		$T_J = 125^\circ\text{C}$, $V_{DRM} = \text{rated value}$
I_{GD} Max. DC Gate Current not to trigger	0.1	mA	$T_J = 125^\circ\text{C}$, $V_{DRM} = \text{rated value}$

Switching

Parameters	10TTS08	Units	Conditions
t_{gt} Typical turn-on time	0.8	μs	$T_J = 25^\circ\text{C}$
t_{tr} Typical reverse recovery time	3		$T_J = 125^\circ\text{C}$
t_q Typical turn-off time	100		

Thermal-Mechanical Specifications

Parameters	10TTS08	Units	Conditions
T_J Max. Junction Temperature Range	-40 to 125	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-40 to 125		
R_{thJC} Max. Thermal Resistance Junction to Case	1.5	$^\circ\text{C/W}$	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient	62		
R_{thCS} Typ. Thermal Resistance Case to Heatsink	0.5		Mounting surface, smooth and greased
wt Approximate Weight	2(0.07)	g(oz.)	
T Mounting Torque	Min.	6(5)	Kg-cm (lbf-in)
	Max.	12(10)	
Case Style	TO-220AC		

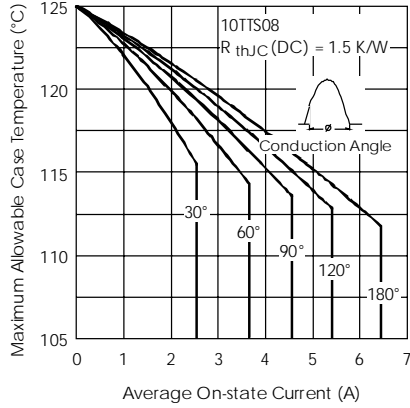


Fig. 1 - Current Rating Characteristics

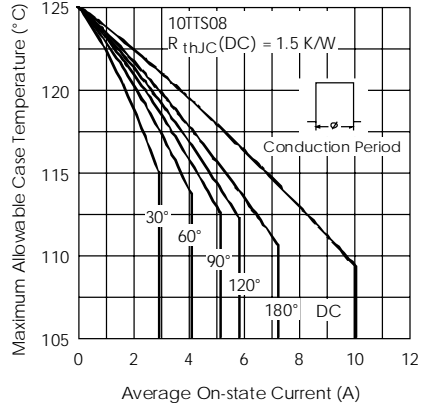


Fig. 2 - Current Rating Characteristics

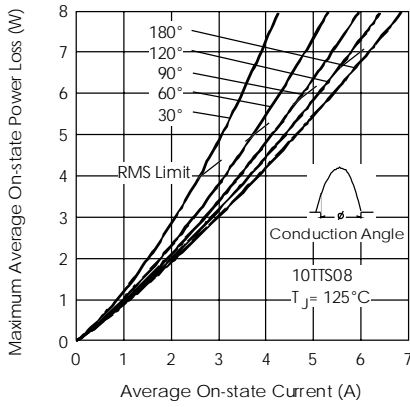


Fig. 3 - On-state Power Loss Characteristics

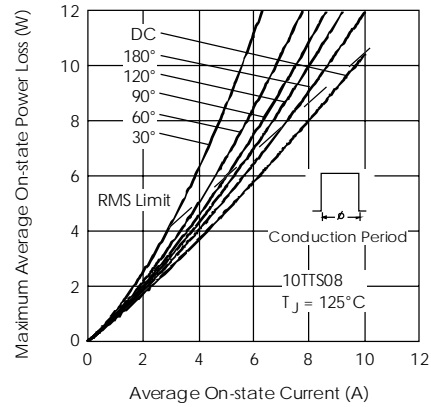


Fig. 4 - On-state Power Loss Characteristics

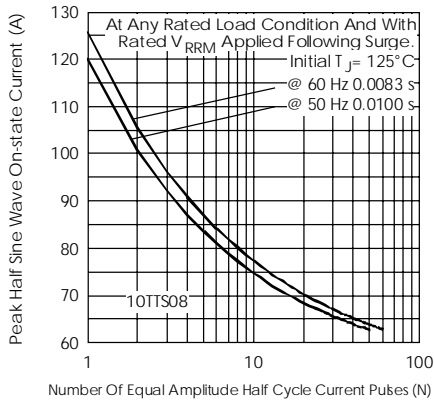


Fig. 6 - Maximum Non-Repetitive Surge Current

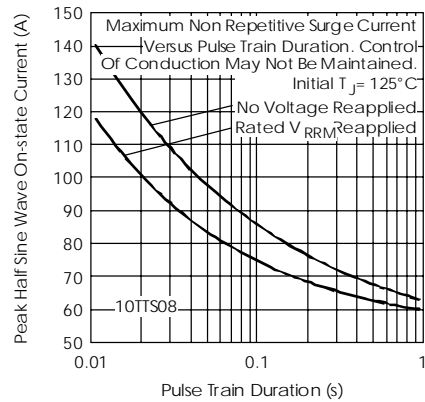


Fig. 7 - Maximum Non-Repetitive Surge Current

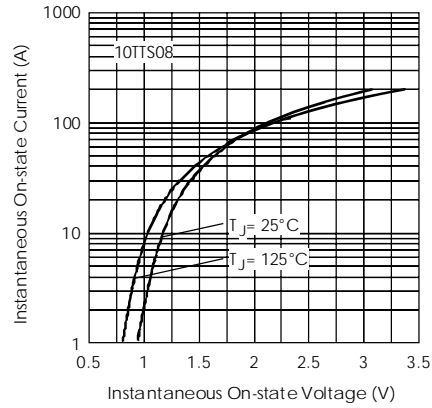


Fig. 7 - On-state Voltage Drop Characteristics

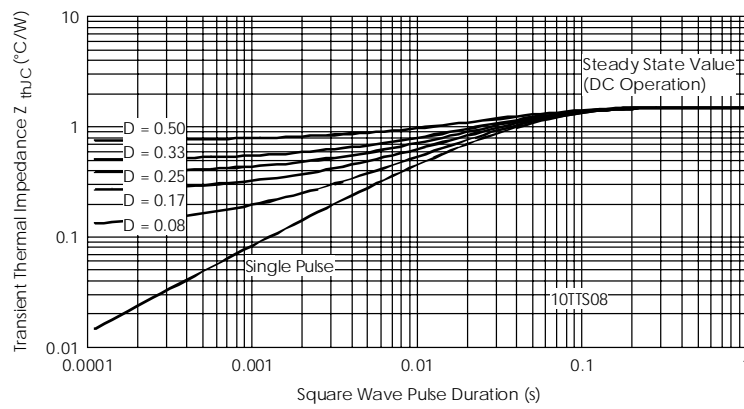
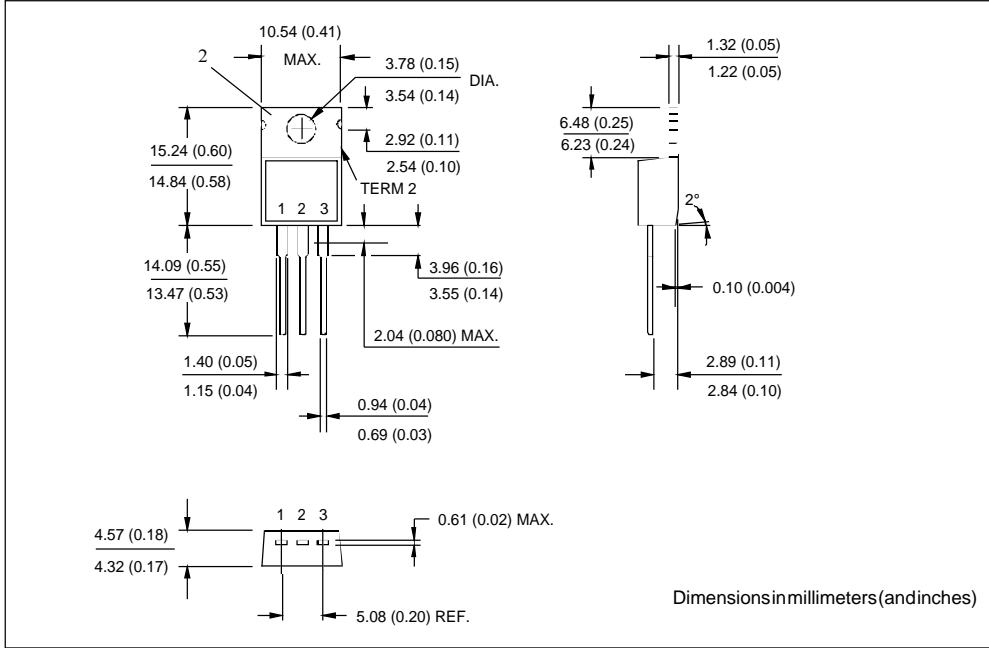
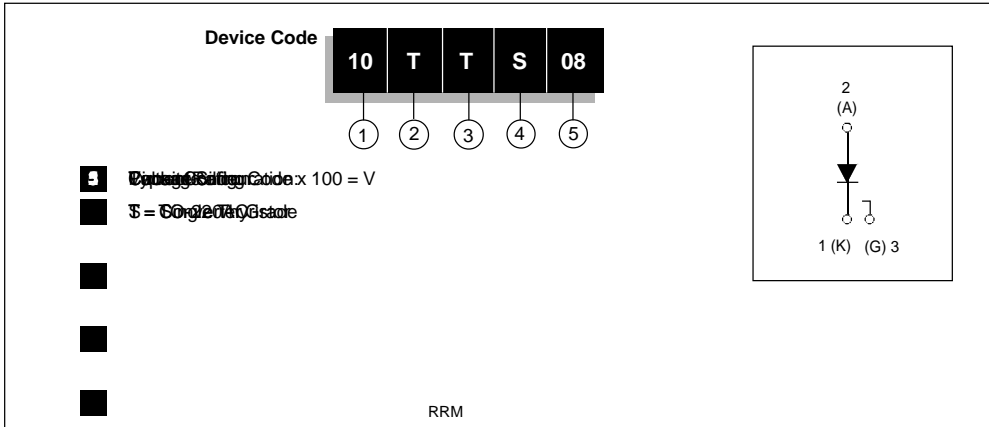


Fig. 8 - Thermal Impedance Z_{thjC} Characteristics

Outline Table



Ordering Information Table



WORLDHEADQUARTERS: 233 Kansas St., El Segundo, California 90245 U.S.A Tel: (310) 322-3331 Fax: (310) 322-3332
EUROPEANHEADQUARTERS: Hurst Green, Oxted, Surrey RH8 9BB, U.K. Tel: ++ 44 1883 732020 Fax: ++ 44 1883 733408
IR CANADA: 7231 Victoria Park Ave., Suite #201, Markham, Ontario L3R 2Z8 Tel: (905) 475 1897. Fax: (905) 475 8801
IR GERMANY: Saalburgstrasse 157, 61350 Bad Homburg Tel: ++ 49 6172 96590 Fax: ++ 49 6172 965933
IR ITALY: Via Liguria 49, 10071 Borgaro, Torino Tel: ++ 39 11 4510111 Fax: ++ 39 11 4510220
IR FAR EAST: K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171 Tel: 81 3 3983 0086 Fax: 81 3 3983 0642
IR SOUTHEAST ASIA: 315 Outram Road, # 10-02 Tan Boon Liat Building, SINGAPORE 0316. Tel: 65 221 8371. Fax: 65 221 8372.

Fax-On-Demand: +44 1883 733420

Data and specifications subject to change without notice

11/97



Notice

The products described herein were acquired by Vishay Intertechnology, Inc., as part of its acquisition of International Rectifier's Power Control Systems (PCS) business, which closed in April 2007. Specifications of the products displayed herein are pending review by Vishay and are subject to the terms and conditions shown below.

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.

International Rectifier®, IR®, the IR logo, HEXFET®, HEXSense®, HEXDIP®, DOL®, INTERO®, and POWIRTRAIN® are registered trademarks of International Rectifier Corporation in the U.S. and other countries. All other product names noted herein may be trademarks of their respective owners.