

International
IR Rectifier

SAFEIR Series
10TTS08

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.

	$V_T < 1.15V @ 6.5A$ $I_{TSM} = 140A$ $V_{RRM} = 800V$
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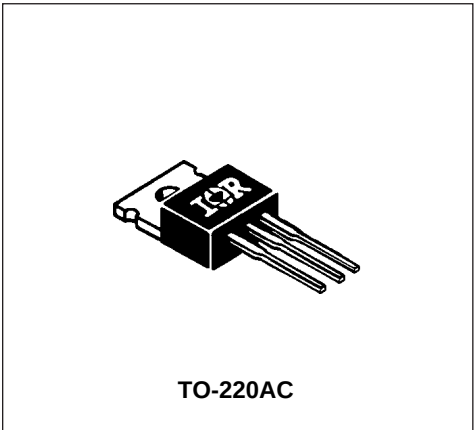
Output Current in Typical Applications

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	°C

Package Outline



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

10TTS08 *SAFEIR* Series

Preliminary Data Sheet I2143 11/97

International
IOR Rectifier

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° 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° C	
		140		10ms Sine pulse, no voltage reapplied, T _J = 125° C	
I ² t	Max. I ² t for fusing	72	A ² s	10ms Sine pulse, rated V _{RRM} applied, T _J = 125° C	
		100		10ms Sine pulse, no voltage reapplied, T _J = 125° C	
I ² √t	Max. I ² √t for fusing	1000	A ² √s	t = 0.1 to 10ms, no voltage reapplied, T _J = 125° C	
V _{TM}	Max. On-state Voltage Drop	1.15	V	@ 6.5A, T _J = 25° C	
r _t	On-state slope resistance	17.3	mΩ	T _J = 125° C	
V _{T(TO)}	Threshold Voltage	0.85	V		
I _{RM} /I _{DM}	Max. Reverse and Direct Leakage Current	0.05	mA	T _J = 25° C	V _R = rated V _{RRM} / V _{DRM}
		1.0		T _J = 125° C	
I _H	Typ. Holding Current	30	mA	Anode Supply = 6V, Resistive load, Initial I _T = 1A	
I _L	Max. Latching Current	50	mA	Anode Supply = 6V, Resistive load	
dv/dt	Max. rate of rise of off-state Voltage	150	V/μs	T _J = 25° C	
di/dt	Max. rate of rise of turned-on Current	100	A/μs		

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_{rr} 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	°C	
T _{stg}	Max. Storage Temperature Range	-40 to 125		
R _{thJC}	Max. Thermal Resistance Junction to Case	1.5	°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		

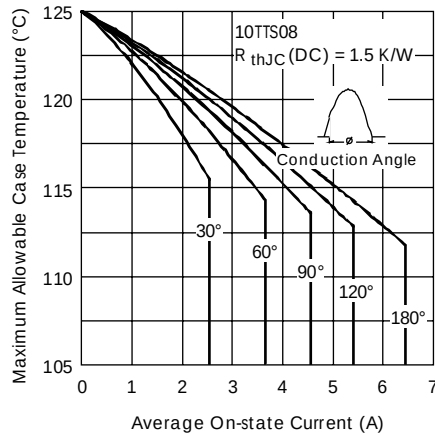


Fig. 1 - Current Rating Characteristics

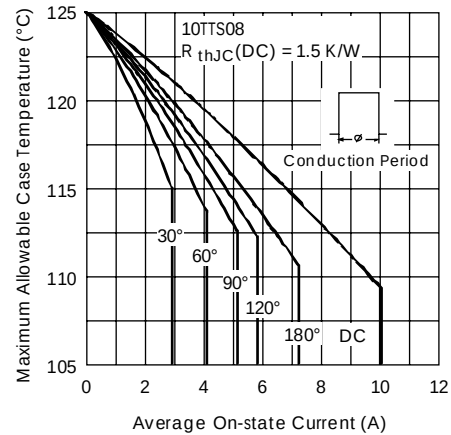


Fig. 2 - Current Rating Characteristics

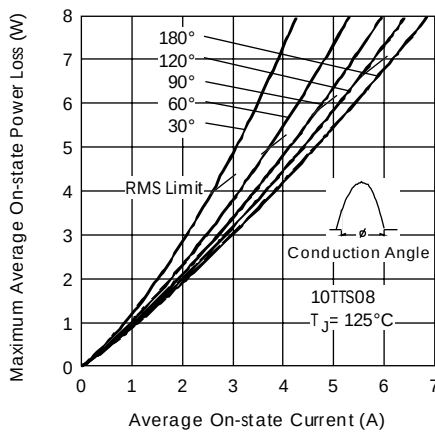


Fig. 3 - On-state Power Loss Characteristics

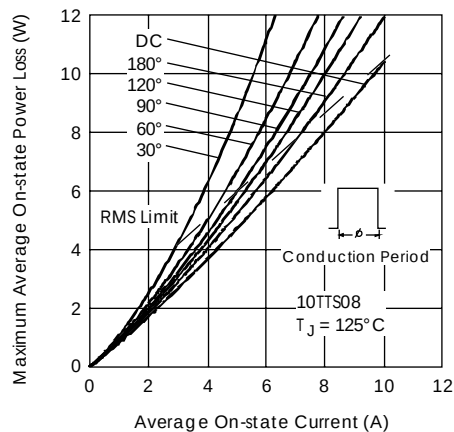


Fig. 4 - On-state Power Loss Characteristics

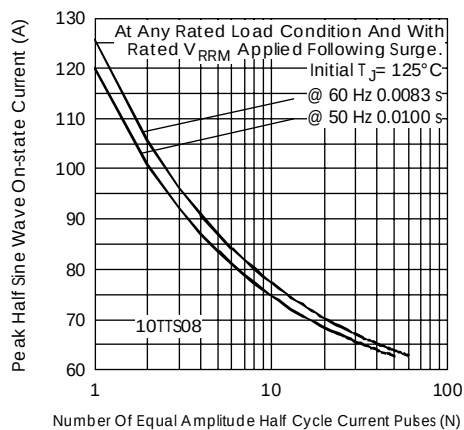


Fig. 6 - Maximum Non-Repetitive Surge Current

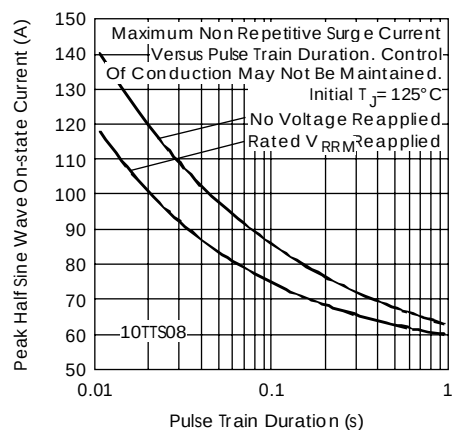


Fig. 7 - Maximum Non-Repetitive Surge Current

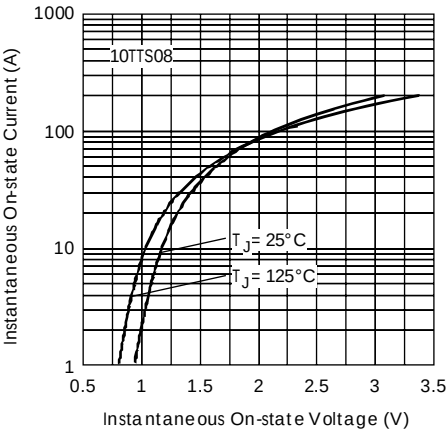


Fig. 7 - On-state Voltage Drop Characteristics

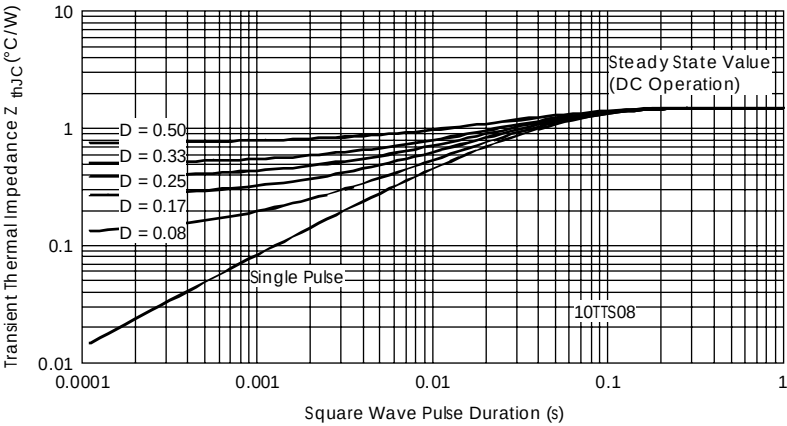
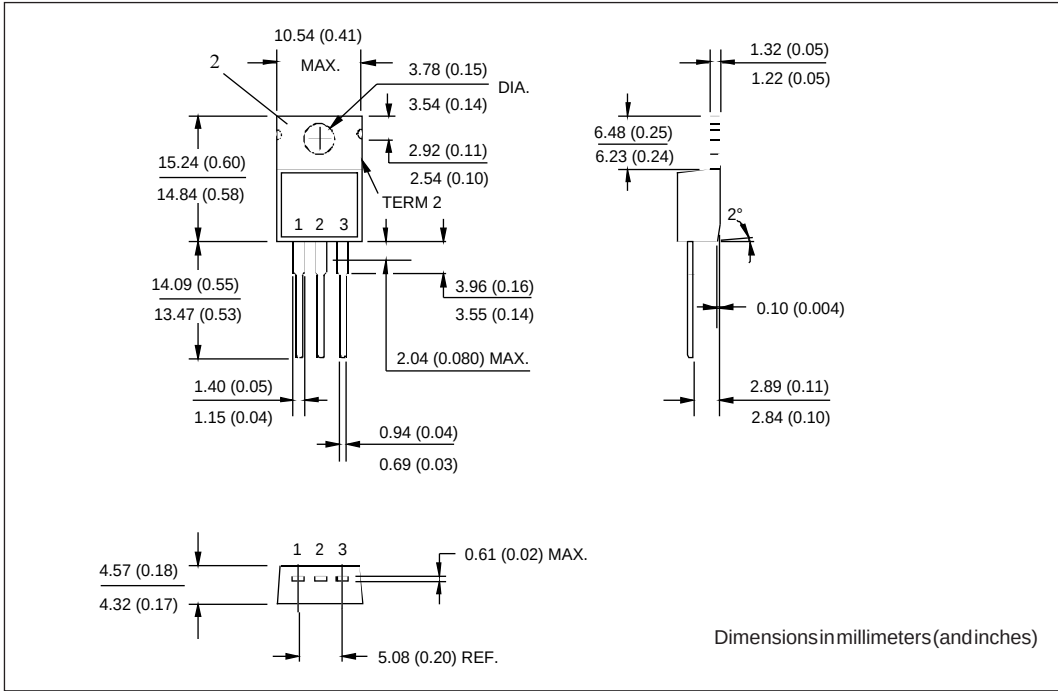


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Ordering Information Table

Device Code				
10	T	T	S	08
1	2	3	4	5
1	Current Rating			
2	Circuit Configuration:			
	T = Single Thyristor			
3	Package:			
	T = TO-220AC			
4	Type of Silicon:			
	S = Converter Grade			
5	Voltage code: Code x 100 = V_{RRM}			

