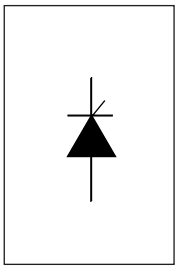
International
IOR Rectifier

*SAFE**IR*** Series
10TTS08

PHASE CONTROL SCR



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

Description/Features

The 10TTS08 *SAFE**IR*** 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.

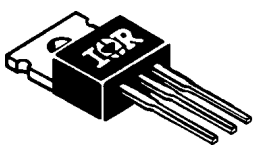
Output Current in Typical Applications

Applications	Single-phase Bridge	Three-phase Bridge	Units
Capacitive input filter T_A = 55°C, T_J = 125°C, common heatsink of 1°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	@ 6.5 A, T_J = 25°C	1.15	V
dv/dt		150	V/µs
di/dt		100	A/µs
T_J	range	-40 to 125	°C

Package Outline



TO-220AC

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° C, 180° conduction half sine wave	
$I_{T(RMS)}$	Max. RMS On-state Current	10			
I_{TSM}	Max. Peak One Cycle Non-Repetitive	120	A	10ms Sine pulse, rated V_{RRM} applied, T_J = 125°C	
	Surge Current	140		10ms Sine pulse, no voltage reapplied, T_J = 125°C	
I^2t	Max. I^2t for fusing	72	A^2s	10ms Sine pulse, rated V_{RRM} applied, T_J = 125°C	
		100		10ms Sine pulse, no voltage reapplied, T_J = 125°C	
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for fusing	1000	$A^2\sqrt{s}$	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	0.05	mA	T_J = 25 °C	V_R = rated V_{RRM}/ V_{DRM}
	Leakage Current	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. paek positive Gate Current	1.5	A	
$- V_{GM}$	Max. paek negative Gate Voltage	10	V	
I_{GT}	Max. required DC Gate Current	20	mA	Anode supply = 6V, resistive load, T_J = - 65°C
	to trigger	15		Anode supply = 6V, resistive load, T_J = 25°C
		10		Anode supply = 6V, resistive load, T_J = 125°C
V_{GT}	Max. required DC Gate Voltage	1.2	V	Anode supply = 6V, resistive load, T_J = - 65°C
	to trigger	1		Anode supply = 6V, resistive load, T_J = 25°C
		0.7		Anode supply = 6V, resistive load, T_J = 125°C
V_{GD}	Max. DC Gate Voltage not to trigger	0.2		T_J = 125°C, V_{DRM} = rated value
I_{GD}	Max. DC Gate Current not to trigger	0.1	mA	T_J = 125°C, V_{DRM} = rated value

Switching

	Parameters	10TTS08	Units	Conditions
t_{gt}	Typical turn-on time	0.8	µs	T_J = 25°C
t_{rr}	Typical reverse recovery time	3		T_J = 125°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		

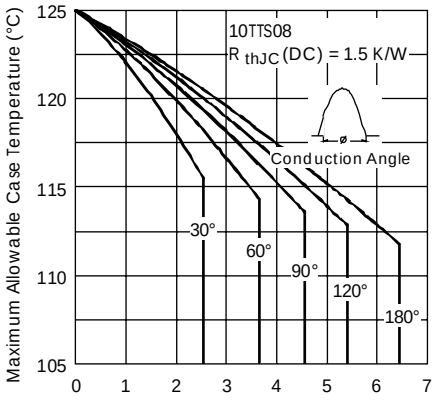


Fig. 1 - Current Rating Characteristics

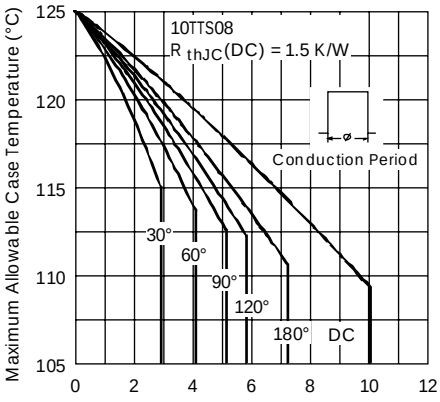


Fig. 2 - Current Rating Characteristics

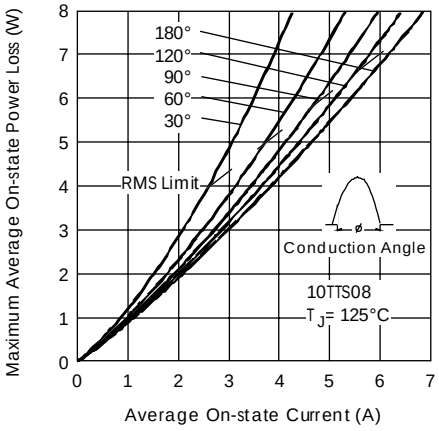


Fig. 3 - On-state Power Loss Characteristics

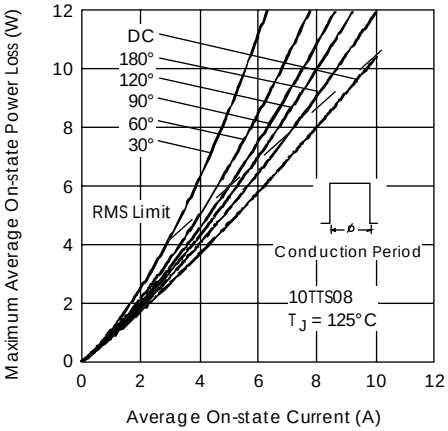


Fig. 4 - On-state Power Loss Characteristics

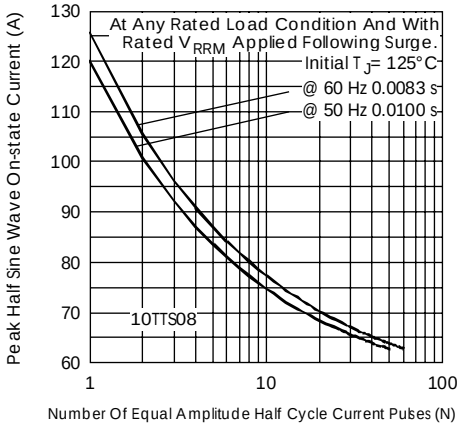


Fig. 6 - Maximum Non-Repetitive Surge Current

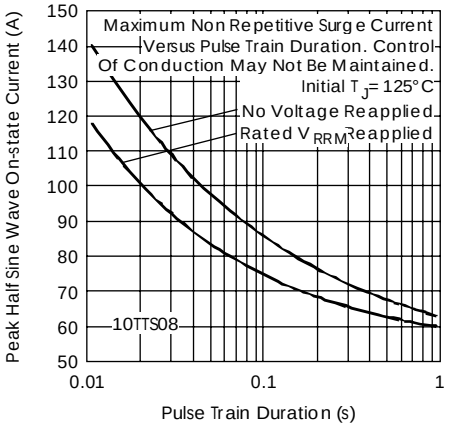


Fig. 7 - Maximum Non-Repetitive Surge Current

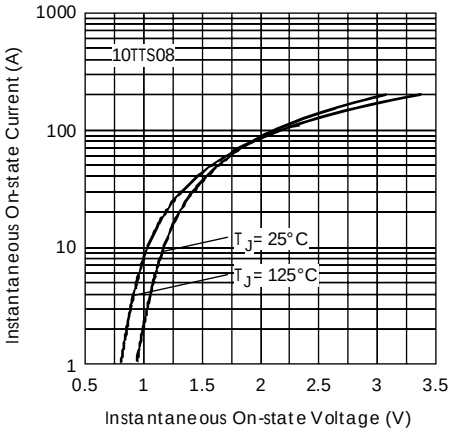


Fig. 7 - On-state Voltage Drop Characteristics

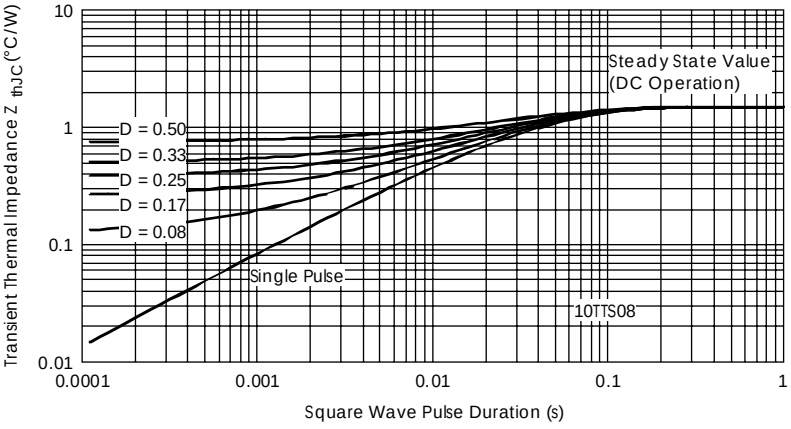
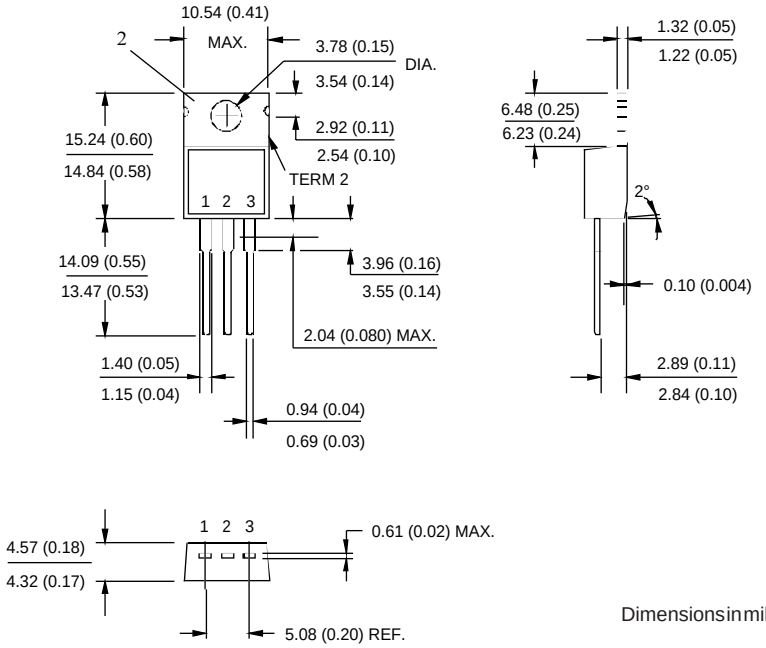


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

Outline Table

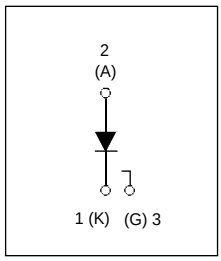


Dimensions in millimeters (and inches)

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}

International
IOR Rectifier

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IR GERMANY: Saalburgstrasse 157, 61350 Bad Homburg Tel: ++ 49 6172 96590 Fax: ++ 49 6172 965933
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