

Preliminary Data Sheet I2132 rev. C 10/99

International
IR Rectifier

SAFEIR Series
8TWS..S

PHASE CONTROL SCR



V_T	$< 1.2\text{ V @ } 8\text{ A}$
I_{TSM}	$= 120\text{ A}$
V_R / V_D	$= \text{up to } 800\text{ V}$

Description/Features

The 8TWS..S **SAFEIR** new series of silicon controlled rectifiers in D-Pak, are specifically designed for low 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 (soft start), AC switches, Motor Control and Crow-Bar. These products are designed to be used with International Rectifier input diodes, switches and output rectifiers which are available in identical package outlines.

Major Ratings and Characteristics

Characteristics	8TWS..S	Units
$I_{T(AV)}$ Sinusoidal waveform	8	A
I_{RMS}	12	A
V_{RRM} / V_{DRM}	upto 800	V
I_{TSM}	120	A
V_T @ 8 A, $T_J = 25^\circ\text{C}$	1.2	V
dv/dt	200	V/ μs
di/dt	150	A/ μs
T_J	-40to 125	$^\circ\text{C}$

Package Outline



TO-252AA (D-Pak)



8TWS..S **SAFEIR** Series

Preliminary Data Sheet I2132 rev. C 10/99

International
IOR Rectifier

Voltage Ratings

Part Number	V_{RRM} / V_{DRM} , max. repetitive peak and off-state voltage V	V_{RSM} , maximum non repetitive peak reverse voltage V	I_{RRM} / I_{DRM} 125°C mA
8TWS04S	400	500	5
8TWS06S	600	700	
8TWS08S	800	900	

Absolute Maximum Ratings

Parameters		8TWS..S	Units	Conditions	
I _{T(AV)}	Max. Average On-state Current	8	A	@ T _C =95°C, 180° conduction half sine wave	
I _{RMS}	Max. RMS On-state Current	12			
I _{TSM}	Max. Peak One Cycle	100		10ms Sine pulse, rated V _{RRM} applied, T _J = 125°C	
	Non-Repetitive Surge Current	120		10ms Sine pulse, no voltage reapplied, T _J = 125°C	
I ² t	Max. I ² t for fusing	45	A ² s	10ms Sine pulse, rated V _{RRM} applied, T _J = 125°C	
		70		10ms Sine pulse, no voltage reapplied T _J = 125°C	
I ² √t	Max. I ² √t for fusing	700	A ² √s	t=0.1 to 10ms, no voltage reapplied	
V _{TM}	Max. On-state Voltage Drop	1.2	V	@ 8A, T _J = 25°C	
r _t	On-state slope resistance	2724	mΩ	T _J = 125°C	
V _{T(TO)}	Threshold Voltage	1.011	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	5		T _J = 125 °C	
I _H	Max. Holding Current	85	mA	Anode Supply = 6V, Resistive load, Initial I _T =1A	
I _L	Max. Latching Current	75	mA	Anode Supply=6V, Resistive load	
dv/dt	Max. rate of rise of off-state Voltage	200	V/μs		
di/dt	Max. rate of rise of turned-on Current	150	A/μs		

Triggering

Parameters	8TWS..S	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, $T_J = -10^\circ\text{C}$
	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, $T_J = -10^\circ\text{C}$
	1		Anode supply = 6V, resistive load, $T_J = 25^\circ\text{C}$
	0.75		Anode supply = 6V, resistive load, $T_J = 125^\circ\text{C}$
V_{GD} Max. DC Gate Voltage not to trigger	0.20		$T_J = 125^\circ\text{C}$, $V_{DRM} = \text{rated value}$
I_{GD} Max. DC Gate Current not to trigger	0.10	mA	$T_J = 125^\circ\text{C}$, $V_{DRM} = \text{rated value}$

Switching

Parameters	8TWS..S	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	8TWS..S	Units	Conditions
T_J Max. Junction Temperature Range	-40 to 125	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-40 to 125		
Soldering Temperature	240	$^\circ\text{C}$	for 10 seconds (1.6mm from case)
R_{thJC} Max. Thermal Resistance Junction to Case	2.0	$^\circ\text{C/W}$	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient (PCB Mount)**	65	$^\circ\text{C/W}$	
wt Approximate Weight	1(0.03)	g(oz.)	
T Case Style	TO-252AA(D-PAK)		

**When mounted on 1" square (650mm²) PCB of FR-4 or G-10 material 4oz (140μm) copper 40°C/W
For recommended footprint and soldering techniques refer to application note #AN-994

8TWS..S *SAFEIR* Series

Preliminary Data Sheet I2132 rev. C 10/99

International
IOR Rectifier

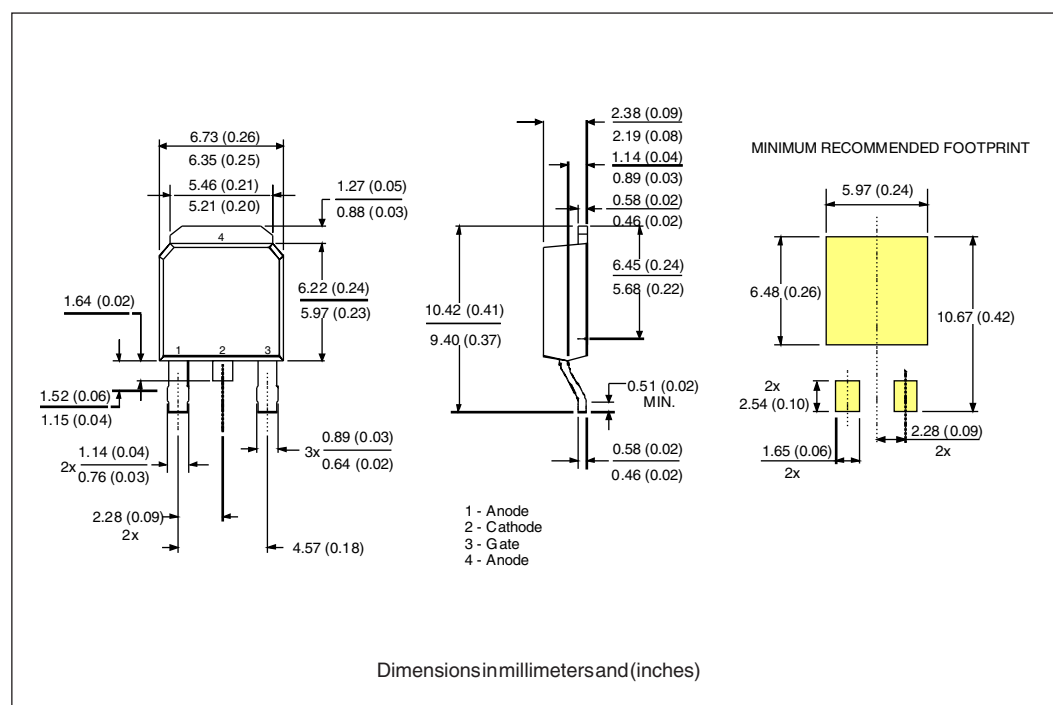
Ordering Information Table

Device Code						
8	T	W	S	08	S	TRL
①	②	③	④	⑤	⑥	⑦

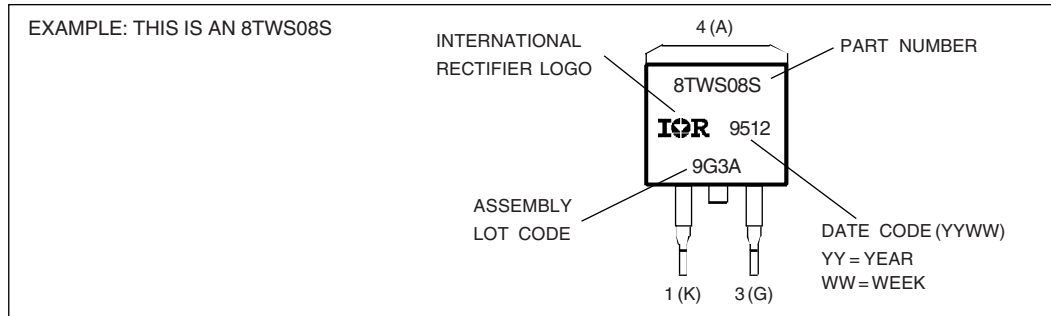
1	-	Current Rating
2	-	Circuit Configuration: T = Thyristor
3	-	Package: W = TO-252AA (D-Pak)
4	-	Type of Silicon: S = Standard Thyristors
5	-	Voltage code: Code x 100 = V_{RRM}
6	-	SMD Package
7	-	Tape and Reel Option TRL = Left Reel TRR = Right Orientation Reel

04	=	400V
06	=	600V
08	=	800V

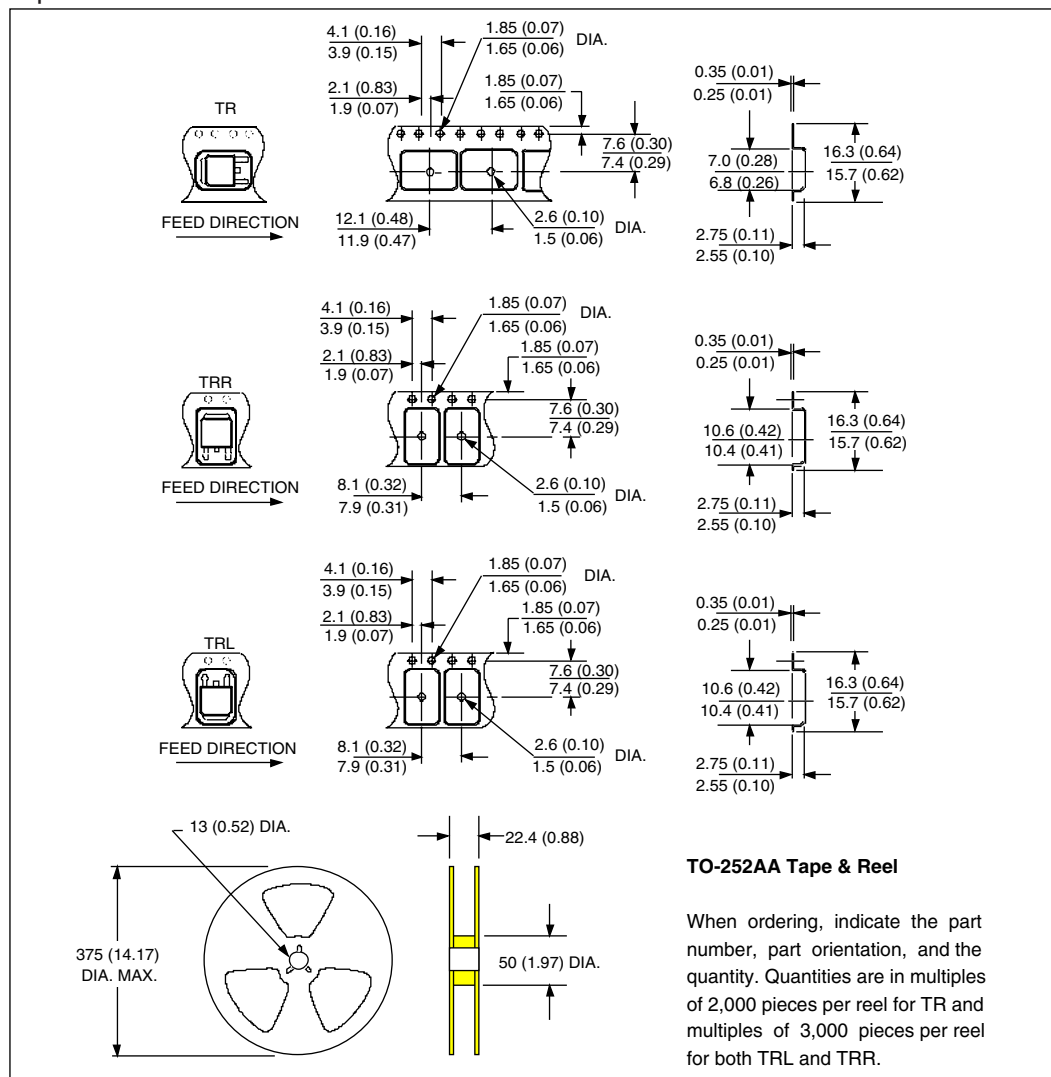
Outline Table



Marking Information



Tape & Reel Information



8TWS..S **SAFEIR** Series

Preliminary Data Sheet I2132 rev. C 10/99

International
IOR Rectifier

International
IOR Rectifier

WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245 U.S.A. Tel: (310) 322 3331. Fax: (310) 322 3332.
EUROPEAN HEADQUARTERS: Hurst Green, Oxted, Surrey RH8 9BB, U.K. Tel: ++ 44 1883 732020. Fax: ++ 44 1883 733408.

IR CANADA: 15 Lincoln Court, Brampton, Markham, Ontario L6T3Z2. Tel: (905) 453 2200. 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.

IR SOUTHEAST ASIA: 1 Kim Seng Promenade, Great World City West Tower, 13-11, Singapore 237994. Tel: ++ 65 838 4630.

IR TAIWAN: 16 Fl. Suite D.207, Sec. 2, Tun Haw South Road, Taipei, 10673, Taiwan. Tel: 886 2 2377 9936.

<http://www.irf.com>

Fax-On-Demand: +44 1883 733420

Data and specifications subject to change without notice.