


International
IR Rectifier

SAFEIR Series
 8TWS..S

PHASE CONTROL SCR

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

Description/Features

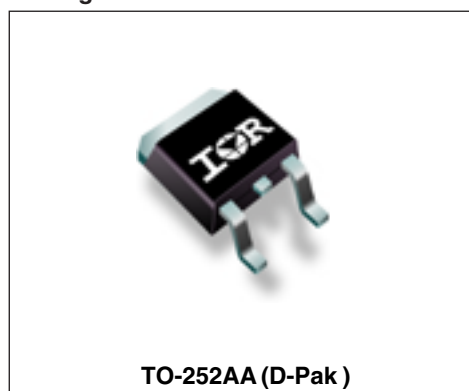
The 8TWS..S **SAFEIR** new series of silicon controlled rectifiers in D-Pak, are specifically designed for low power switching and phase control applications. The glass passivation technology used has reliable operation up to 125°C junction temperature.

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 @ 8A, $T_J = 25^\circ\text{C}$	1.2	V
dv/dt	200	V/ μs
di/dt	150	A/ μs
T_J	-40 to 125	$^\circ\text{C}$

Package Outline



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	@ $T_C=95^\circ\text{C}$, 180° conduction half sine wave
I_{RMS} Max. RMS On-state Current	12		
I_{TSM} Max. Peak One Cycle Non-Repetitive Surge Current	100		10ms Sine pulse, rated V_{RRM} applied, $T_J = 125^\circ\text{C}$
	120		10ms Sine pulse, no voltage reapplied, $T_J = 125^\circ\text{C}$
I^2t Max. I^2t for fusing	45	A^2s	10ms Sine pulse, rated V_{RRM} applied, $T_J = 125^\circ\text{C}$
	70		10ms Sine pulse, no voltage reapplied $T_J = 125^\circ\text{C}$
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	700	$\text{A}^2\sqrt{\text{s}}$	$t=0.1$ to 10ms, no voltage reapplied
V_{TM} Max. On-state Voltage Drop	1.2	V	@ 8A, $T_J = 25^\circ\text{C}$
r_t On-state slope resistance	2724	$\text{m}\Omega$	$T_J = 125^\circ\text{C}$
$V_{T(TO)}$ Threshold Voltage	1.011	V	
I_{RM} / I_{DM} Max. Reverse and Direct Leakage Current	0.05	mA	$T_J = 25^\circ\text{C}$
	5		$T_J = 125^\circ\text{C}$
			$V_R = \text{rated } V_{RRM} / V_{DRM}$
I_H Max. Holding Current	85	mA	Anode Supply = 6V, Resistive load, Initial $I_T=1\text{A}$
I_L Max. Latching Current	75	mA	Anode Supply = 6V, Resistive load
dv/dt Max. rate of rise of off-state Voltage	200	$\text{V}/\mu\text{s}$	
di/dt Max. rate of rise of turned-on Current	150	$\text{A}/\mu\text{s}$	

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_{tr} 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	°C	
T_{stg} Max. Storage Temperature Range	-40 to 125		
Soldering Temperature	240	°C	for 10 seconds (1.6mm from case)
R_{thJC} Max. Thermal Resistance Junction to Case	2.0	°C/W	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient (PCB Mount)**	65	°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 (140 μm) copper 40°C/W
For recommended footprint and soldering techniques refer to application note #AN-994

8TWS..S SAFEIR Series

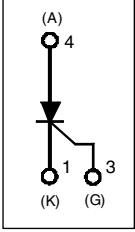
Preliminary Data Sheet I2132 rev. C 10/99

International
IR Rectifier

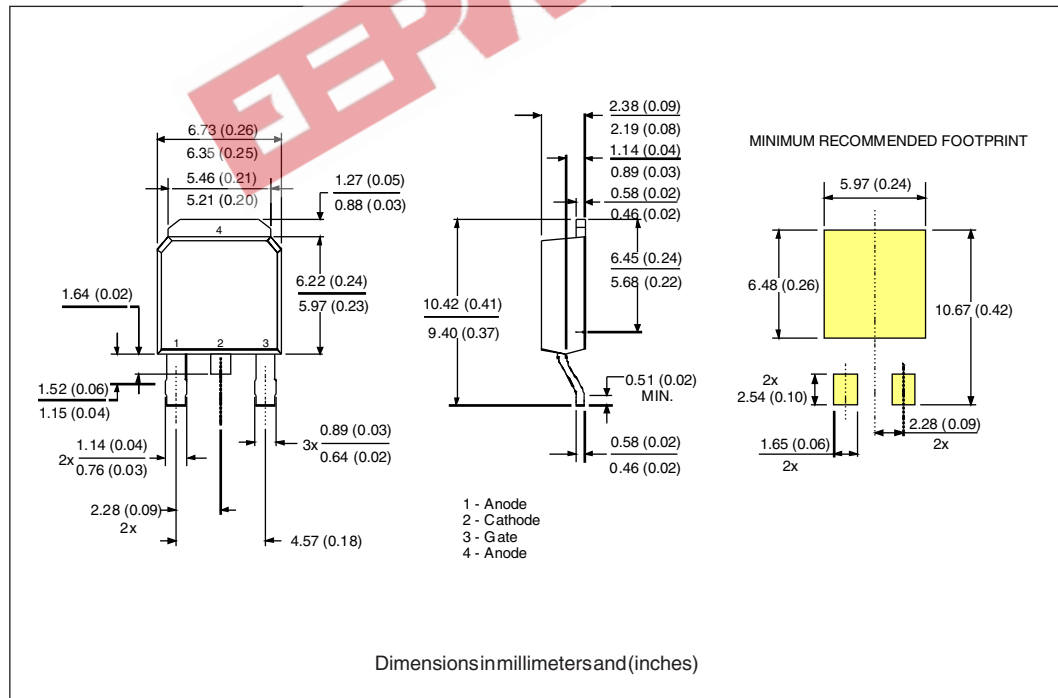
Ordering Information Table

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

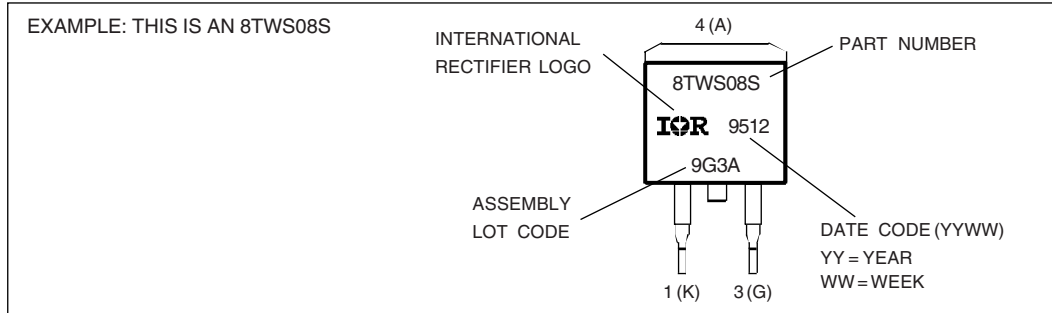
<p>1 - Current Rating</p> <p>2 - Circuit Configuration: T = Thyristor</p> <p>3 - Package: W = TO-252AA (D-Pak)</p> <p>4 - Type of Silicon: S = Standard Thyristors</p> <p>5 - Voltage code: Code x 100 = V_{RRM}</p> <p>6 - SMD Package</p> <p>7 - Tape and Reel Option TRL = Left Reel TRR = Right Orientation Reel</p>	<table border="1"> <tr><td>04</td><td>= 400V</td></tr> <tr><td>06</td><td>= 600V</td></tr> <tr><td>08</td><td>= 800V</td></tr> </table>	04	= 400V	06	= 600V	08	= 800V
04	= 400V						
06	= 600V						
08	= 800V						



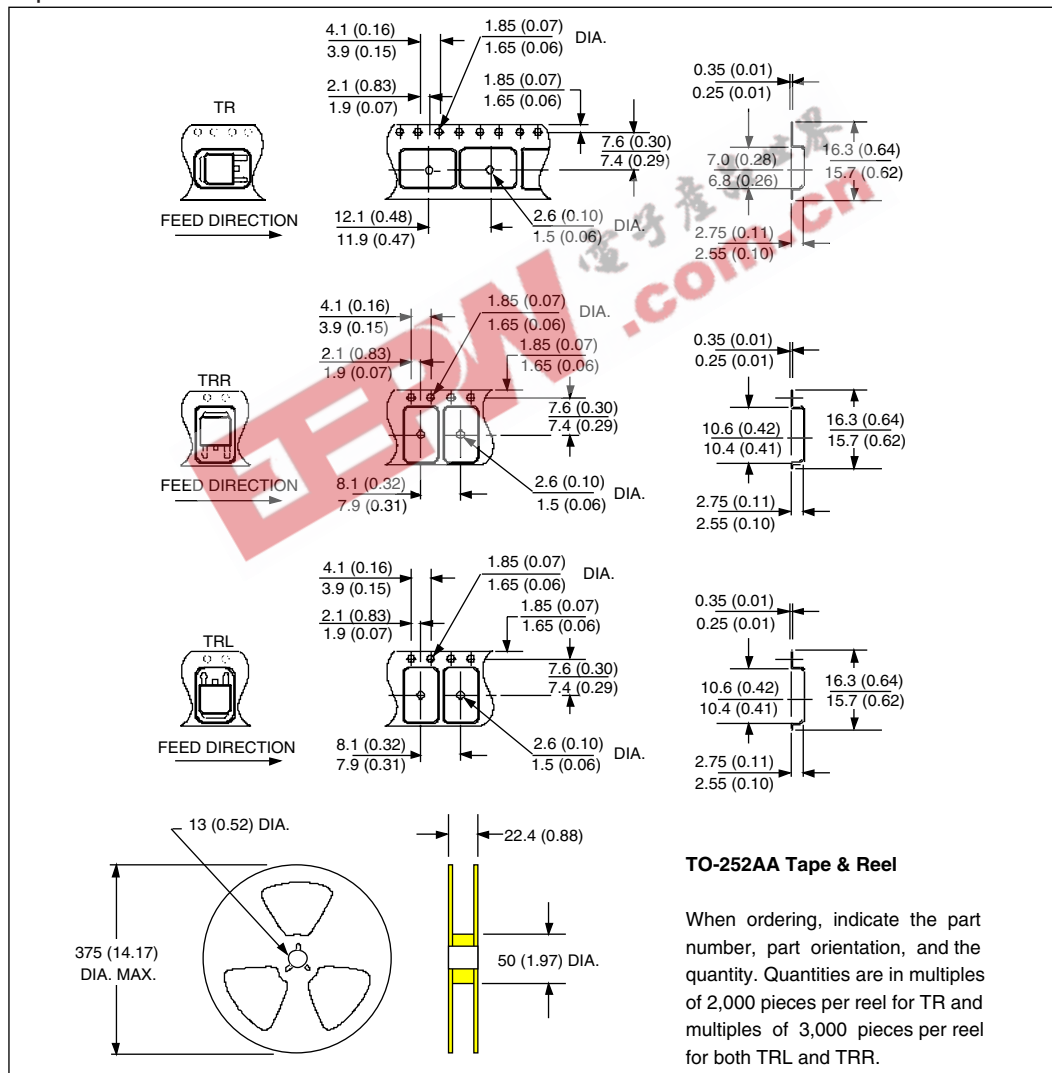
Outline Table



Marking Information



Tape & Reel Information



EEPW 电子產品世界
.com.cn

International
IR 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.