


International  
**IOR** 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

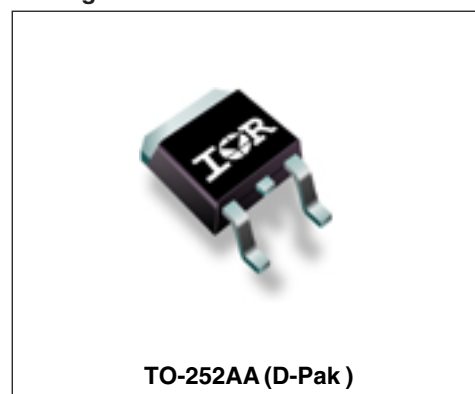
The 8TWS..S **SAFEIR** new series of silicon controlled rectifiers in D-Pak, are specifically designed for low power switching and phase control applications. The glass passivation technology used has reliable operation up to 125°C junction temperature.

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

### Package Outline



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### 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 <sub>T(AV)</sub>	Max. Average On-state Current	8	A	@ T <sub>C</sub> = 95°C, 180° conduction half sine wave	
I <sub>RMS</sub>	Max. RMS On-state Current	12			
I <sub>TSM</sub>	Max. Peak One Cycle	100		10ms Sine pulse, rated V <sub>RRM</sub> applied, T <sub>J</sub> = 125°C	
	Non-Repetitive Surge Current	120		10ms Sine pulse, no voltage reapplied, T <sub>J</sub> = 125°C	
I <sup>2</sup> t	Max. I <sup>2</sup> t for fusing	45	A <sup>2</sup> s	10ms Sine pulse, rated V <sub>RRM</sub> applied, T <sub>J</sub> = 125°C	
		70		10ms Sine pulse, no voltage reapplied T <sub>J</sub> = 125°C	
I <sup>2</sup> √t	Max. I <sup>2</sup> √t for fusing	700	A <sup>2</sup> √s	t = 0.1 to 10ms, no voltage reapplied	
V <sub>TM</sub>	Max. On-state Voltage Drop	1.2	V	@ 8A, T <sub>J</sub> = 25°C	
r <sub>t</sub>	On-state slope resistance	2724	mΩ	T <sub>J</sub> = 125°C	
V <sub>T(TO)</sub>	Threshold Voltage	1.011	V		
I <sub>RM</sub> / I <sub>DM</sub>	Max. Reverse and Direct	0.05	mA	T <sub>J</sub> = 25 °C	V <sub>R</sub> = rated V <sub>RRM</sub> / V <sub>DRM</sub>
	Leakage Current	5		T <sub>J</sub> = 125 °C	
I <sub>H</sub>	Max. Holding Current	85	mA	Anode Supply = 6V, Resistive load, Initial I <sub>T</sub> = 1A	
I <sub>L</sub>	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	$\mu\text{s}$	$T_J = 25^\circ\text{C}$
$t_{tr}$ 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	$^\circ\text{C}$	
$T_{stg}$ 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 (650mm<sup>2</sup>) 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

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### Ordering Information Table

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

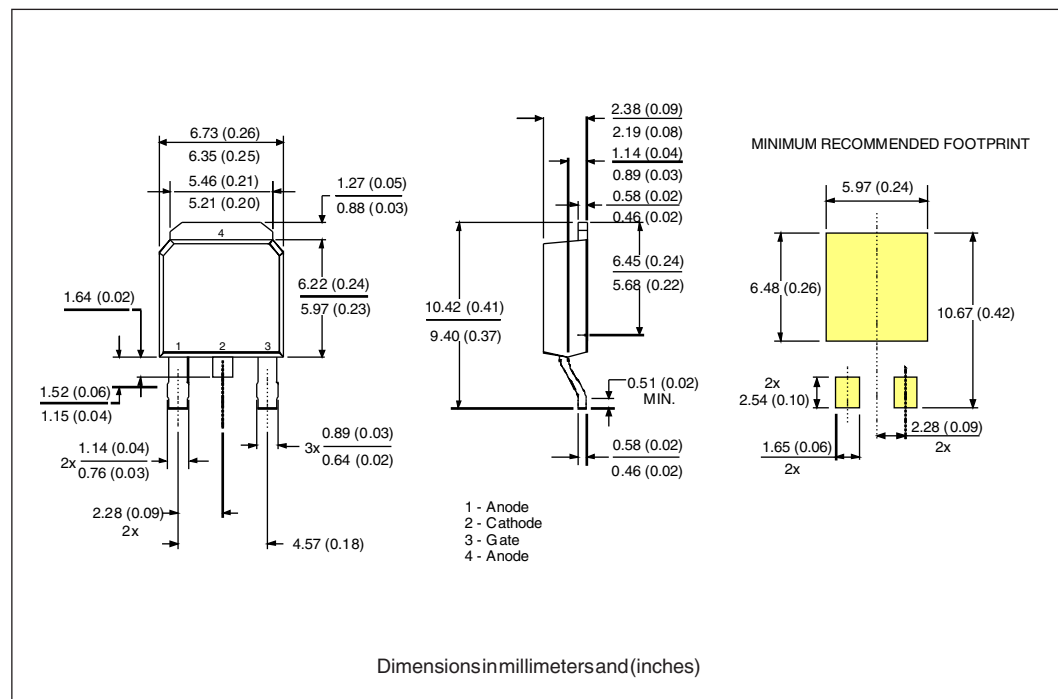
<b>1</b>	-	Current Rating
<b>2</b>	-	Circuit Configuration: T = Thyristor
<b>3</b>	-	Package: W = TO-252AA (D-Pak)
<b>4</b>	-	Type of Silicon: S = Standard Thyristors
<b>5</b>	-	Voltage code: Code x 100 = $V_{RRM}$
<b>6</b>	-	SMD Package
<b>7</b>	-	Tape and Reel Option TRL = Left Reel TRR = Right Orientation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

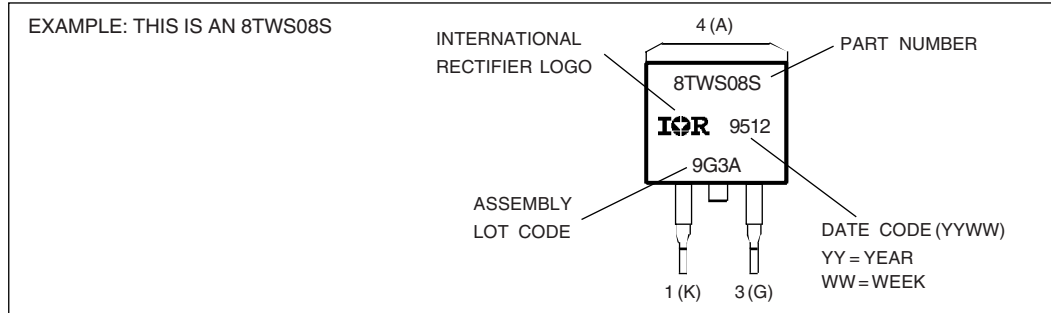
04	=	400V
06	=	600V
08	=	800V

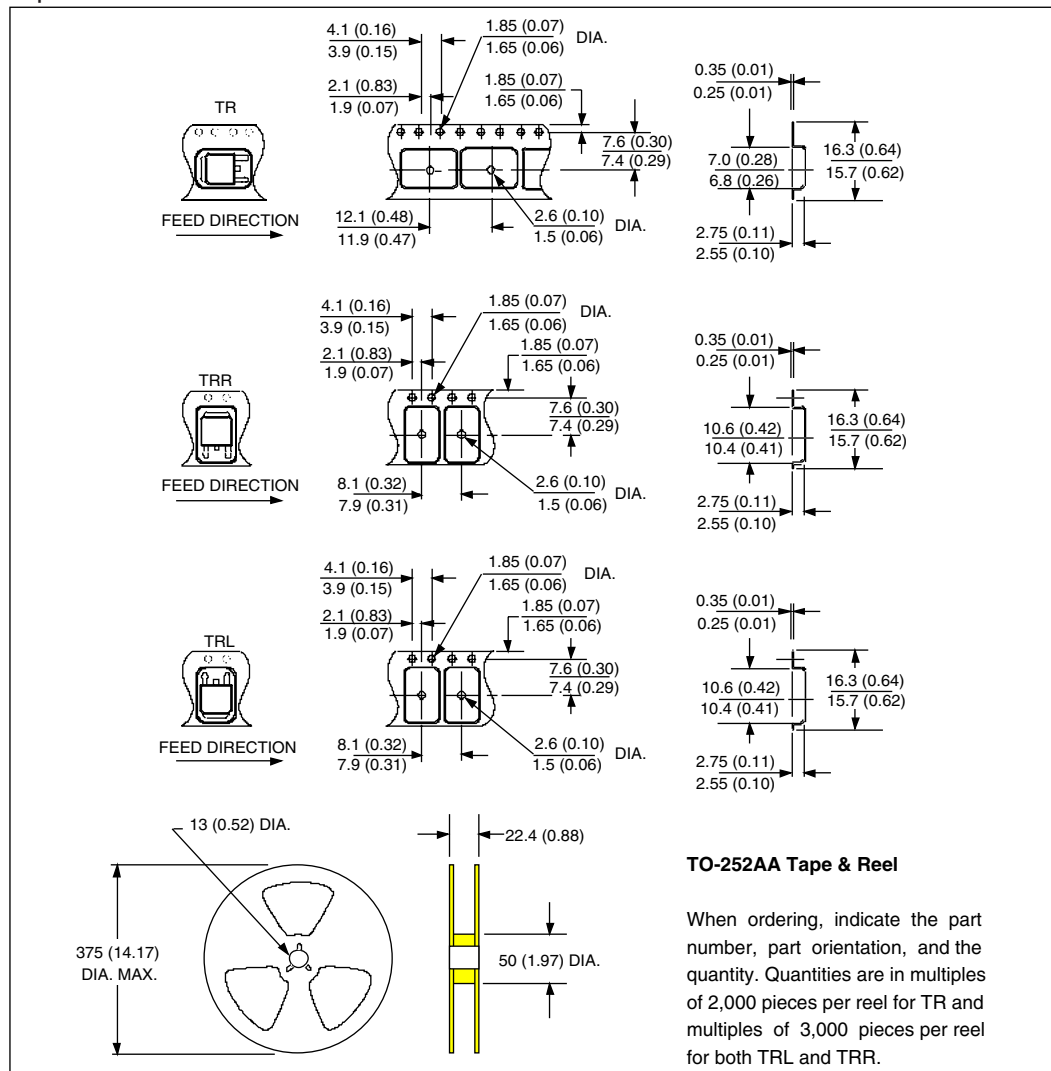
### Outline Table



## Marking Information



## Tape & Reel Information



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Data and specifications subject to change without notice.