

# STS 2300S

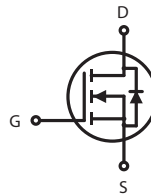
## PRODUCT SUMMARY

V <sub>DSS</sub>	I <sub>D</sub>	R <sub>DS(ON)</sub> (mΩ) Max
20V	6A	35 @ V <sub>GS</sub> = 4.5V 45 @ V <sub>GS</sub> = 2.5V

## FEATURES

- Super high dense cell design for low R<sub>DS(ON)</sub>.
- Rugged and reliable.
- SOT-23 package.

SOT-23



## ABSOLUTE MAXIMUM RATING (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	20	V
Gate-Source Voltage	V <sub>GS</sub>	±2	V
Drain Current-Continuous @ T <sub>J</sub> =25°C -Pulsed <sup>b</sup>	I <sub>D</sub>	6	A
	I <sub>DM</sub>	20	A
Drain-Source Diode Forward Current	I <sub>S</sub>	1.25	A
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	1.25	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C

## THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient <sup>a</sup>	R <sub>thJA</sub>	100	°C/W
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**ELECTRICAL CHARACTERISTICS** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ <sup>c</sup>	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=16V, V_{GS}=0V$			1	$\mu A$
Gate-Body Leakage	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$			$\pm 100$	nA
<b>ON CHARACTERISTICS<sup>b</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.8	1.3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=4A$		30	35	m-ohm
		$V_{GS}=2.5V, I_D=2A$		38	45	m-ohm
On-State Drain Current	$I_{D(ON)}$	$V_{DS}=5V, V_{GS}=4.5V$	6			A
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=4A$		18.1		S
<b>DYNAMIC CHARACTERISTICS<sup>c</sup></b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=15V, V_{GS}=0V$ $f=1.0\text{MHz}$		803		pF
Output Capacitance	$C_{OSS}$			120		pF
Reverse Transfer Capacitance	$C_{RSS}$			85		pF
<b>SWITCHING CHARACTERISTICS<sup>c</sup></b>						
Turn-On Delay Time	$t_{D(ON)}$	$V_{DD}=10V,$ $I_D=1A,$ $V_{GS}=4.5V,$ $R_{GEN}=6\text{ ohm}$		15		ns
Rise Time	$t_r$			18		ns
Turn-Off Delay Time	$t_{D(OFF)}$			78		ns
Fall Time	$t_f$			27		ns
Total Gate Charge	$Q_g$	$V_{DS}=10V, I_D=4A,$ $V_{GS}=4.5V$		8.8		nC
Gate-Source Charge	$Q_{gs}$			1.8		nC
Gate-Drain Charge	$Q_{gd}$			3.9		nC

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ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS <sup>b</sup>						
Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 1.25A$		0.8	1.2	V

## Notes

- Surface Mounted on FR4 Board,  $t \leq 10\text{sec}$ .
- Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to production testing.