



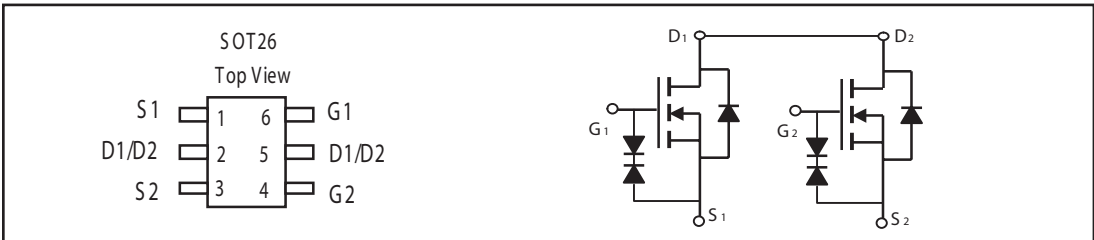
# STS8201

## Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V <sub>DSS</sub>	I <sub>D</sub>	R <sub>DS(ON)</sub> (mΩ) Max
20V	5A	27 @ V <sub>GS</sub> = 4.0V 40 @ V <sub>GS</sub> = 2.5V

### FEATURES

- Super high dense cell design for low R<sub>DS(ON)</sub>.
- Rugged and reliable.
- Surface Mount Package.
- ESD Protected.



### ABSOLUTE MAXIMUM RATINGS (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>	±12	V
Drain Current-Continuous @ T <sub>J</sub> =25°C -Pulsed <sup>b</sup>	I <sub>D</sub>	5	A
	I <sub>DM</sub>	20	A
Drain-Source Diode Forward Current <sup>a</sup>	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>θJA</sub>	100	°C/W
------------------------------------------------------	------------------	-----	------

# STS8201

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ <sup>c</sup>	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250µA	20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 16V, V <sub>GS</sub> = 0V			1	µA
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V			±10	µA
ON CHARACTERISTICS <sup>b</sup>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250µA	0.5	0.8	1.5	V
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 4.0V, I <sub>D</sub> = 5A		22	27	m ohm
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 3A		30	40	m ohm
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 5A		19		S
DYNAMIC CHARACTERISTICS <sup>c</sup>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> = 8V, V <sub>GS</sub> = 0V f = 1.0MHz		720		pF
Output Capacitance	C <sub>OSS</sub>			195		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			147		pF
SWITCHING CHARACTERISTICS <sup>c</sup>						
Turn-On Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> = 10V, I <sub>D</sub> = 1A, V <sub>GEN</sub> = 4.0V, R <sub>GEN</sub> = 10 ohm		34		ns
Rise Time	t <sub>r</sub>			68		ns
Turn-Off Delay Time	t <sub>D(OFF)</sub>			104		ns
Fall Time	t <sub>f</sub>			43		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 5A, V <sub>GS</sub> = 4.0V		12		nC
Gate-Source Charge	Q <sub>gs</sub>			2.3		nC
Gate-Drain Charge	Q <sub>gd</sub>			5.5		nC

# STS8201

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

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

### Notes

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

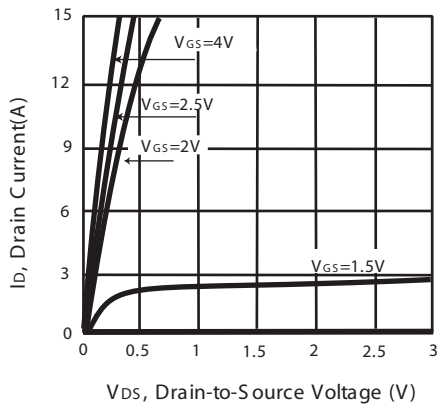


Figure 1. Output Characteristics

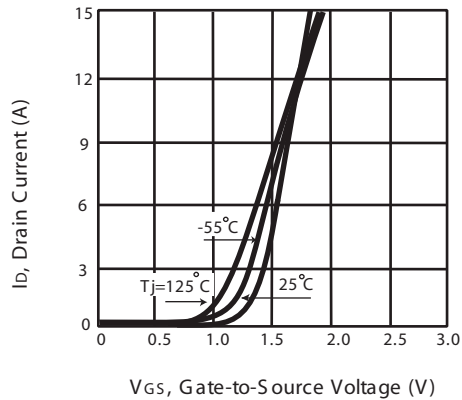


Figure 2. Transfer Characteristics

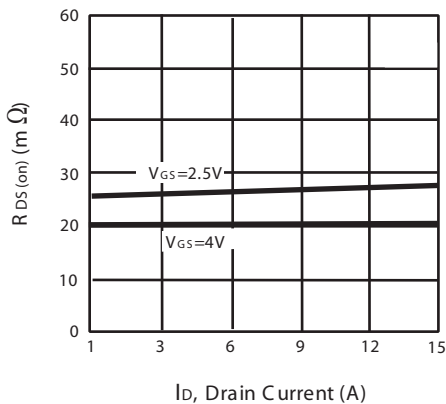


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

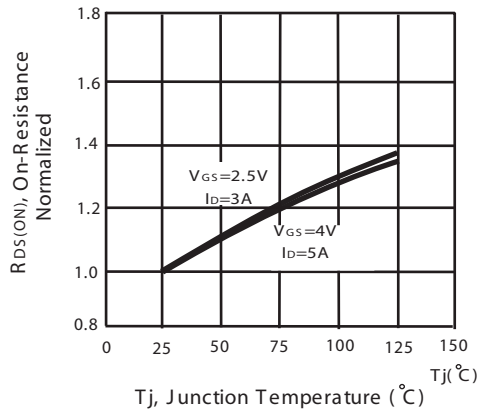


Figure 4. On-Resistance Variation with Drain Current and Temperature

# STS8201

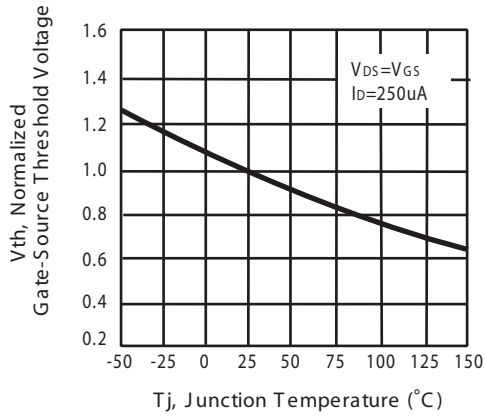


Figure 5. Gate Threshold Variation with Temperature

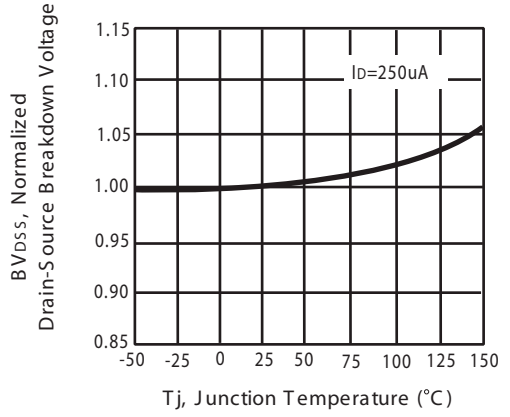


Figure 6. Breakdown Voltage Variation with Temperature

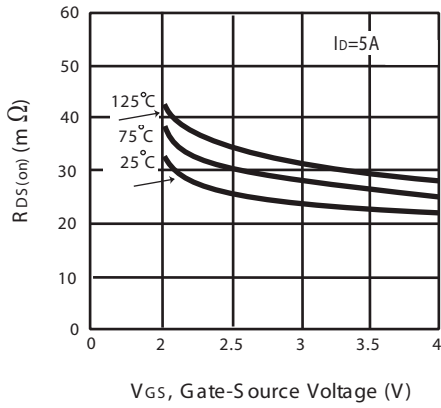


Figure 7. On-Resistance vs. Gate-Source Voltage

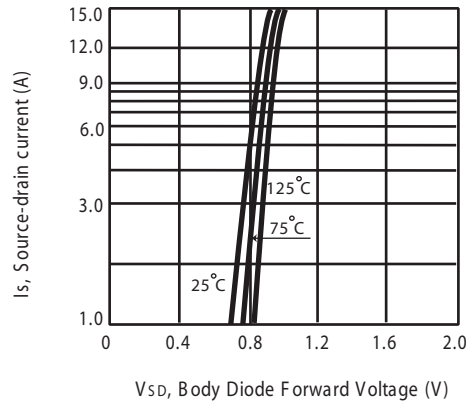


Figure 8. Body Diode Forward Voltage Variation with Source Current

# STS 8201

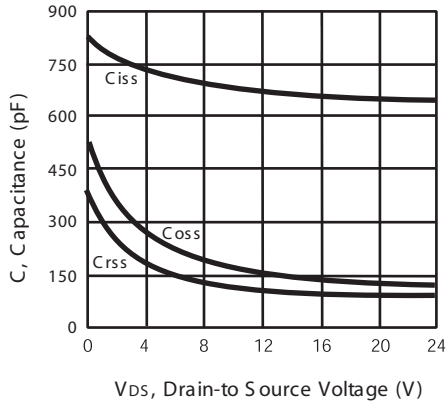


Figure 9. Capacitance

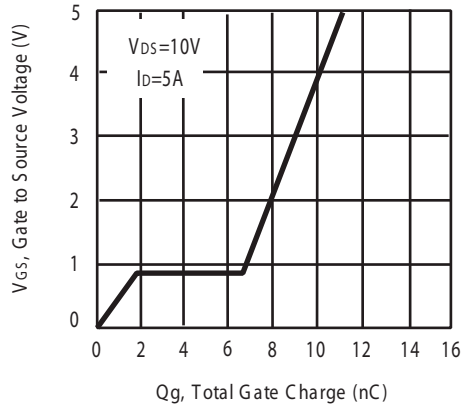


Figure 10. Gate Charge

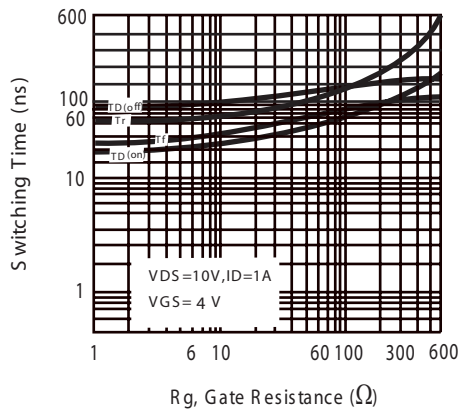


Figure 11. switching characteristics

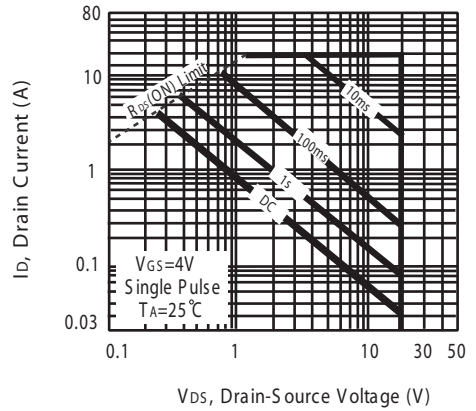


Figure 12. Maximum Safe Operating Area

# STS 8201

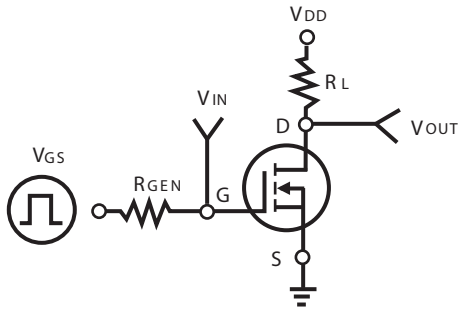


Figure 11. Switching Test Circuit

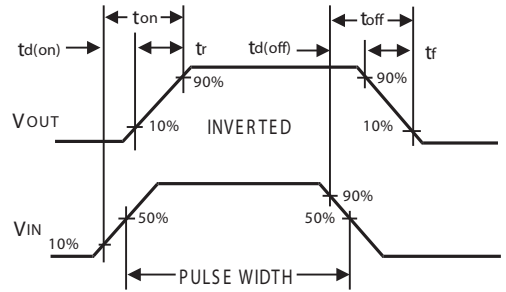
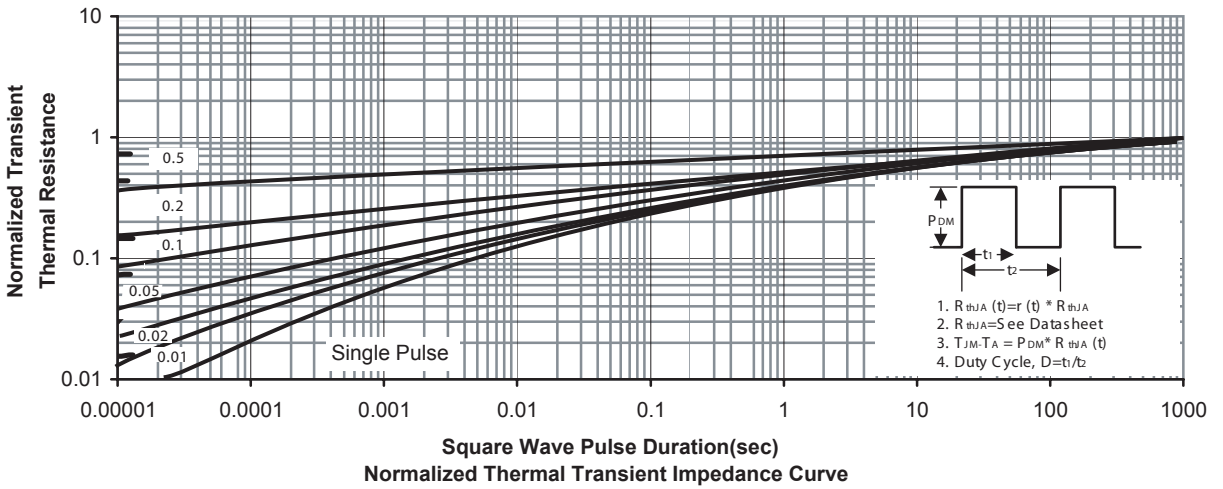


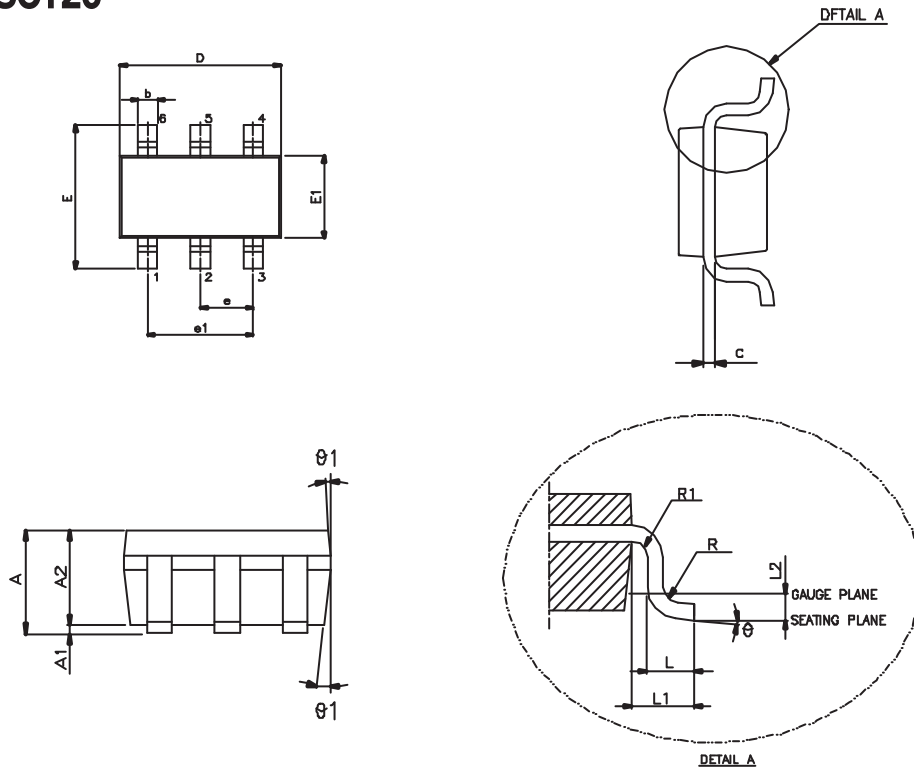
Figure 12. S switching Waveforms



# STS 8201

## PACKAGE OUTLINE DIMENSIONS

### SOT26

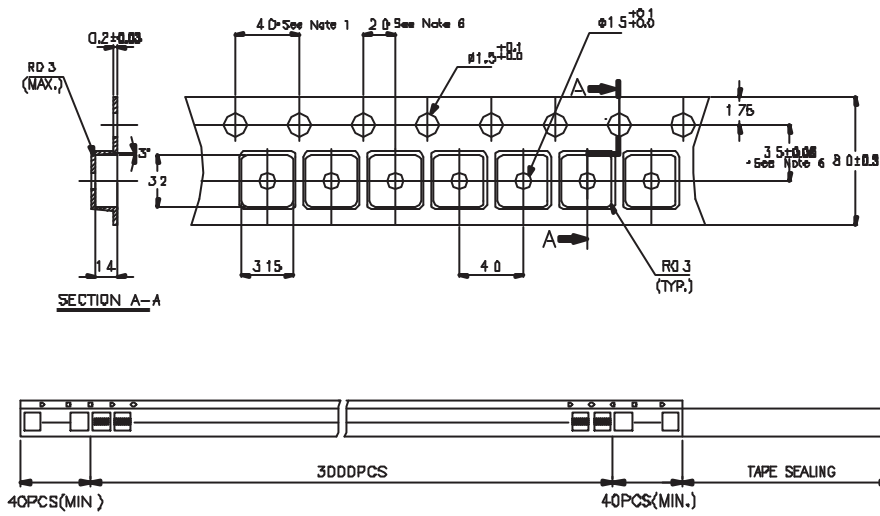


SYMBOL	MIN.	NOM.	MAX.
A	—	—	1.45
A1	—	—	0.15
A2	0.90	1.15	1.30
b	0.30	—	0.50
c	0.08	—	0.22
D	2.90 BSC.		
E	2.80 BSC.		
E1	1.60 BSC.		
e	0.95 BSC.		
e1	1.90 BSC.		
L	0.30	0.45	0.60
L1	0.60 REF.		
L2	0.25 BSC.		
R	0.10	—	—
R1	0.10	—	0.25
$\theta$	0°	4°	8°
$\theta 1$	5°	10°	15°

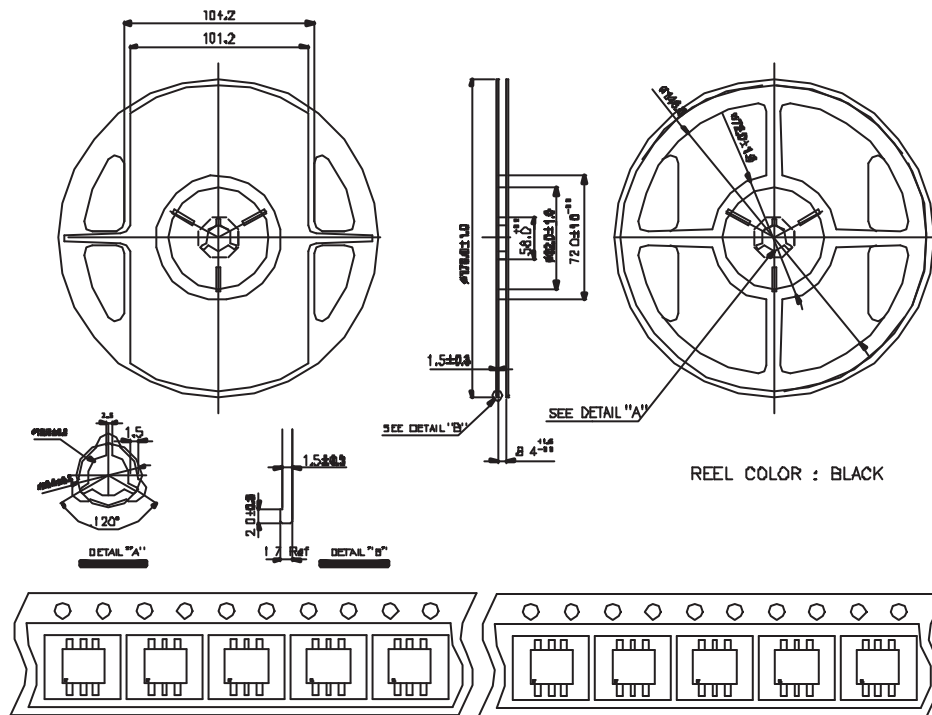
# STS 8201

## SOT26 Tape and Reel Data

### SOT26 Carrier Tape



### SOT26 Reel



SOT-26