SamHop Microelectronics Corp.

STS8201

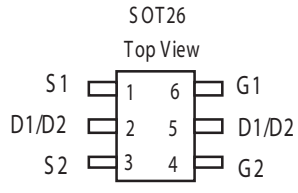
Jan. 03 2006

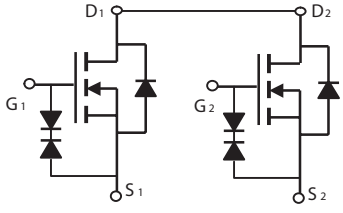
Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
20V	5A	27 @ V_{GS} = 4.0V 40 @ V_{GS} = 2.5V

FEATURES

- Super high dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- Surface Mount Package.
- ESD Protected.





ABSOLUTE MAXIMUM RATINGS (T_A=25 °C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	±20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous @ T_J=25°C	I_D	5	A
-Pulsed [b]	I_{DM}	20	A
Drain-Source Diode Forward Current [a]	I_S	1.25	A
Maximum Power Dissipation [a]	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient [a]	$R_{\theta JA}$	100	°C/W

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ELECTRICAL CHARACTERISTICS (T_A=25 °C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ [c]	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V, V_{GS}=0V			1	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±12V,V_{DS}=0V			±10	uA
ON CHARACTERISTICS [b]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	0.5	0.8	1.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.0V, I_D=5A		22	27	m ohm
		V_{GS}=2.5V, I_D=3A		30	40	m ohm
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=5A		19		S
DYNAMIC CHARACTERISTICS [c]						
Input Capacitance	C_{ISS}	V_{DS}=8V, V_{GS}=0V f=1.0MHz		720		pF
Output Capacitance	C_{OSS}			195		pF
Reverse Transfer Capacitance	C_{RSS}			147		pF
SWITCHING CHARACTERISTICS [c]						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD}=10V, I_D=1A, V_{GEN}=4.0V, R_{GEN}=10 ohm		34		ns
Rise Time	t_r			68		ns
Turn-Off Delay Time	$t_{D(OFF)}$			104		ns
Fall Time	t_f			43		ns
Total Gate Charge	Q_g	V_{DS}=10V, I_D=5A, V_{GS}=4.0V		12		nC
Gate-Source Charge	Q_{gs}			2.3		nC
Gate-Drain Charge	Q_{gd}			5.5		nC

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ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS [b]						
Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, Is = 1.25A		0.8	1.2	V

Notes

a.Surface Mounted on FR4 Board, t <=10sec.

b.Pulse Test:Pulse Width ≤ 300us, Duty Cycle ≤ 2%.

c.Guaranteed by design, not subject to production testing.

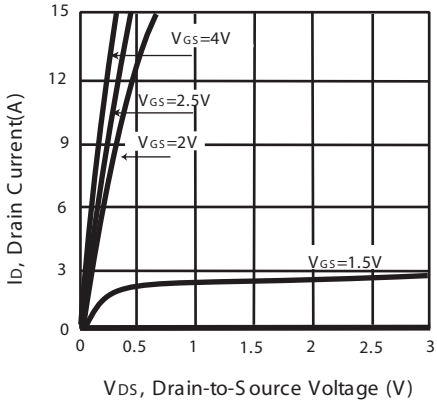

Figure 1. Output Characteristics

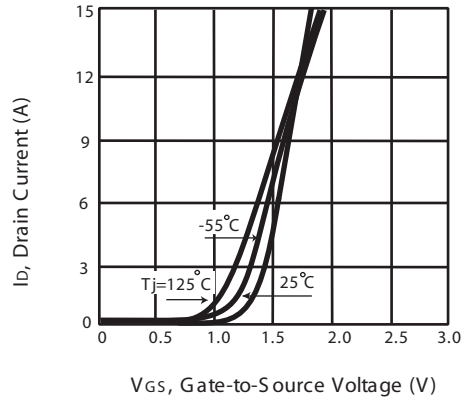

Figure 2. Transfer Characteristics

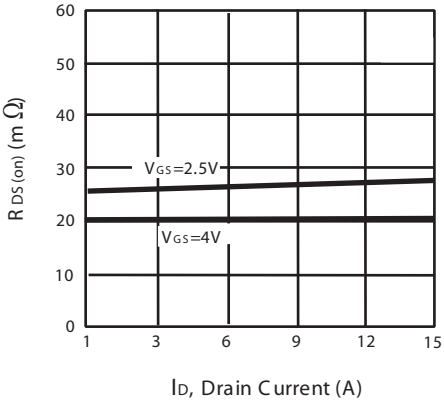

Figure 3. On-Resistance vs. Drain Current and Gate Voltage

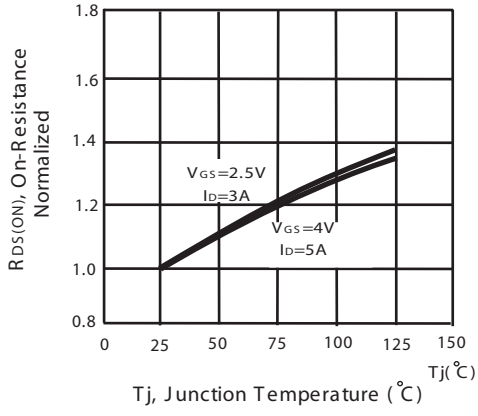

Figure 4. On-Resistance Variation with Drain Current and Temperature

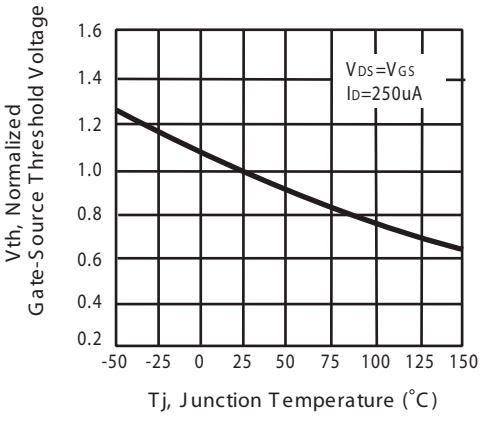

Figure 5. Gate Threshold Variation with Temperature

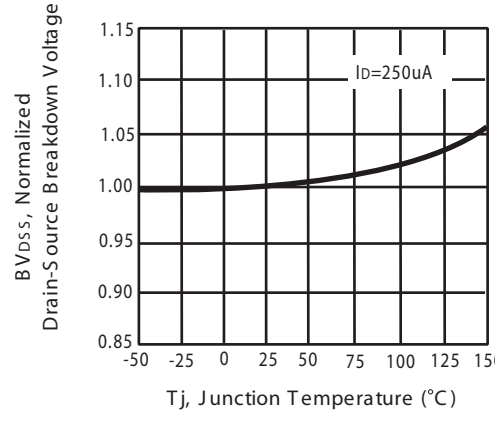

Figure 6. Breakdown Voltage Variation with Temperature

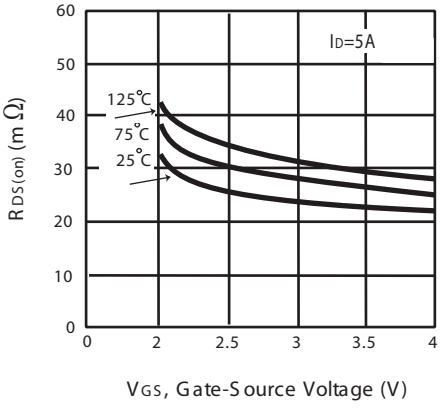

Figure 7. On-Resistance vs. Gate-Source Voltage

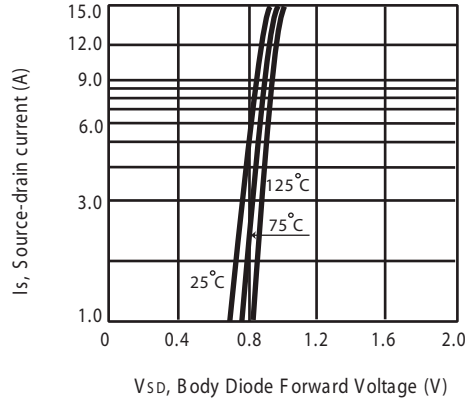

Figure 8. Body Diode Forward Voltage Variation with Source Current

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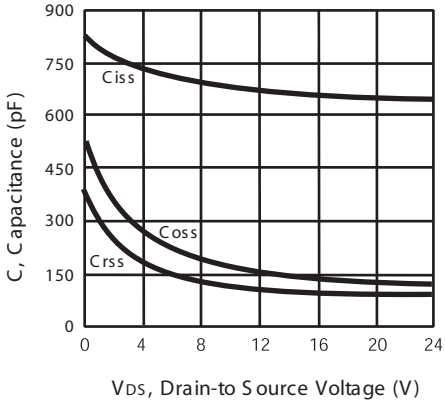


Figure 9. Capacitance

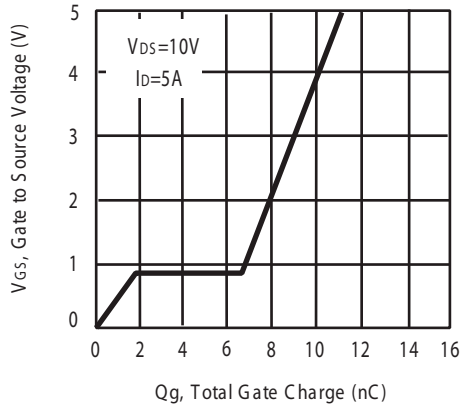


Figure 10. Gate Charge

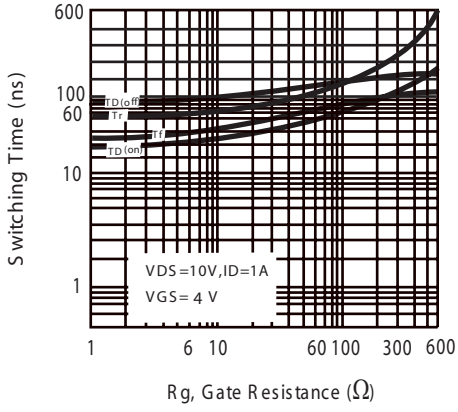


Figure 11.switching characteristics

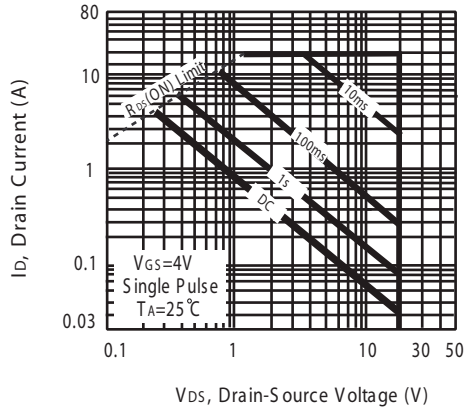


Figure 12. Maximum Safe Operating Area

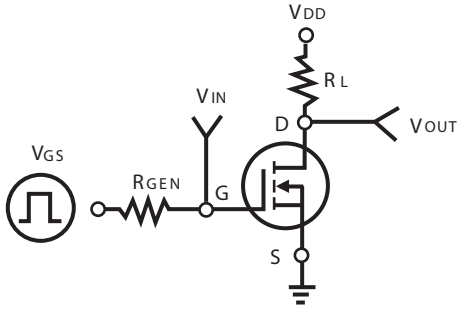


Figure 11. Switching Test Circuit

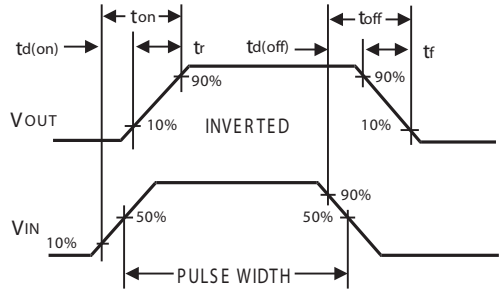
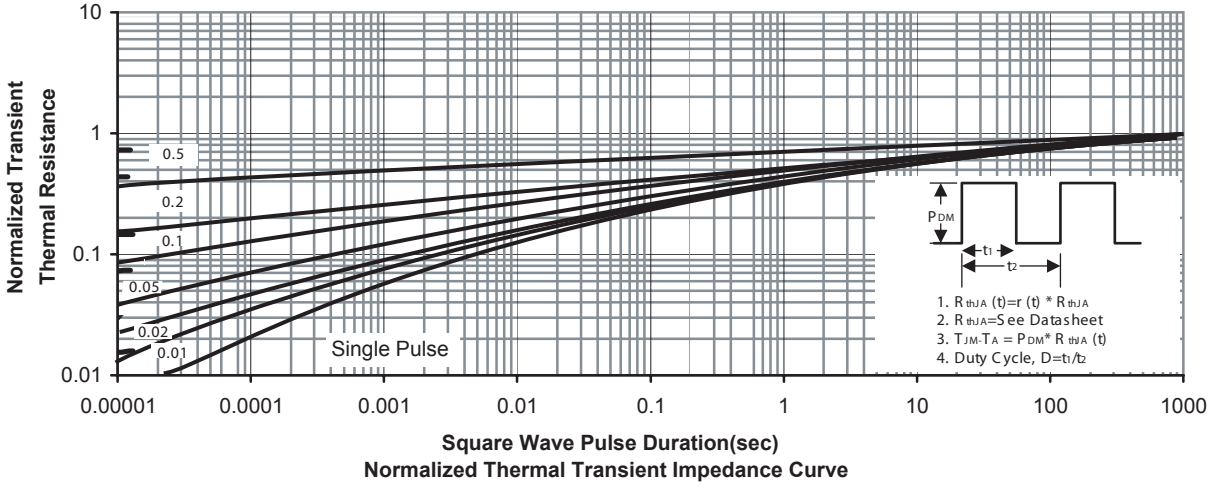


Figure 12. Switching Waveforms



Normalized Thermal Transient Impedance Curve

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PACKAGE OUTLINE DIMENSIONS

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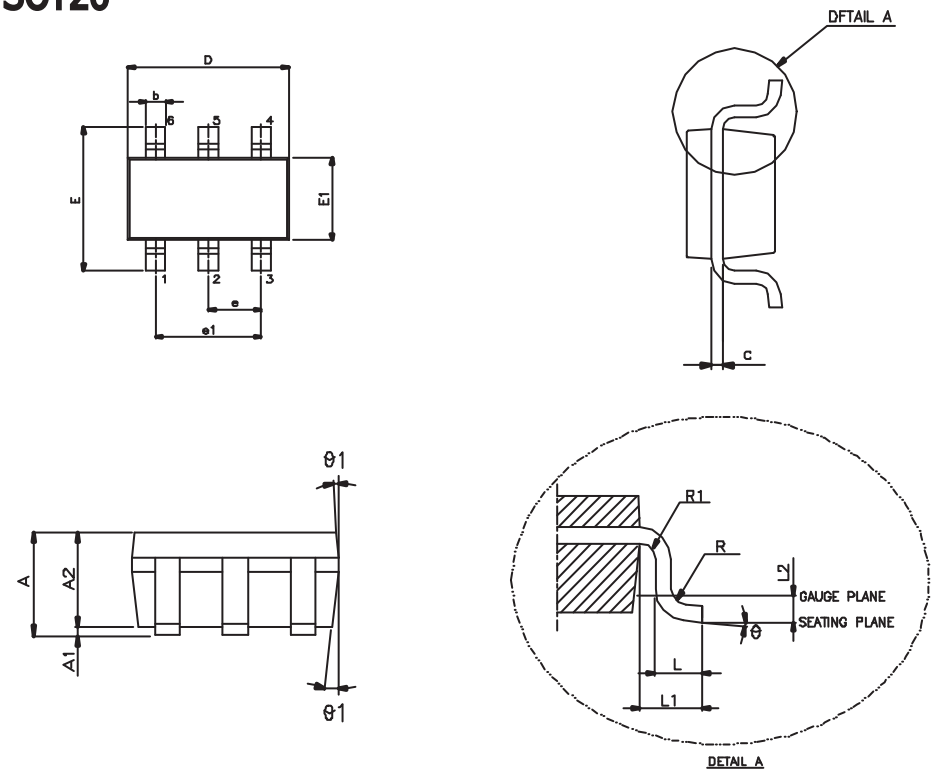
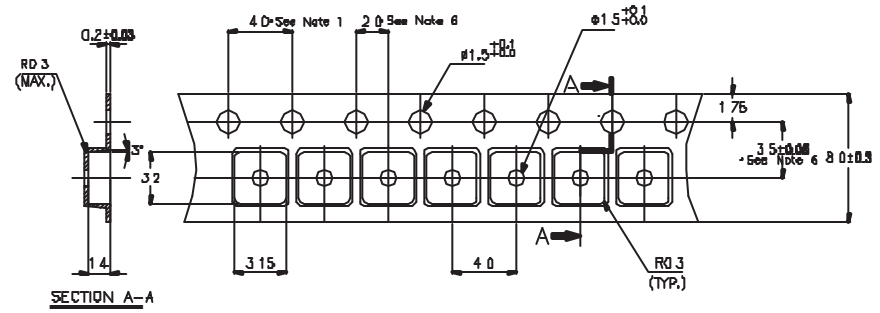


SYMBOL	MIN.	NOM.	MAX.
A	–	–	1.45
A1	–	–	0.15
A2	0.90	1.15	1.30
b	0.30	–	0.50
c	0.08	–	0.22
D	2.90 BSC.		
E	2.80 BSC.		
E1	1.60 BSC.		
e	0.95 BSC		
e1	1.90 BSC.		
L	0.30	0.45	0.60
L1	0.60 REF.		
L2	0.25 BSC.		
R	0 10	–	–
R1	0 10	–	0.25
θ	0°	4°	8°
θ1	5°	10°	15°

SOT26 Tape and Reel Data

SOT26 Carrier Tape



SOT26 Reel