



SamHop Microelectronics Corp.



STT622S

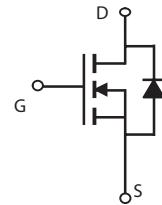
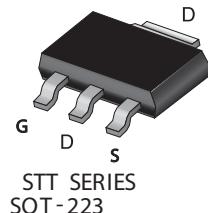
Ver 1.0

N-Channel Logic Level Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
VDSS	ID	RDS(ON) (mΩ) Max
60V	4.2A	76 @ VGS=10V
		100 @ VGS=4.5V

FEATURES

- Super high dense cell design for low RDS(ON).
- Rugged and reliable.
- Surface Mount Package.



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Limit	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current-Continuous ^a	4.2	A
		3.4	A
I_{DM}	-Pulsed ^b	28	A
E_{AS}	Single Pulse Avalanche Energy ^d	16	mJ
P_D	Maximum Power Dissipation ^a	3	W
		1.9	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient ^a	42	$^\circ\text{C/W}$
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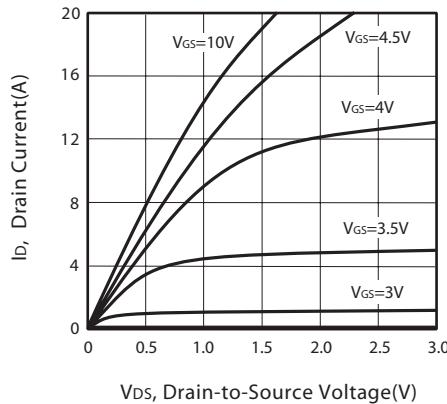
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =48V , V _{GS} =0V			1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	1.9	3	V
R _{DSON}	Drain-Source On-State Resistance	V _{GS} =10V , I _D =4.2A		61	76	m ohm
		V _{GS} =4.5V , I _D =3.7A		74	100	m ohm
g _{FS}	Forward Transconductance	V _{DS} =5V , I _D =4.2A		10.5		S
DYNAMIC CHARACTERISTICS ^c						
C _{ISS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V f=1.0MHz		720		pF
C _{OSS}	Output Capacitance			52		pF
C _{RSS}	Reverse Transfer Capacitance			39		pF
SWITCHING CHARACTERISTICS ^c						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =30V I _D =1A V _{GS} =10V R _{GEN} = 6 ohm		12.5		ns
t _r	Rise Time			12		ns
t _{D(OFF)}	Turn-Off Delay Time			20		ns
t _f	Fall Time			14.5		ns
Q _g	Total Gate Charge	V _{DS} =30V, I _D =4.2A, V _{GS} =10V		12		nC
		V _{DS} =30V, I _D =4.2A, V _{GS} =4.5V		6		nC
Q _{gs}	Gate-Source Charge	V _{DS} =30V, I _D =4.2A, V _{GS} =10V		1.5		nC
Q _{gd}	Gate-Drain Charge			3.2		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V _{SD}	Diode Forward Voltage ^b	V _{GS} =0V, I _S =1A		0.79	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.						
d.Starting T _J =25°C,L=0.5mH,V _{DD} = 30V.(See Figure13)						

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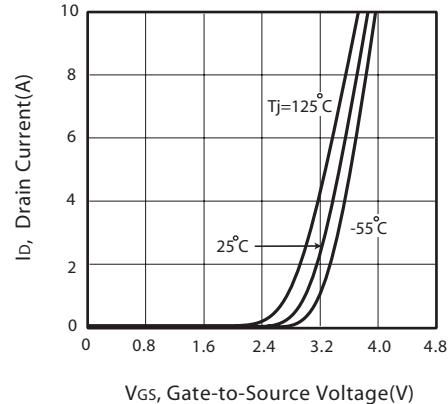
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V_{DS} , Drain-to-Source Voltage(V)

Figure 1. Output Characteristics



V_{GS} , Gate-to-Source Voltage(V)

Figure 2. Transfer Characteristics

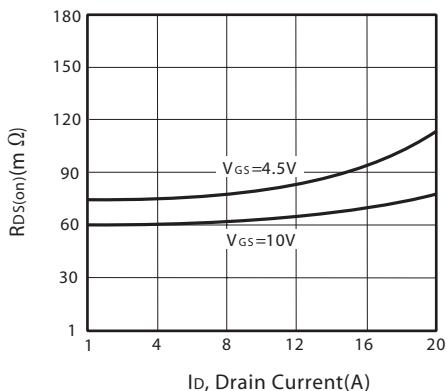


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

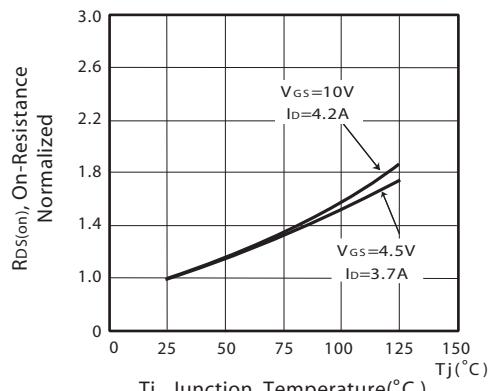


Figure 4. On-Resistance Variation with Drain Current and Temperature

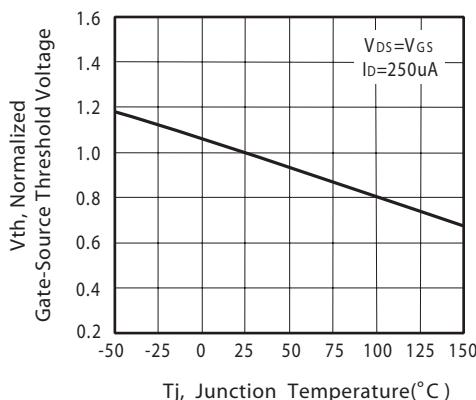


Figure 5. Gate Threshold Variation with Temperature

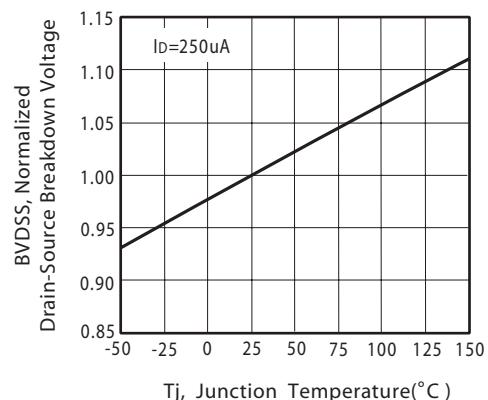
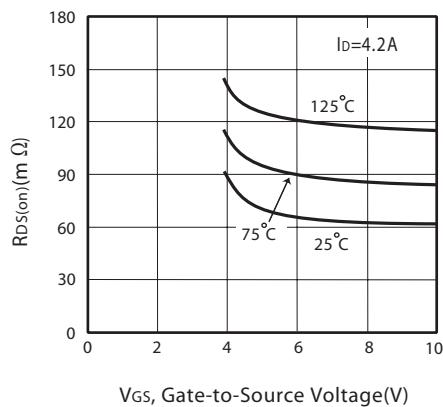


Figure 6. Breakdown Voltage Variation with Temperature

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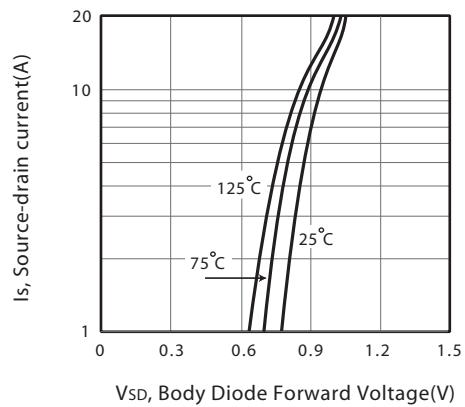
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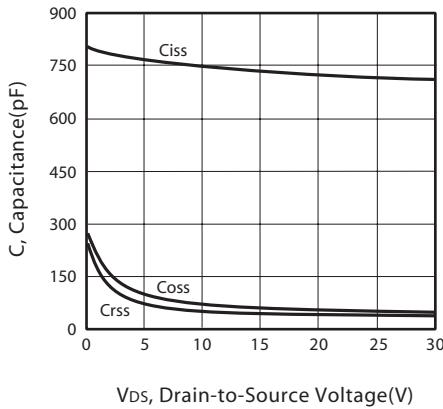
V_{GS}, Gate-to-Source Voltage(V)

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



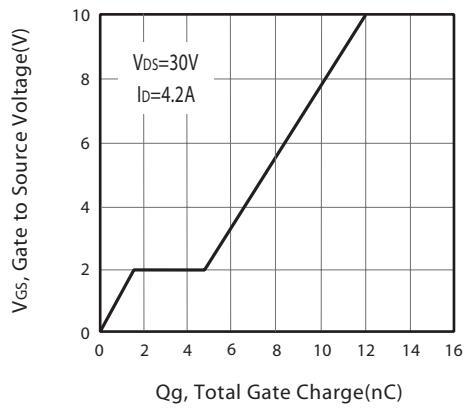
V_{SD}, Body Diode Forward Voltage(V)

Figure 8. Body Diode Forward Voltage Variation with Source Current



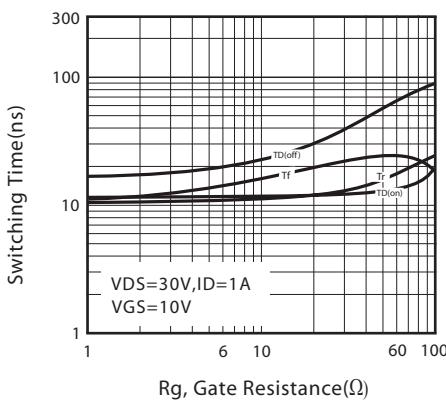
V_{DS}, Drain-to-Source Voltage(V)

Figure 9. Capacitance



Q_G, Total Gate Charge(nC)

Figure 10. Gate Charge



R_g, Gate Resistance(Ω)

Figure 11. switching characteristics

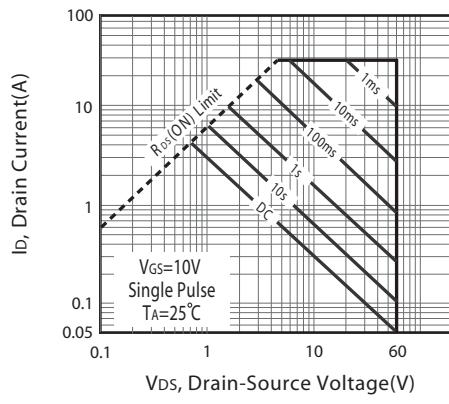
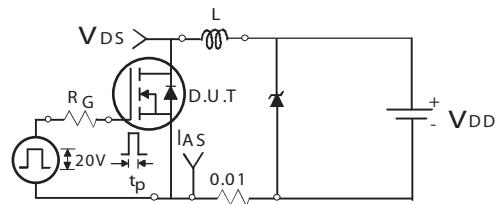


Figure 12. Maximum Safe Operating Area

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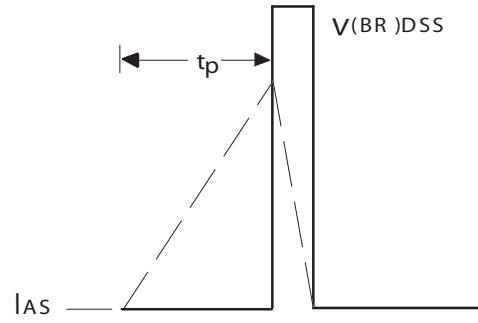
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Unclamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.

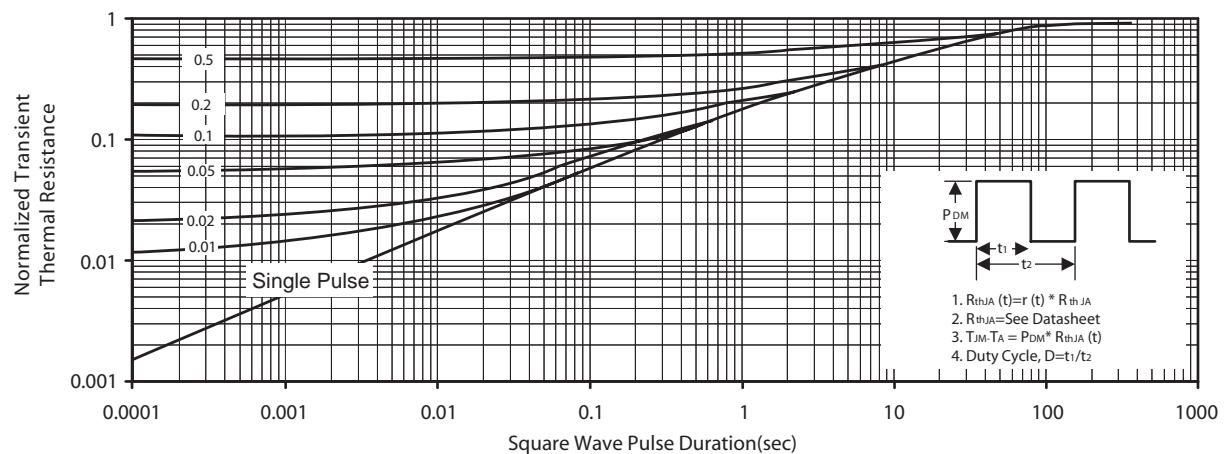
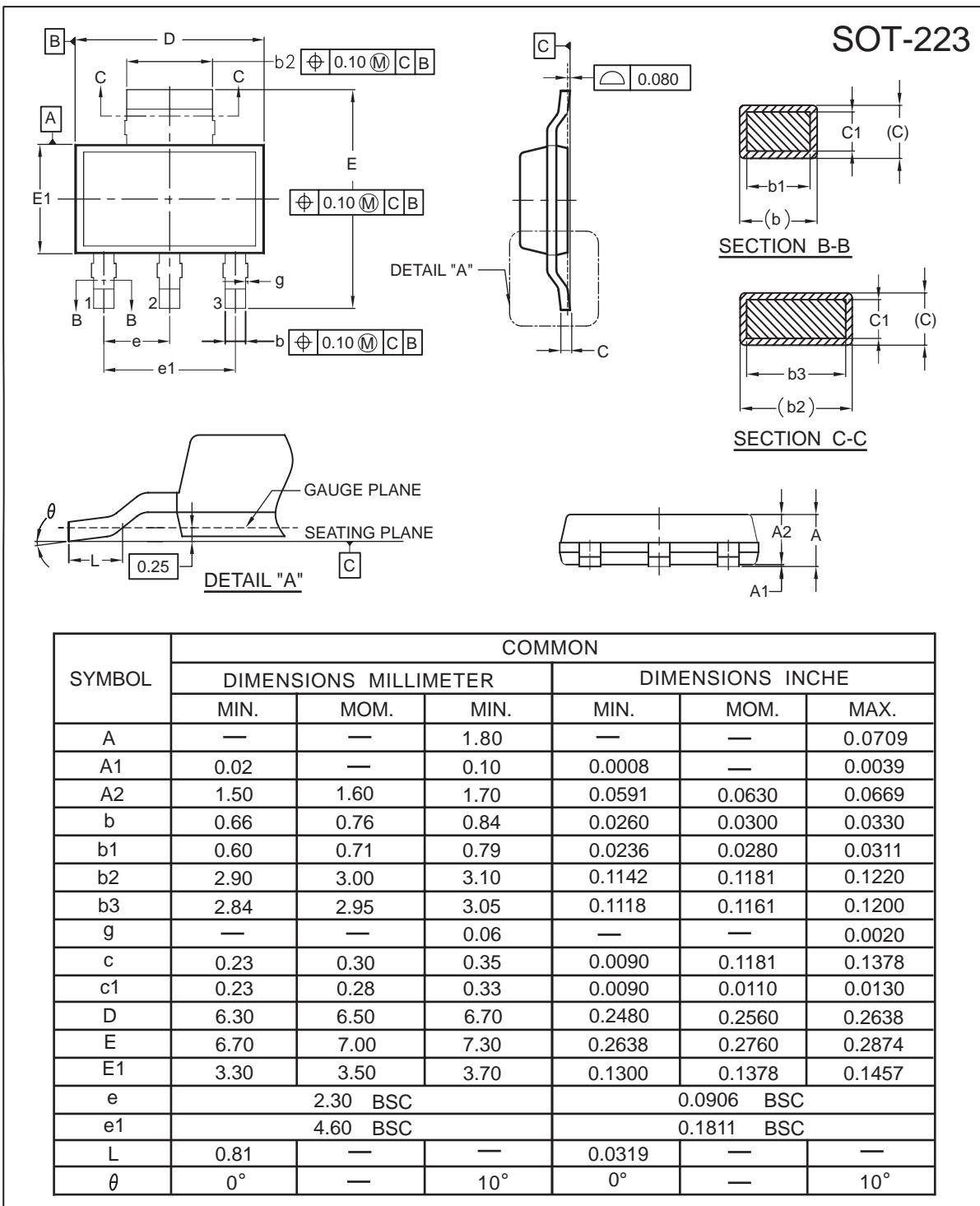


Figure 14. Normalized Thermal Transient Impedance Curve

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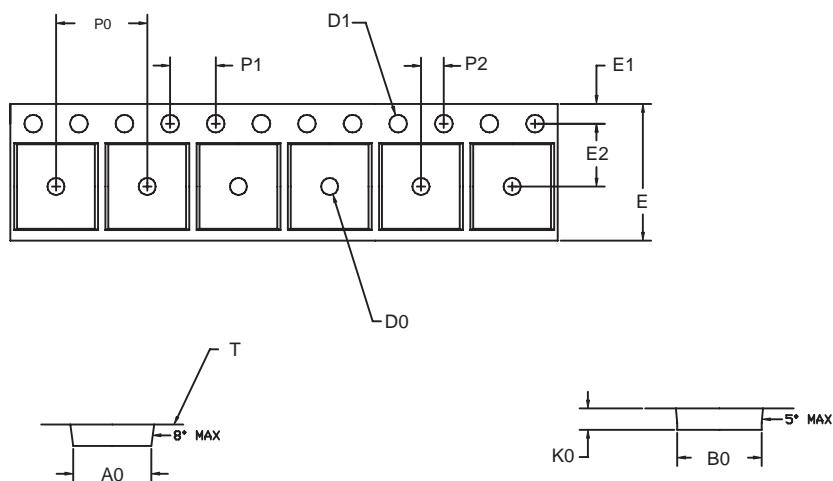
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SOT-223 Tape and Reel Data

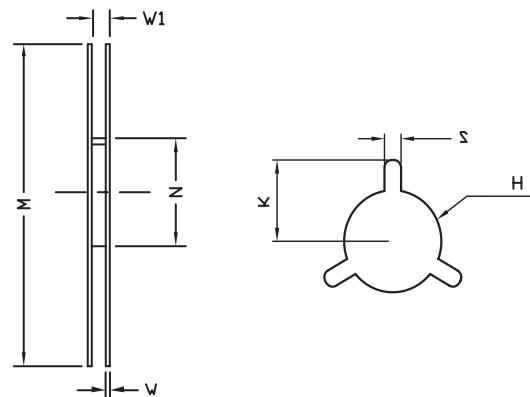
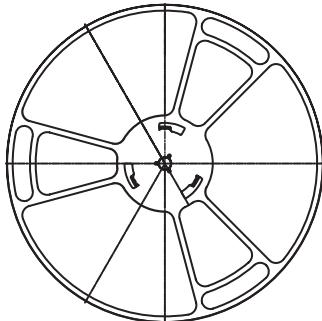
SOT-223 Carrier Tape



unit:mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
---	6.83 ±0.1	7.42 ±0.1	1.88 ±0.1	1.50 + 0.25	1.60 + 0.1	12.0 + 0.3 - 0.1	1.75 ±0.1	5.50 ±0.5	8.0 ±0.1	4.00 ±0.1	2.00 ±0.05	0.292 ±0.02

SOT-223 Reel



UNIT:mm

REEL SIZE	M	N	W	W1	H	K	S	G	R	V
φ 330 ± 0.5	---	φ 97.0 ± 1.0	2.2	13.0 + 1.5	φ 13.0 + 0.5 - 0.2	10.6	2.0 ± 0.5	---	---	---