SamHop Microelectronics Corp.

STM6930A

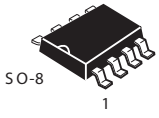
June,8 2006 ver1.4

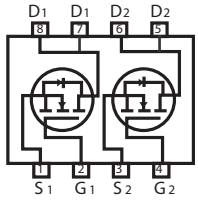
Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
55V	4.8A	50 @ V_{GS} = 10V 75 @ V_{GS} = 4.5V

FEATURES

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





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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage Rating		V_{spike}[d]	60	V
Drain-Source Voltage		V_{DS}	55	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous[a] @ Ta	25°C	I_D	4.8	A
	70°C		4.1	A
-Pulsed[b]		I_{DM}	25	A
Drain-Source Diode Forward Current[a]		I_S	1.7	A
Maximum Power Dissipation[a]	Ta= 25°C	P_D	2	W
	Ta=70°C		1.44	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient[a]	$R_{\theta JA}$	62.5	°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	55			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=44V, V_{GS}=0V			1	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS [b]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1.0	1.8	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=4.5A		38	50	m ohm
		V_{GS}=4.5V, I_D=3A		60	75	m ohm
On-State Drain Current	$I_{D(ON)}$	V_{DS}=5V, V_{GS}=10V	20			A
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=4.5A		7		S
DYNAMIC CHARACTERISTICS [c]						
Input Capacitance	C_{ISS}	V_{DS}=25V, V_{GS}=0V f=1.0MHz		700	805	pF
Output Capacitance	C_{OSS}			82	95	pF
Reverse Transfer Capacitance	C_{RSS}			50	58	pF
Gate resistance	Rg	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		5		ohm
SWITCHING CHARACTERISTICS [c]						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD}=30V I_D=4.5 A V_{GS}=10V R_{GEN}=6 ohm		3.2	3.8	ns
Rise Time	t_r			10.1	12	ns
Turn-Off Delay Time	$t_{D(OFF)}$			13.3	15.3	ns
Fall Time	t_f			8.3	9.6	ns
Total Gate Charge	Q_g	V_{DS}=48V, I_D=4.5A, V_{GS}=10V		17.3	20	nC
		V_{DS}=48V, I_D=4.5A, V_{GS}=4.5V		8.1	9.5	nC
Gate-Source Charge	Q_{gs}	V_{DS}=48V, I_D=4.5 A V_{GS}=10V		1.8	2.2	nC
Gate-Drain Charge	Q_{gd}			4.2	4.9	nC

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

Parameter	Symbol	Condition	Min	Typ[c]	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS [b]						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, Is =1.7A		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.
d.Guaranteed when external Rg=6 ohm and tf < tf max

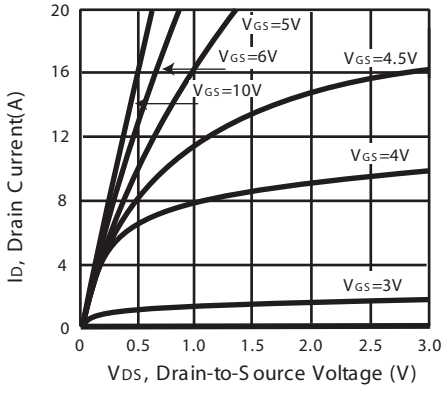


Figure 1. Output Characteristics

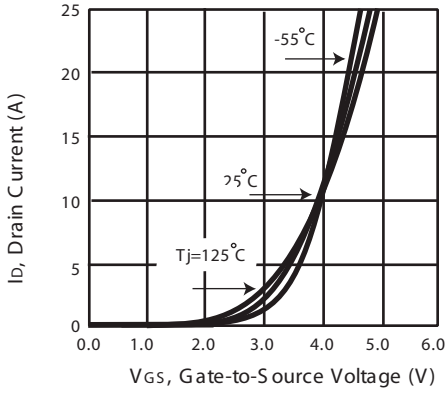


Figure 2. Transfer Characteristics

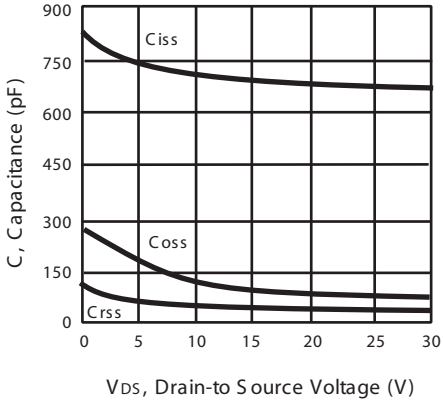


Figure 3. Capacitance

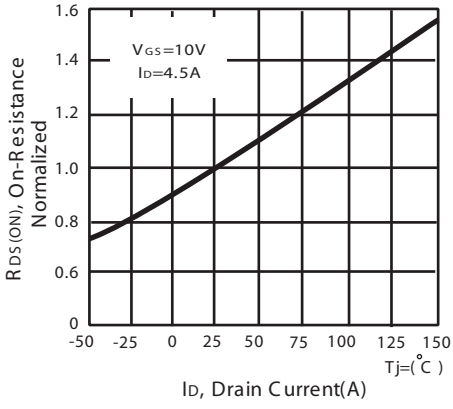


Figure 4. On-Resistance Variation with Drain Current and Temperature

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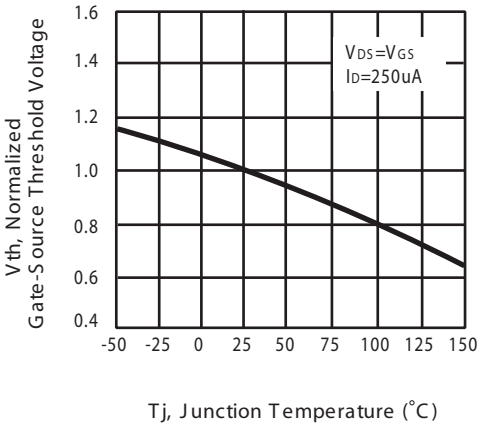


Figure 5. Gate Threshold Variation with Temperature

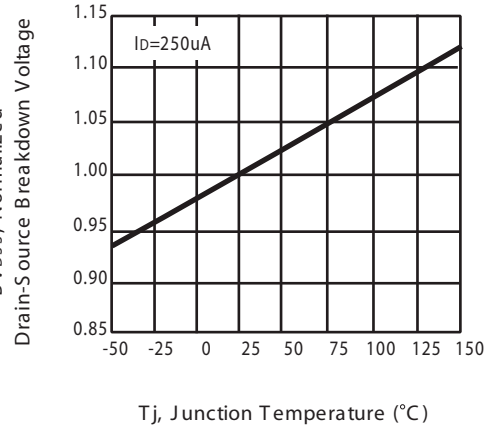


Figure 6. Breakdown Voltage Variation with Temperature

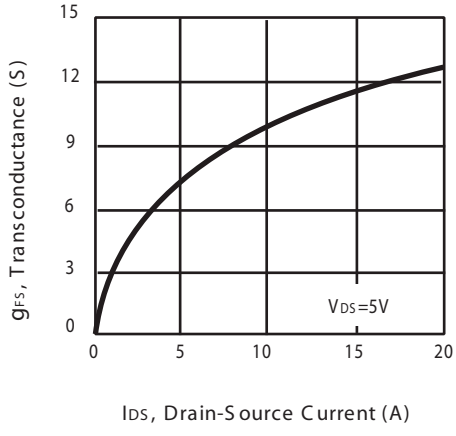


Figure 7. Transconductance Variation with Drain Current

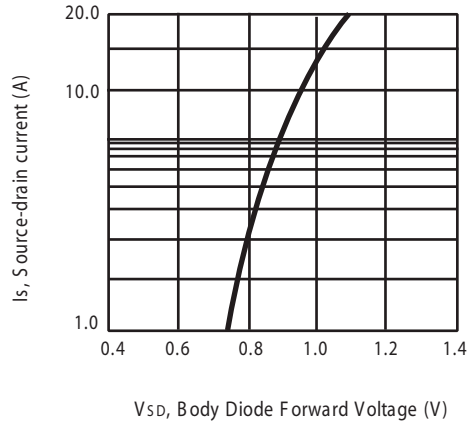


Figure 8. Body Diode Forward Voltage Variation with Source Current

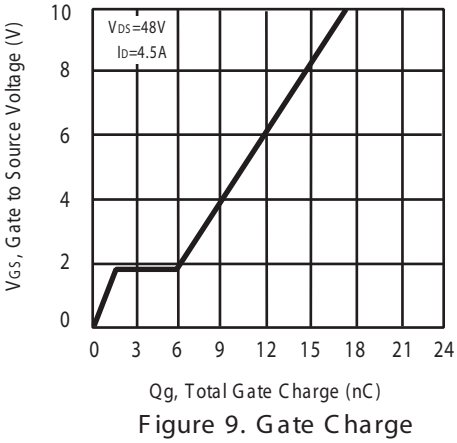


Figure 9. Gate Charge

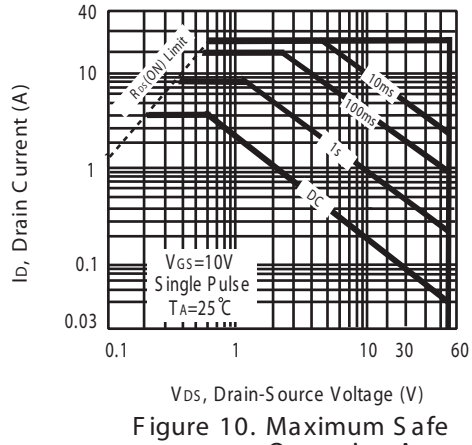


Figure 10. Maximum Safe Operating Area

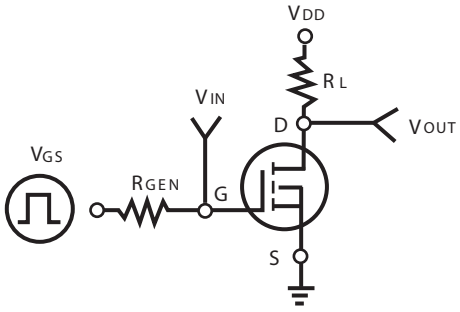


Figure 11. Switching Test Circuit

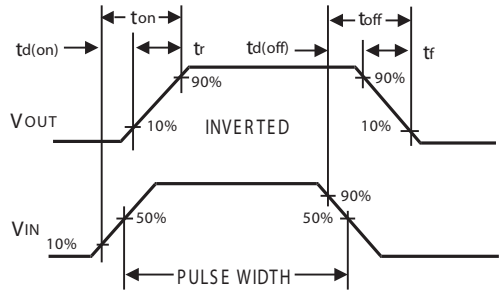
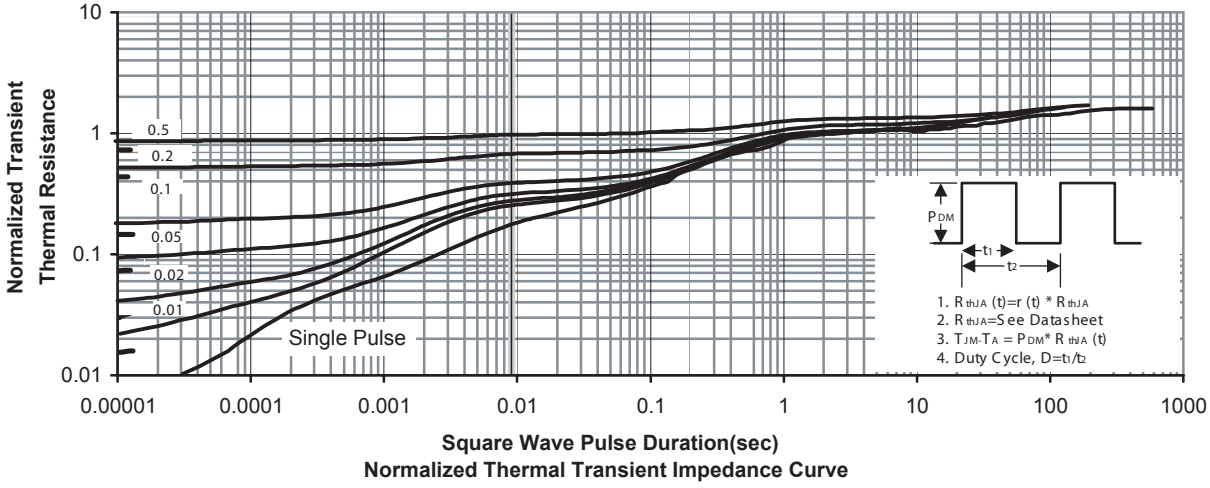


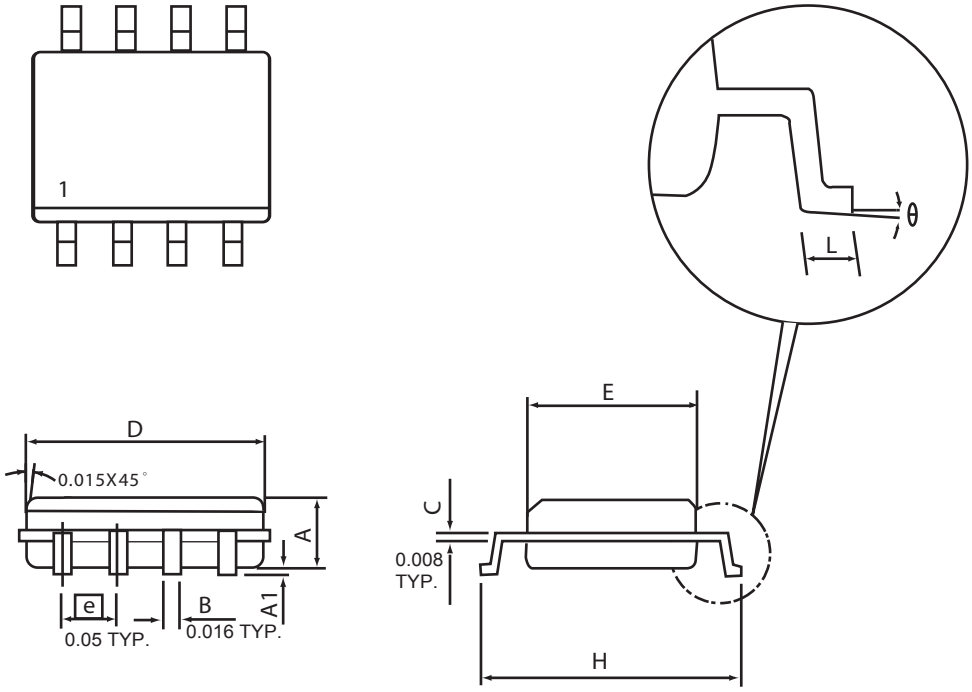
Figure 12. Switching Waveforms



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PACKAGE OUTLINE DIMENSIONS

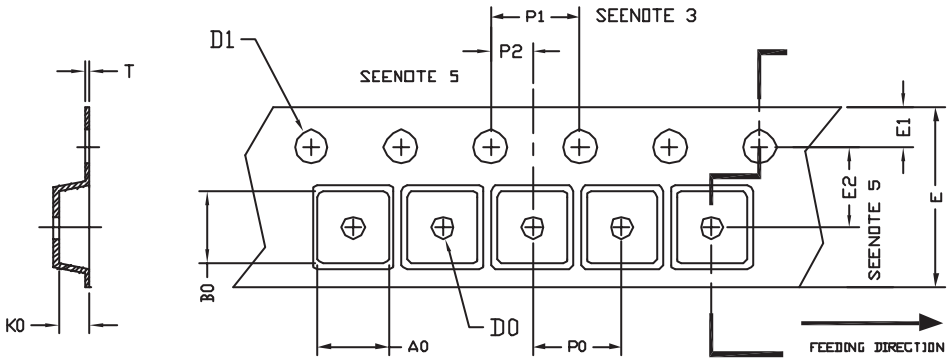
SO-8



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	4.98	0.189	0.196
E	3.81	3.99	0.150	0.157
H	5.79	6.20	0.228	0.244
L	0.41	1.27	0.016	0.050
θ	0°	8°	0°	8°

SO-8 Tape and Reel Data

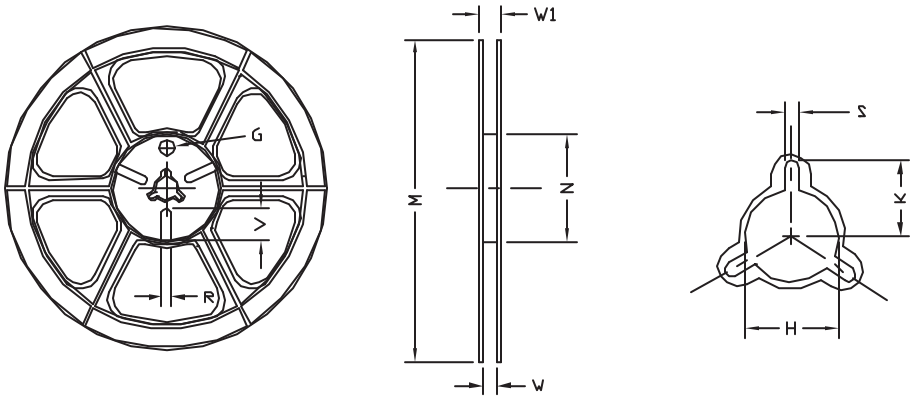
SO-8 Carrier Tape



unit:mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOP 8N 150mil	6.40	5.20	2.10	ϕ1.5 (MIN)	ϕ1.5 + 0.1 - 0.0	12.0 ±0.3	1.75	5.5 ±0.05	8.0	4.0	2.0 ±0.05	0.3 ±0.05

SO-8 Reel



UNIT:mm

TAPE SIZE	REEL SIZE	M	N	W	W1	H	K	S	G	R	V
12 mm	ϕ330	330 ± 1	62 ±1.5	12.4 + 0.2	16.8 - 0.4	ϕ12.75 + 0.15	---	2.0 ±0.15	---	---	---