SamHop Microelectronics Corp.

STS2309A

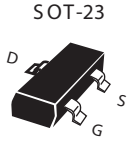
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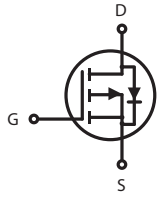
P-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
-20V	-2.3A	130 @ V_{GS} = -4.5V 190@ V_{GS} = -2.5V

FEATURES

- Super high dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- SOT-23 package.





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}	±10	V
Drain Current-Continuous[a] @Tc=25°C	I_D	-2.3	A
-Pulsed[b]	I_{DM}	-8	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_{thJA}	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}=± 10V, V_{DS}=0V			±100	nA
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}=-4.5V, I_D= -2.3A		115	130	m-ohm
		V_{GS}= -2.5V, I_D= -1.0A		175	190	m-ohm
On-State Drain Current	$I_{D(ON)}$	V_{DS}= -5V, V_{GS}= -4.5V	-5			A
Forward Transconductance	g_{FS}	V_{DS}= -5V, I_D=-2.3A		6		S
DYNAMIC CHARACTERISTICS [c]						
Input Capacitance	C_{ISS}	V_{DS}= -20V, V_{GS}= 0V f=1.0MHz		290		pF
Output Capacitance	C_{OSS}			60		pF
Reverse Transfer Capacitance	C_{RSS}			45		pF
SWITCHING CHARACTERISTICS [c]						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD}= -10V, I_D= -1A, V_{GS}= -4.5V, R_{GEN}= 6 ohm		9.8		ns
Rise Time	t_r			10.8		ns
Turn-Off Delay Time	$t_{D(OFF)}$			79.1		ns
Fall Time	t_f			41.3		ns
Total Gate Charge	Q_g	V_{DS}= -10V, I_D= -2.3A, V_{GS}= -4.5V		3.2		nC
Gate-Source Charge	Q_{gs}			0.7		nC
Gate-Drain Charge	Q_{gd}			0.8		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 =-1.25A		-0.85	-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.

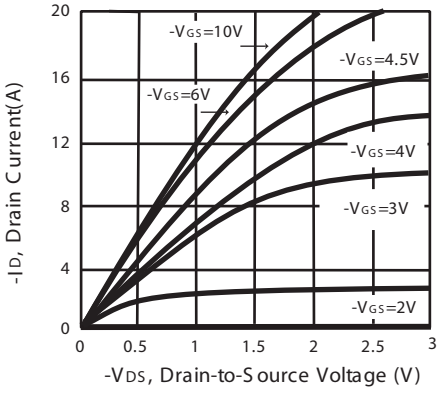


Figure 1. Output Characteristics

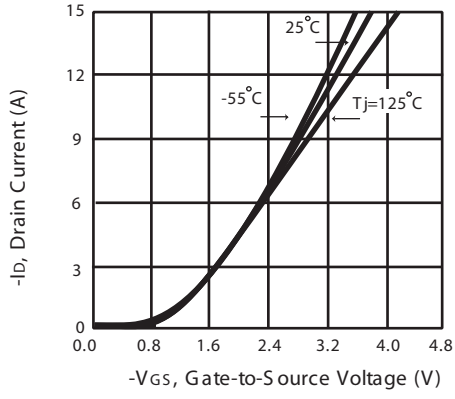


Figure 2. Transfer Characteristics

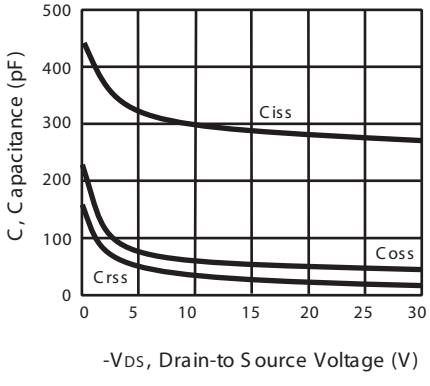


Figure 3. Capacitance

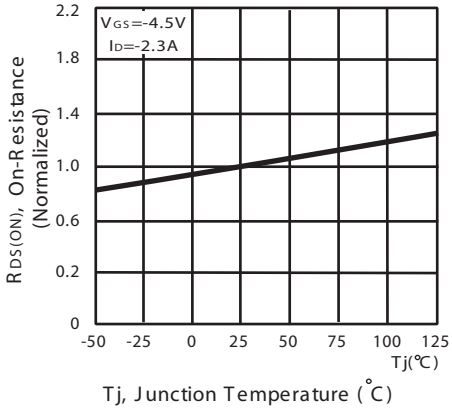
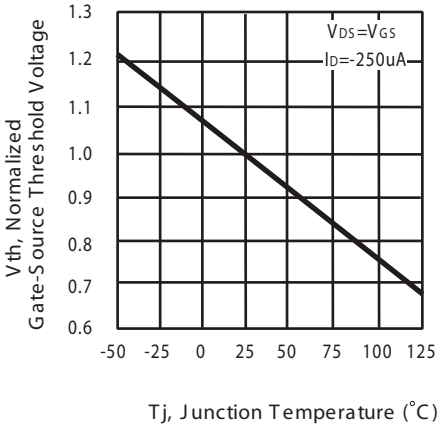


Figure 4. On-Resistance Variation with Temperature



with Temperature

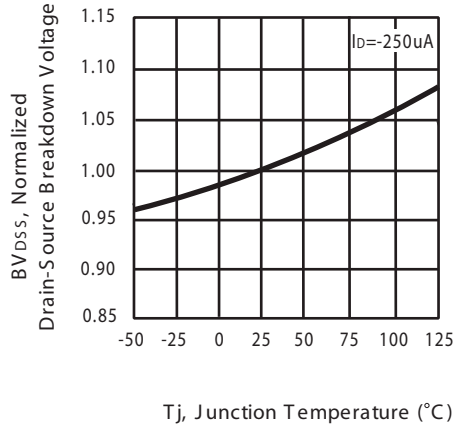


Figure 6. Breakdown Voltage Variation with Temperature

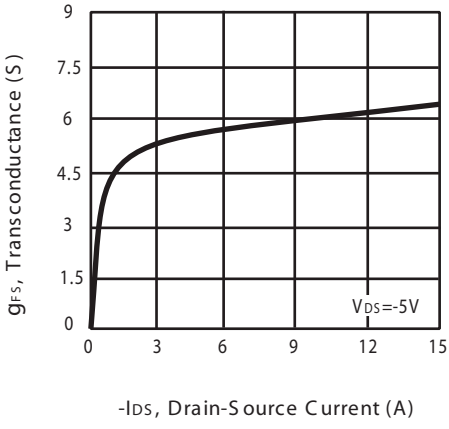


Figure 7. Transconductance Variation with Drain Current

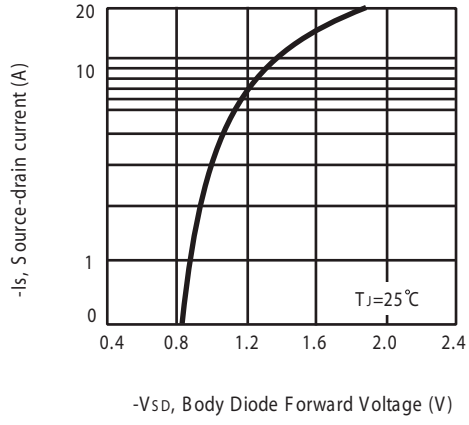


Figure 8. Body Diode Forward Voltage Variation with Source Current

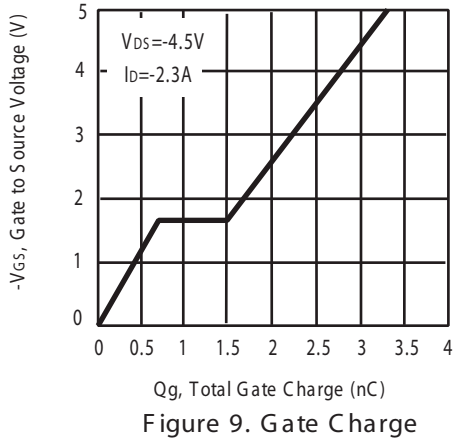


Figure 9. Gate Charge

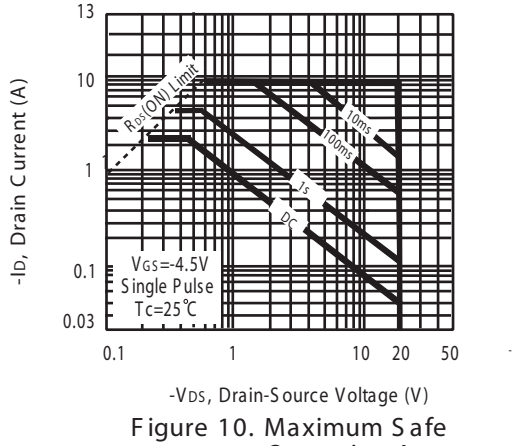


Figure 10. Maximum Safe Operating Area

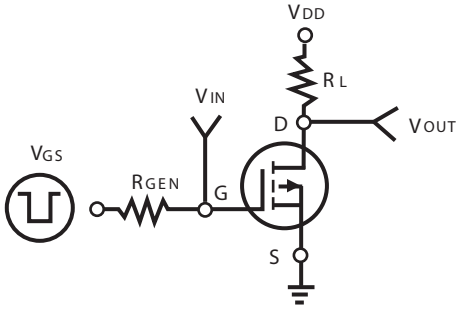


Figure 11. Switching Test Circuit

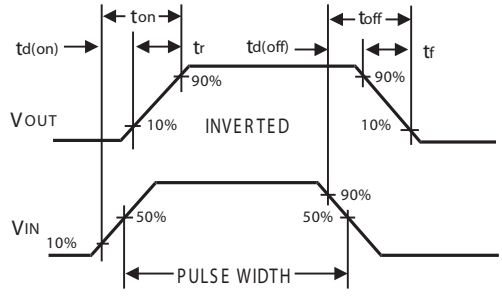
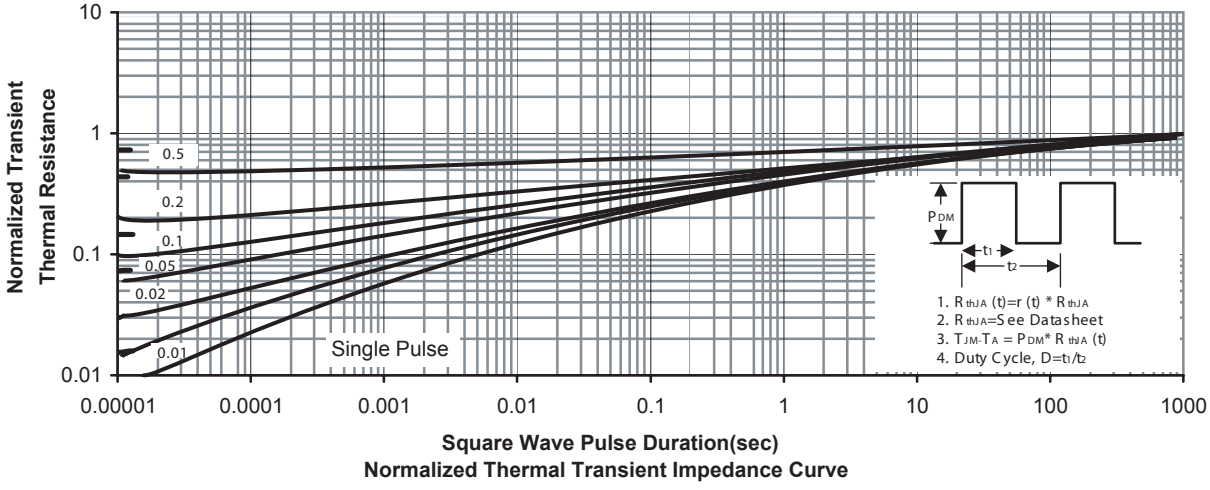


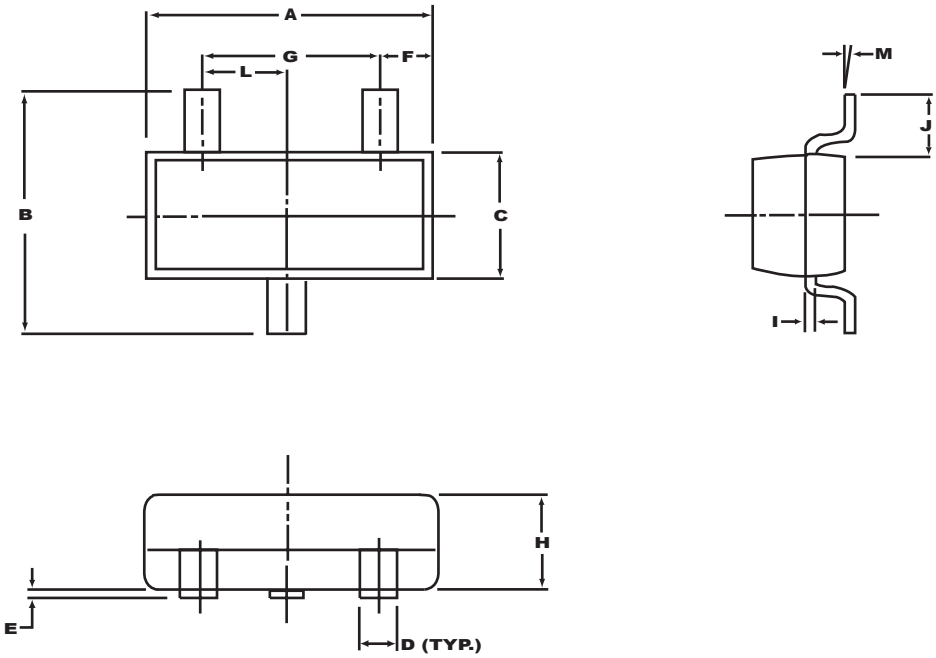
Figure 12. Switching Waveforms



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PACKAGE OUTLINE DIMENSIONS

SOT-23

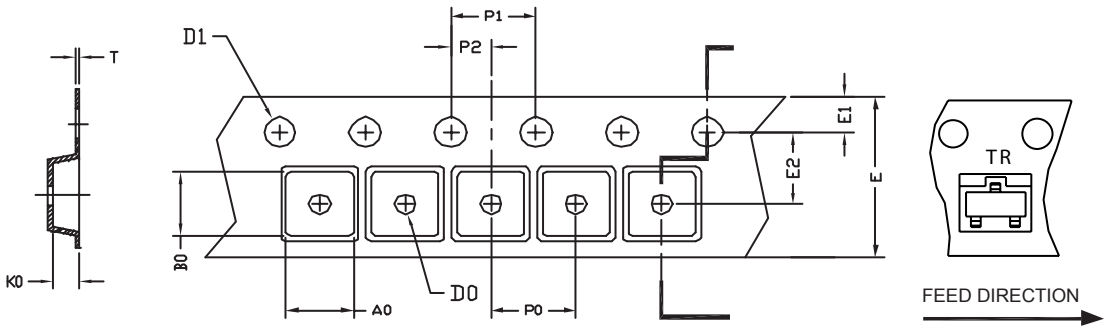


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.70	3.10	0.106	0.122
B	2.40	2.80	0.094	0.110
C	1.40	1.60	0.055	0.063
D	0.35	0.50	0.014	0.020
E	0	0.10	0	0.004
F	0.45	0.55	0.018	0.022
G	1.90 REF.		0.075 REF.	
H	1.00	1.30	0.039	0.051
I	0.10	0.20	0.004	0.008
J	0.40	-	0.016	-
L	0.45	1.15	0.033	0.045
M	0°	10°	0°	10°

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SOT-23 Tape and Reel Data

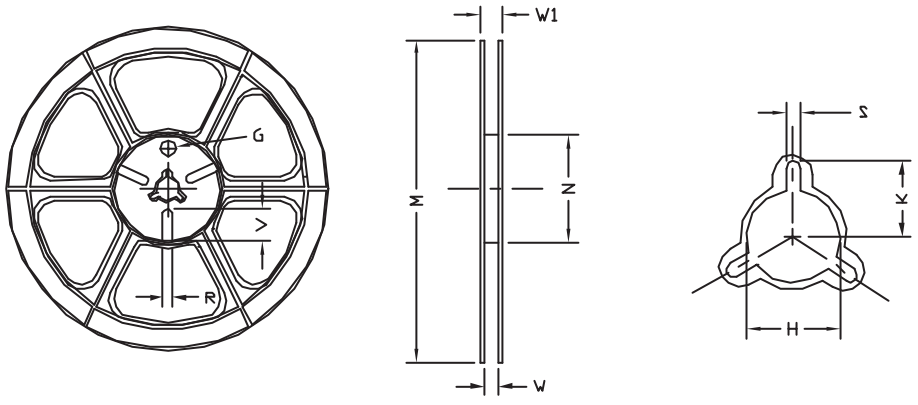
SOT-23 Carrier Tape



UNIT:mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOT-23	3.20 ±0.10	3.00 ±0.10	1.33 ±0.10	ϕ 1.00 +0.25	ϕ 1.50 +0.10	8.00 +0.30 -0.10	1.75 ±0.10	3.50 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	0.20 ±0.02

SOT-23 Reel



UNIT:mm

TAPE SIZE	REEL SIZE	M	N	W	W1	H	K	S	G	R	V
8mm	ϕ 178	ϕ 178 ±1	ϕ 60 ±1	9.00 ±0.5	12.00 ±0.5	ϕ 13.5 ±0.5	10.5	2.00 ±0.5	ϕ 10.0	5.00	18.00