SamHop Microelectronics Corp.

STC2200

Mar 15 2005 ver1.2

N-Channel Enhancement Mode Field Effect Transistor

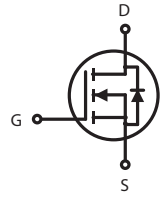
PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
20V	2.3A	85 @ V_{GS} = 4.5V 110 @ V_{GS} = 2.5V

FEATURES

- Super high dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- SOT-323 package.

SOT-323





ABSOLUTE MAXIMUM RATING (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] @ T_c=25°C	I_D	2.3	A
-Pulsed[b]	I_{DM}	8	A
Drain-Source Diode Forward Current[a]	I_S	1	A
Maximum Power Dissipation[a]	P_D	1.0	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}	125	°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=2A		60	85	m-ohm
		V_{GS}=2.5V, I_D=1A		85	110	m-ohm
On-State Drain Current	$I_{D(ON)}$	V_{DS}=5V, V_{GS}=4.5V	6			A
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=2.3A		7		S
DYNAMIC CHARACTERISTICS [c]						
Input Capacitance	C_{ISS}	V_{DS}=10V, V_{GS}=0V f=1.0MHz		210		pF
Output Capacitance	C_{OSS}			75		pF
Reverse Transfer Capacitance	C_{RSS}			46		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		13.2		ns
Rise Time	t_r			9.1		ns
Turn-Off Delay Time	$t_{D(OFF)}$			27.3		ns
Fall Time	t_f			15.9		ns
Total Gate Charge	Q_g	V_{DS}=10V, I_D=2A, V_{GS}=4.5V		4.2		nC
Gate-Source Charge	Q_{gs}			0.88		nC
Gate-Drain Charge	Q_{gd}			1.53		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 =1A		0.83	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.

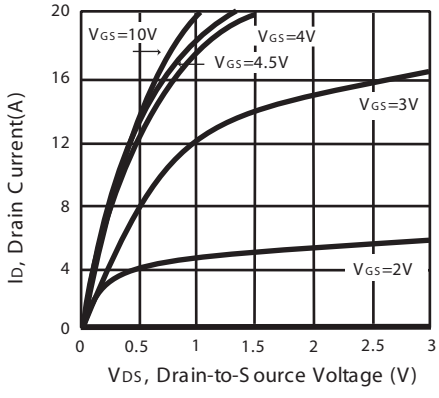


Figure 1. Output Characteristics

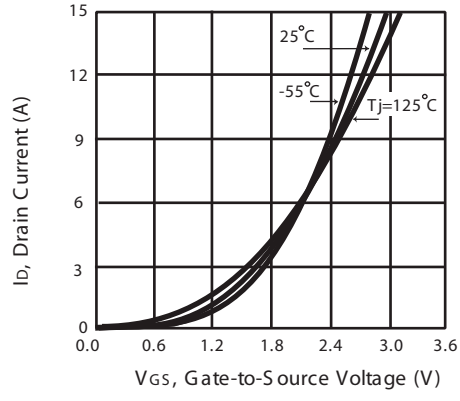


Figure 2. Transfer Characteristics

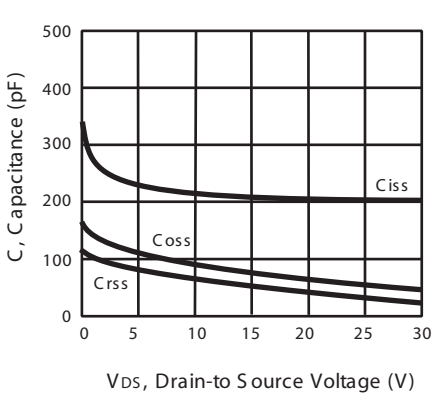


Figure 3. Capacitance

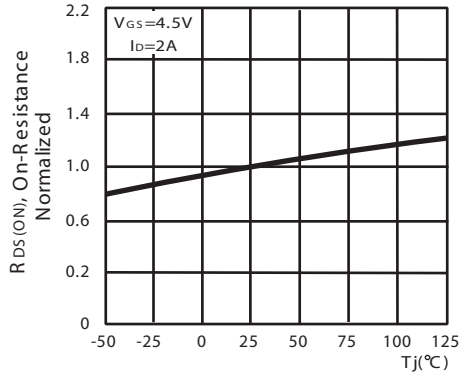
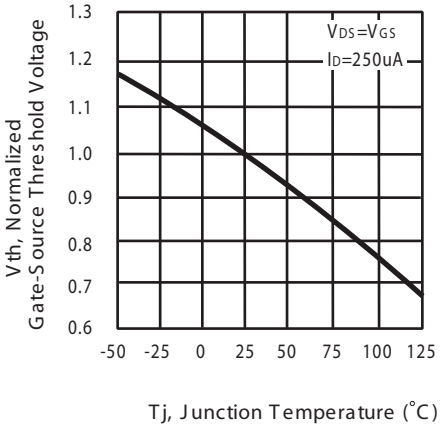


Figure 4. On-Resistance Variation with Temperature



with Temperature

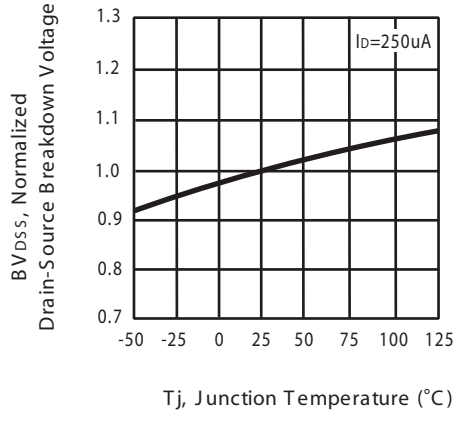


Figure 6. Breakdown Voltage Variation with Temperature

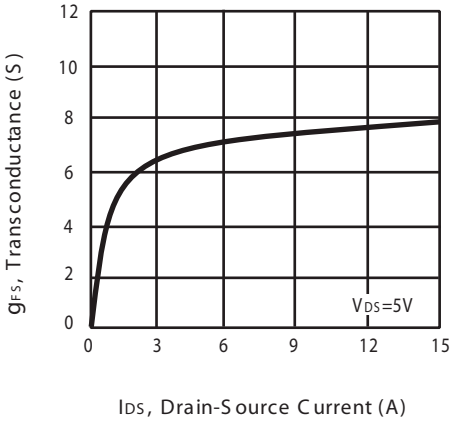


Figure 7. Transconductance Variation with Drain Current

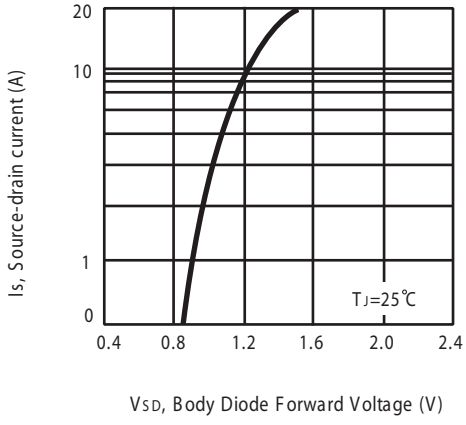


Figure 8. Body Diode Forward Voltage Variation with Source Current

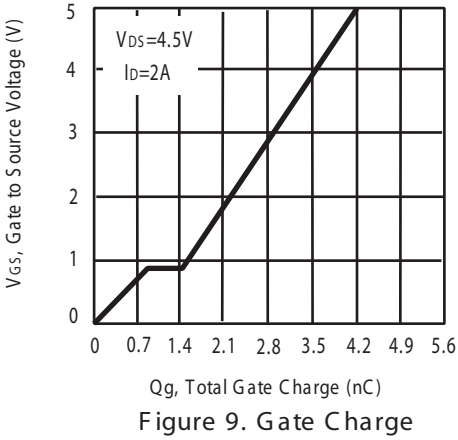


Figure 9. Gate Charge

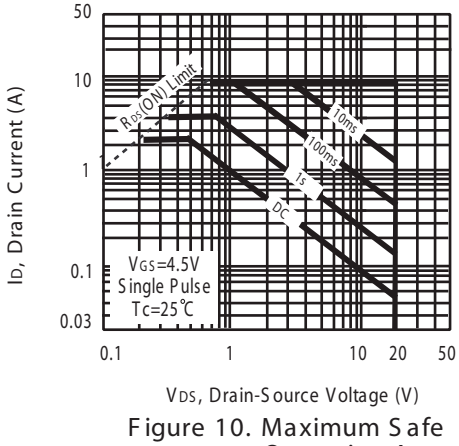


Figure 10. Maximum Safe Operating Area

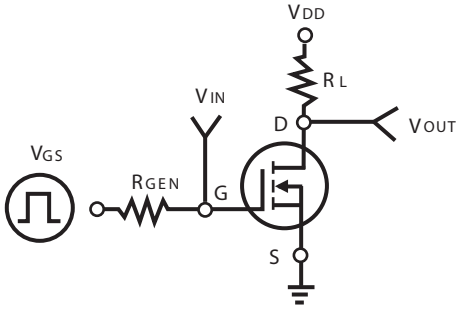


Figure 11. Switching Test Circuit

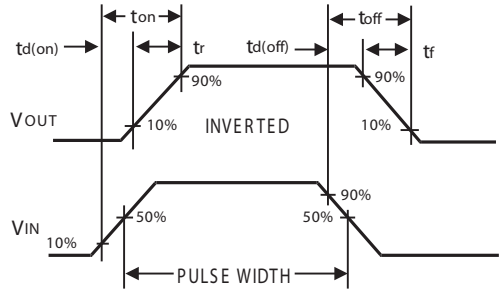
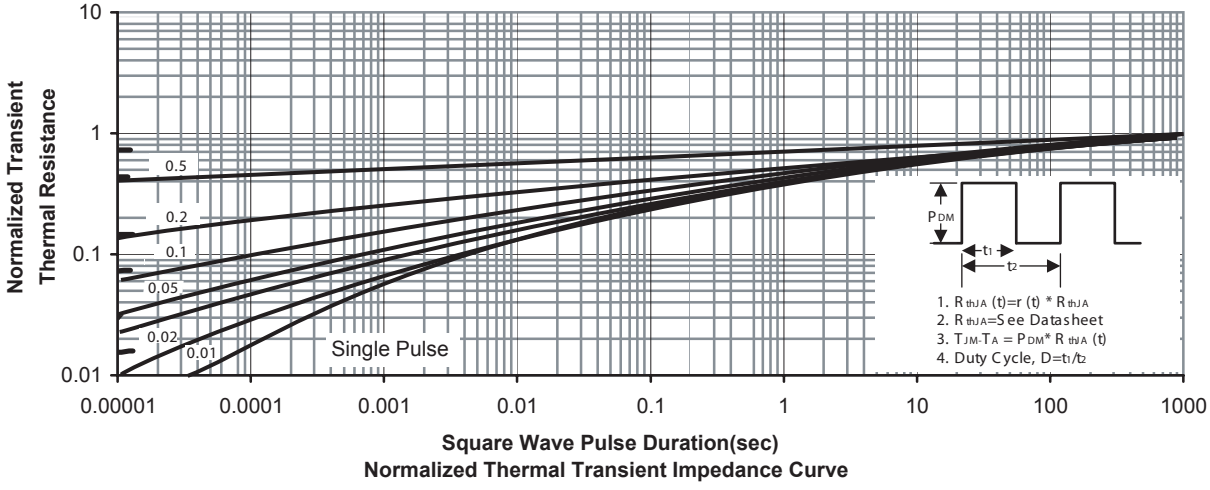


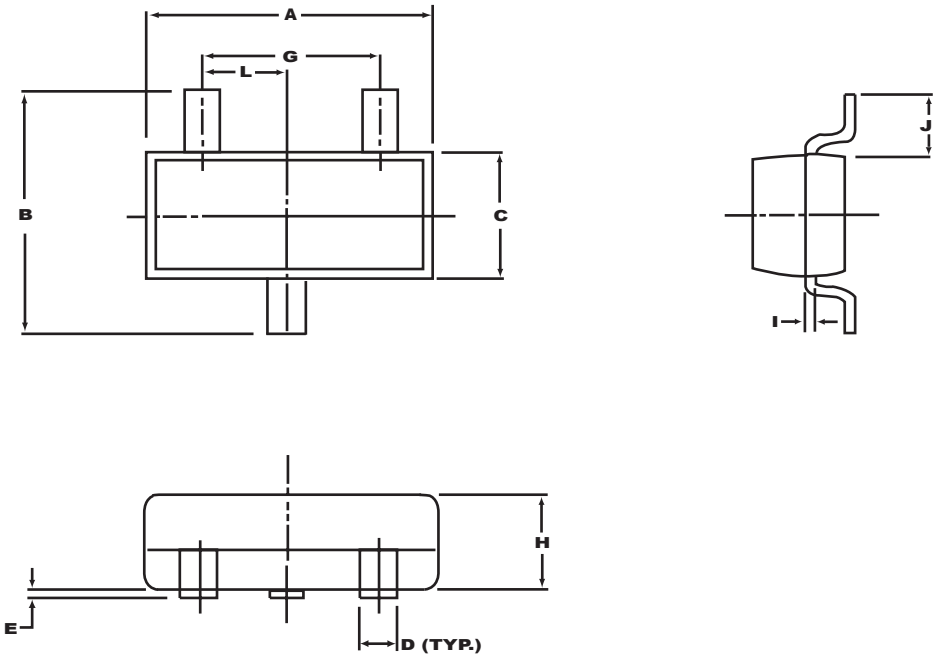
Figure 12. Switching Waveforms



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PACKAGE OUTLINE DIMENSIONS

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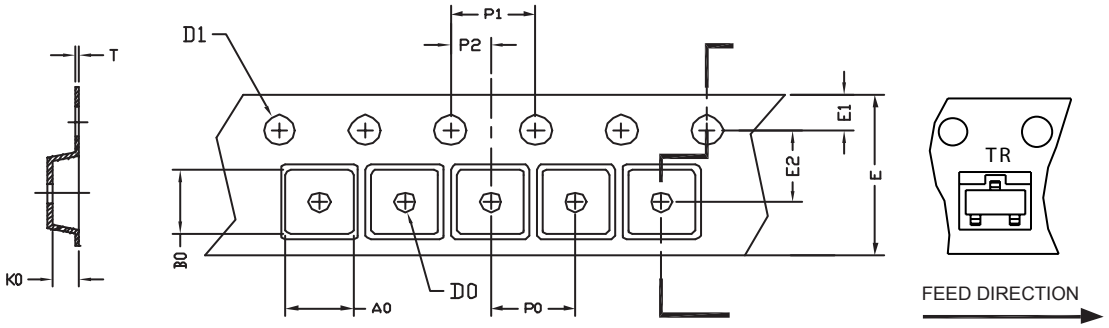


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.8	2.2	0.709	0.866
B	1.8	2.4	0.709	0.945
C	1.15	1.35	0.453	0.531
D	0.25	0.4	0.098	0.157
E	0	0.10	0	0.039
F	----	----	----	----
G	1.30 REF.		0.512 REF.	
H	0.80	1.00	0.315	0.394
I	0.10	0.25	0.039	0.098
J	----	---	----	----
L	0.65	----	0.256	----

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SOT-323 Tape and Reel Data

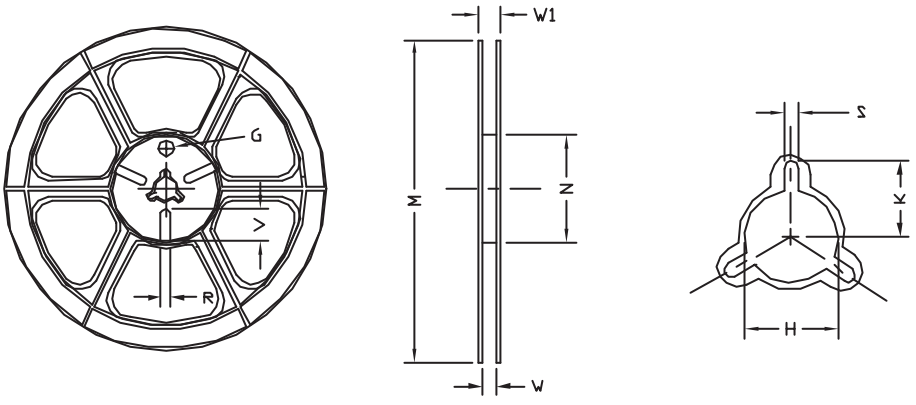
SOT-323 Carrier Tape



UNIT:mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOT-323	2.40 ±0.10	2.40 ±0.10	1.19 ±0.10	∮ 1.00 +0.25	∮ 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	0.254 ±0.02

SOT-323 Reel



UNIT:mm

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