SamHop Microelectronics Corp.

STS2302A

Ver 1.1

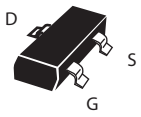
N-Channel Enhancement Mode Field Effect Transistor

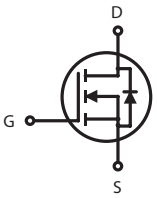
PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
20V	4A	44 @ VGS= 4.5V
		65 @ VGS= 2.5V

FEATURES

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

SOT23-3L





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

Symbol	Parameter		Limit	Units
V_{DS}	Drain-Source Voltage		20	V
V_{GS}	Gate-Source Voltage		±10	V
I_D	Drain Current-Continuous [a]	T_C=25°C	4	A
		T_C=70°C	3.2	A
I_{DM}	-Pulsed [b]		15.3	A
P_D	Maximum Power Dissipation [a]	T_C=25°C	1.25	W
		T_C=70°C	0.8	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range		-55 to 150	°C

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS (T_A=25°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	20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=16V , V_{GS}=0V			1	uA
I_{GSS}	Gate-Body Leakage Current	V_{GS}= ±10V , V_{DS}=0V			±100	nA
ON CHARACTERISTICS						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	0.5	0.8	1.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=4.5V , I_D=4A		35	44	m ohm
		V_{GS}=2.5V , I_D=3.5A		50	65	m ohm
g_{FS}	Forward Transconductance	V_{DS}=5V , I_D=4A		10.5		S
DYNAMIC CHARACTERISTICS [c]						
C_{ISS}	Input Capacitance	V_{DS}=10V,V_{GS}=0V f=1.0MHz		220		pF
C_{OSS}	Output Capacitance			80		pF
C_{RSS}	Reverse Transfer Capacitance			65		pF
SWITCHING CHARACTERISTICS [c]						
$t_{D(ON)}$	Turn-On Delay Time	V_{DD}=10V I_D=1A V_{GS}=4.5V R_{GEN}= 6 ohm		8.5		ns
t_r	Rise Time			14		ns
$t_{D(OFF)}$	Turn-Off Delay Time			18		ns
t_f	Fall Time			8		ns
Q_g	Total Gate Charge	V_{DS}=10V,I_D=4A,V_{GS}=4.5V		6		nC
Q_{gs}	Gate-Source Charge	V_{DS}=10V,I_D=4A, V_{GS}=4.5V		1.5		nC
Q_{gd}	Gate-Drain Charge			2.5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
I_S	Maximum Continuous Drain-Source Diode Forward Current				1	A
V_{SD}	Diode Forward Voltage [b]	V_{GS}=0V,I_S= 1A		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.

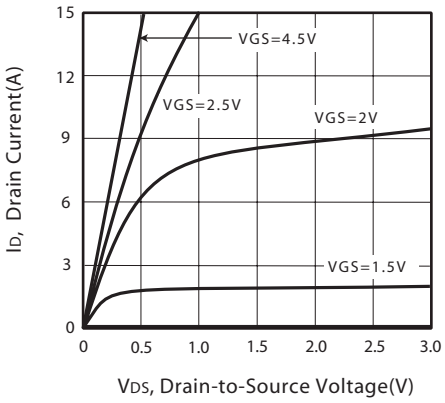


Figure 1. Output Characteristics

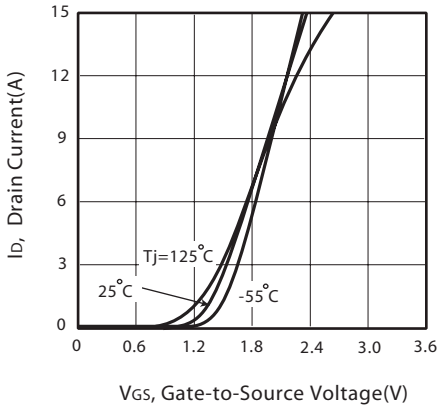


Figure 2. Transfer Characteristics

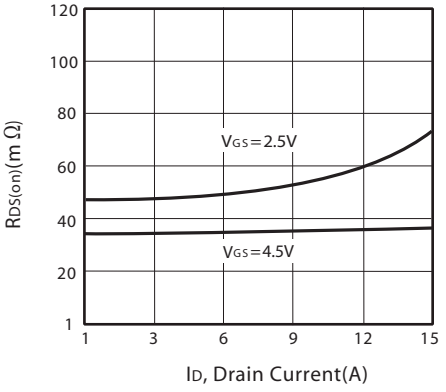


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

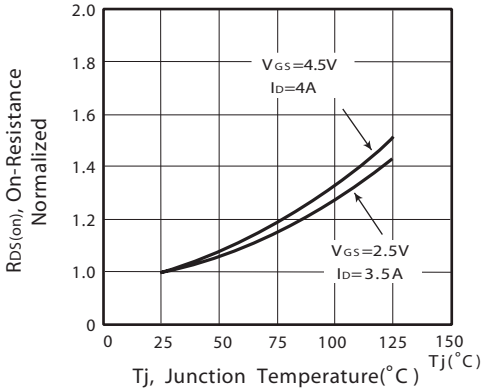


Figure 4. On-Resistance Variation with Drain Current and Temperature

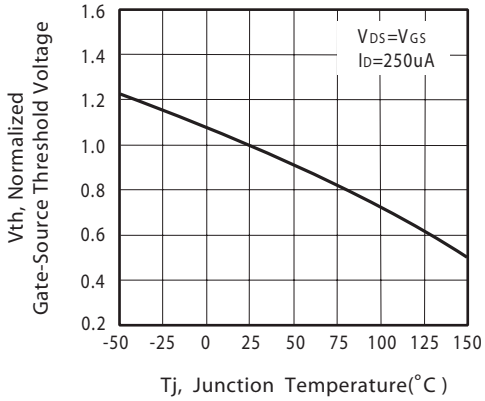


Figure 5. Gate Threshold Variation with Temperature

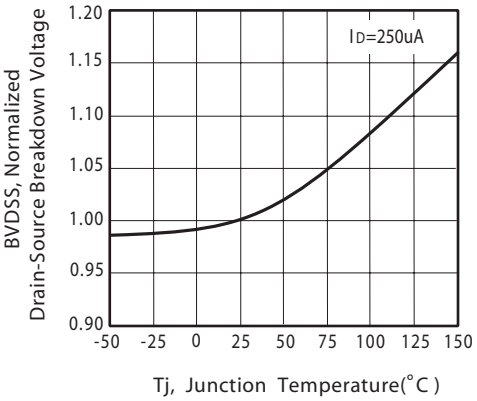


Figure 6. Breakdown Voltage Variation with Temperature

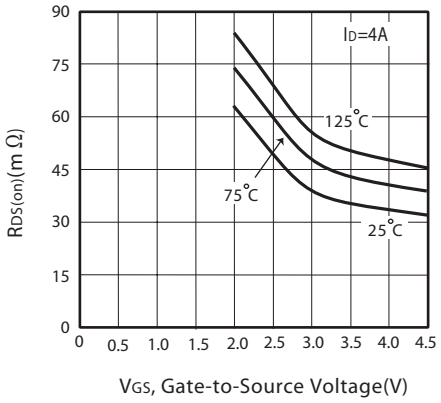


Figure 7. On-Resistance vs. Gate-Source Voltage

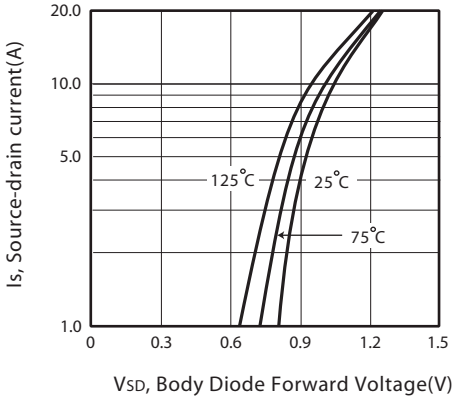


Figure 8. Body Diode Forward Voltage Variation with Source Current

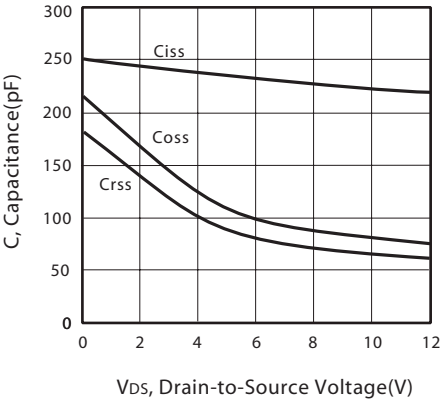


Figure 9. Capacitance

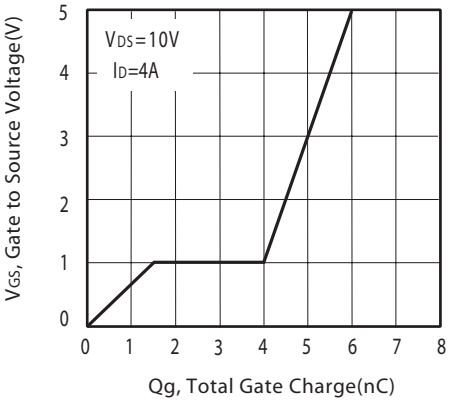


Figure 10. Gate Charge

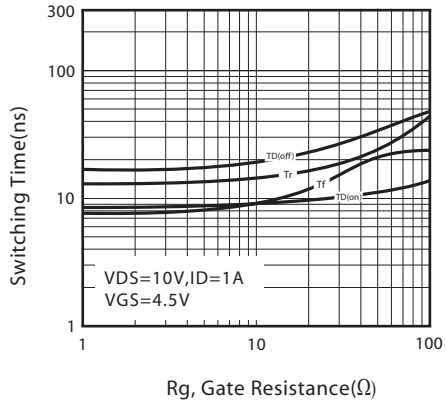


Figure 11. switching characteristics

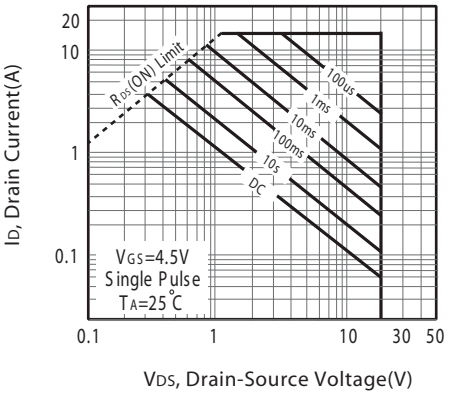


Figure 12. Maximum Safe Operating Area

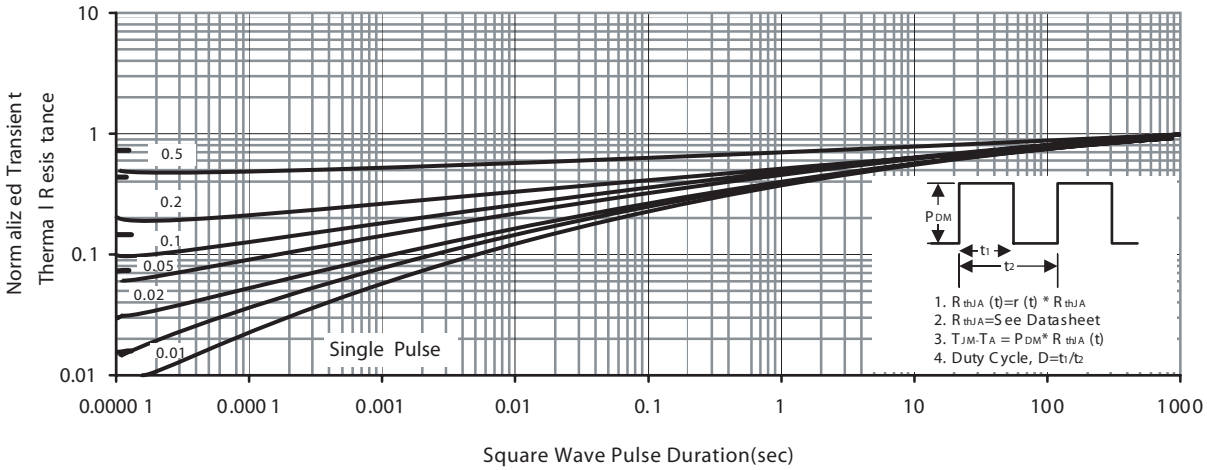
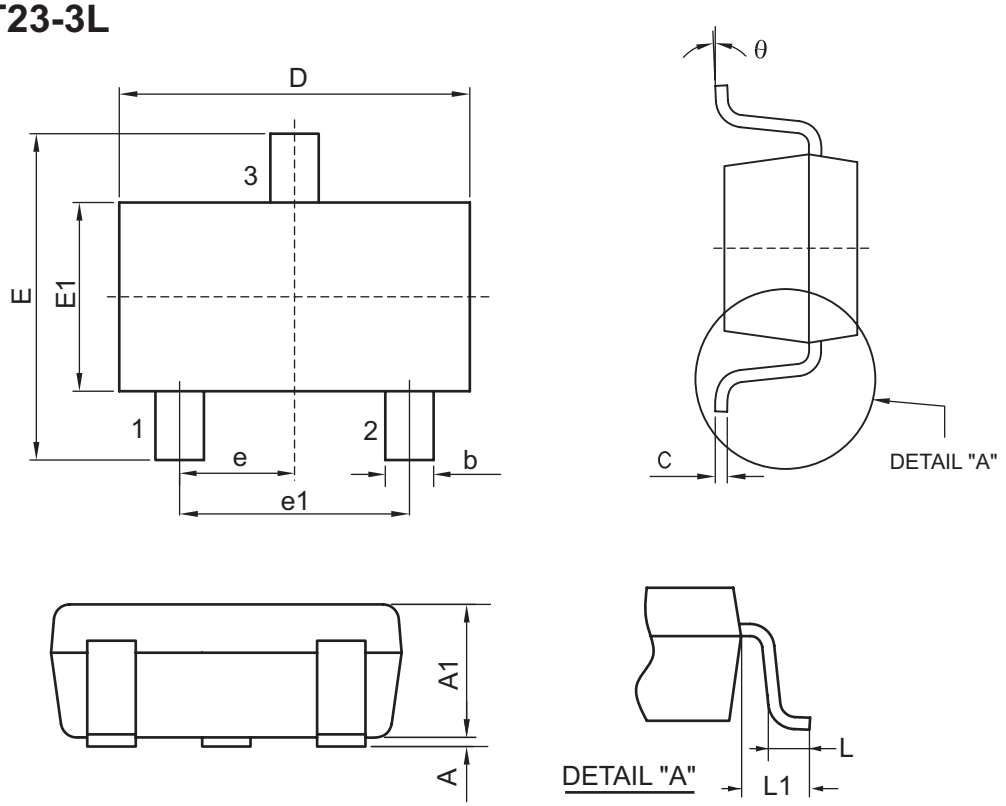


Figure 13. Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS

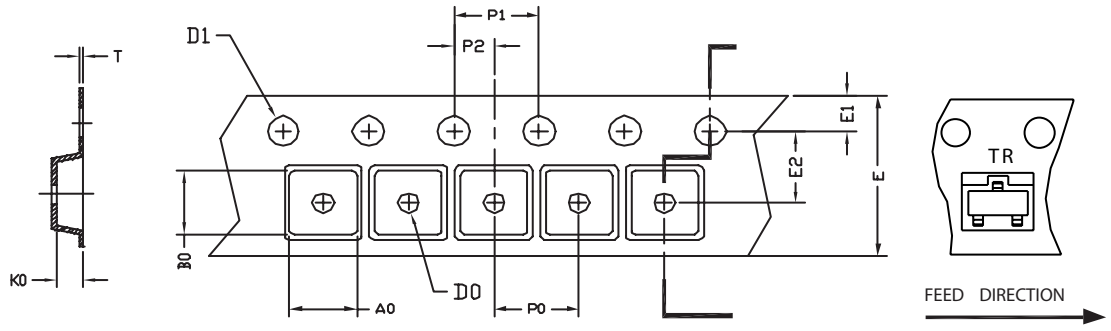
SOT23-3L



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
D	2.700	3.100	0.106	0.122
E	2.200	3.000	0.087	0.118
E1	1.200	1.700	0.047	0.067
e	0.850	1.150	0.033	0.045
e1	1.800	2.100	0.071	0.083
b	0.300	0.510	0.019	0.020
C	0.080	0.200	0.003	0.008
A	0.000	0.150	0.000	0.006
A1	0.887	1.300	0.035	0.051
L	0.450 REF.		0.018 REF.	
L1	0.600 REF.		0.024 REF.	
θ	0°	10°	0°	10°

SOT23-3L Tape and Reel Data

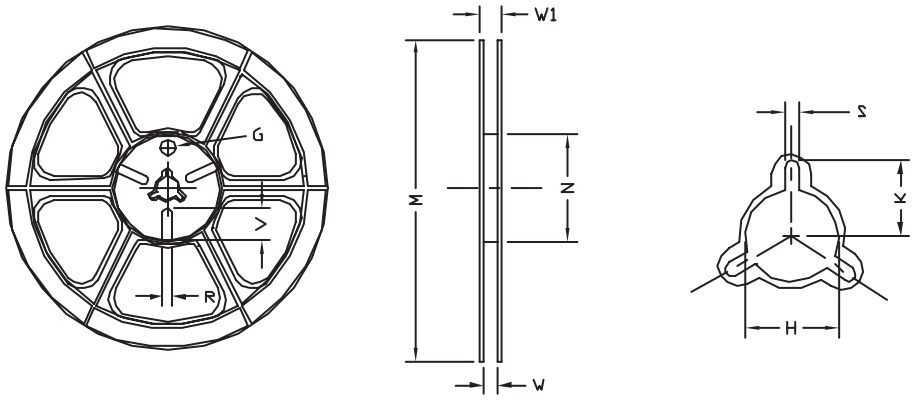
SOT23-3L Carrier Tape



UNIT:mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOT23-3L	3.15 ±0.10	2.77 ±0.10	1.22 ±0.10	∮ 1.00 +0.05	∮ 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	0.22 ±0.04

SOT23-3L 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