SamHop Microelectronics Corp.

STK103

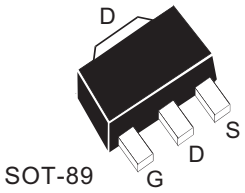
Ver 1.1

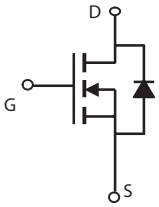
N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
100V	2.0A	210 @ VGS=10V
		312 @ VGS=4.5V

FEATURES

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





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

Symbol	Parameter		Limit	Units
V_{DS}	Drain-Source Voltage		100	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Drain Current-Continuous [a]	T_A=25°C	2.0	A
		T_A=70°C	1.6	A
I_{DM}	-Pulsed [b]		11	A
E_{AS}	Single Pulse Avalanche Energy [d]		20	mJ
P_D	Maximum Power Dissipation	T_A=25°C	1.25	W
		T_A=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	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	100			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V , 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	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V , I_D=1.00A		168	210	m ohm
		V_{GS}=4.5V , I_D=0.82A		231	312	m ohm
g_{FS}	Forward Transconductance	V_{DS}=10V , I_D=1.00A		1.9		S
DYNAMIC CHARACTERISTICS [c]						
C_{ISS}	Input Capacitance	V_{DS}=25V,V_{GS}=0V f=1.0MHz		310		pF
C_{OSS}	Output Capacitance			38		pF
C_{RSS}	Reverse Transfer Capacitance			24		pF
SWITCHING CHARACTERISTICS [c]						
$t_{D(ON)}$	Turn-On Delay Time	V_{DD}=50V I_D=1.00A V_{GS}=10V R_{GEN}= 6 ohm		7.7		ns
tr	Rise Time			9.2		ns
$t_{D(OFF)}$	Turn-Off Delay Time			16		ns
tf	Fall Time			4.1		ns
Q_g	Total Gate Charge	V_{DS}=50V,I_D=1.00A,V_{GS}=10V		5.6		nC
		V_{DS}=50V,I_D=1.00A,V_{GS}=4.5V		3.3		nC
Q_{gs}	Gate-Source Charge	V_{DS}=50V,I_D=1.00A, V_{GS}=10V		0.9		nC
Q_{gd}	Gate-Drain Charge			1.7		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=1A		0.79	1.3	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} = 50V.(See Figure13)

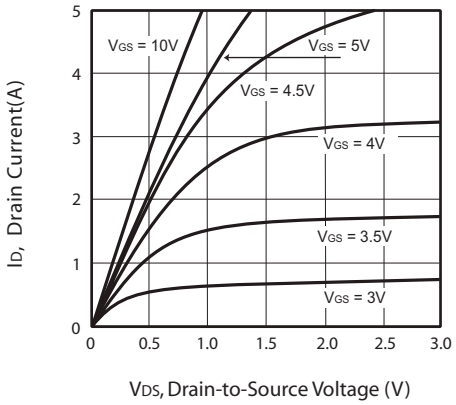


Figure 1. Output Characteristics

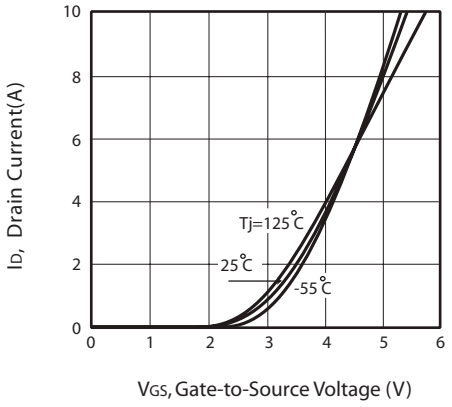


Figure 2. Transfer Characteristics

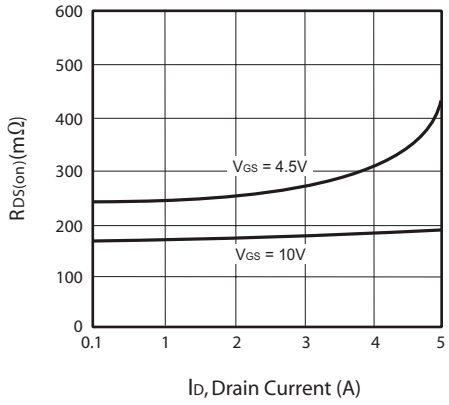


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

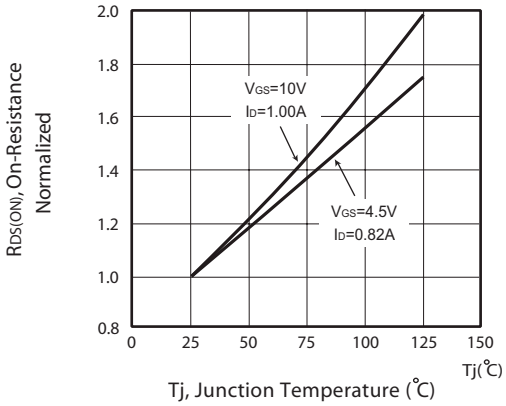


Figure 4. On-Resistance Variation with Drain Current and Temperature

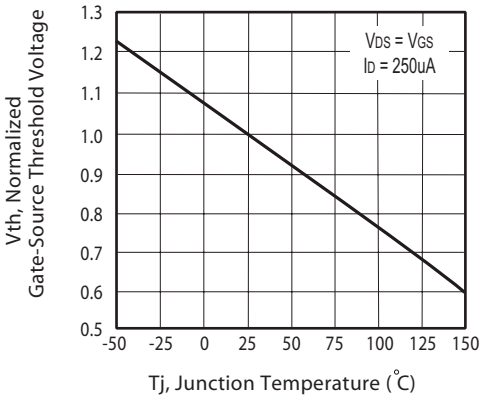


Figure 5. Gate Threshold Variation with Temperature

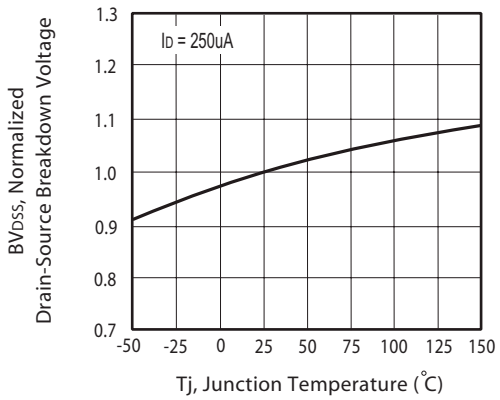


Figure 6. Breakdown Voltage Variation with Temperature

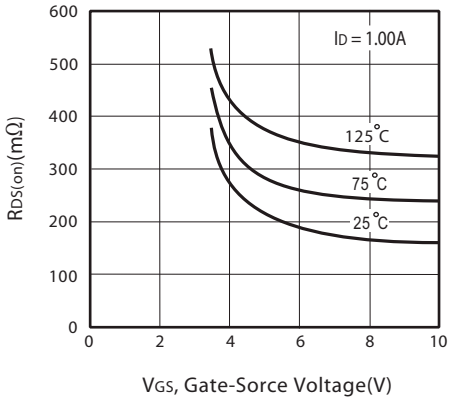


Figure 7. On-Resistance vs. Gate-Source Voltage

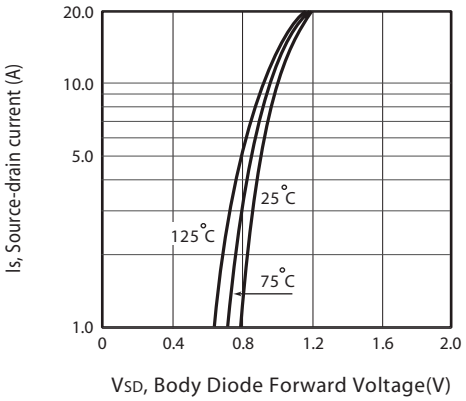


Figure 8. Body Diode Forward Voltage Variation with Source Current

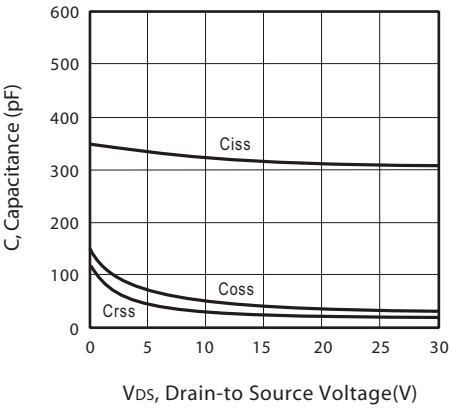


Figure 9. Capacitance

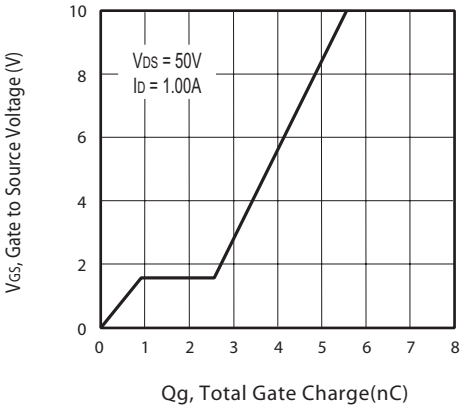


Figure 10. Gate Charge

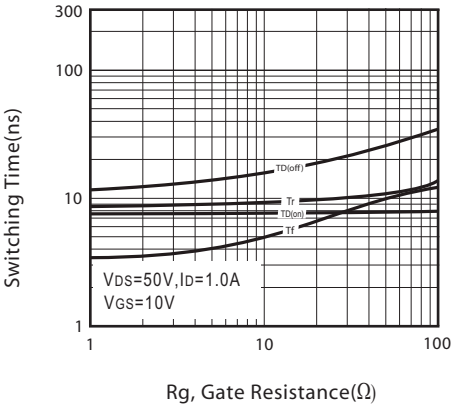


Figure 11. switching characteristics

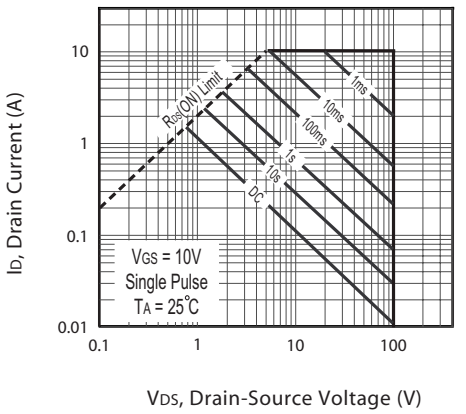
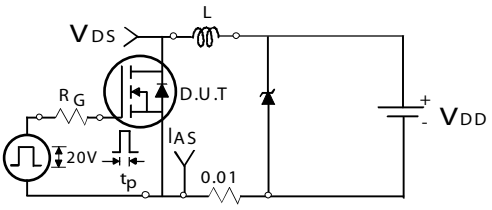
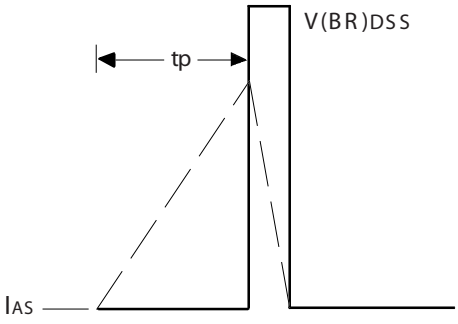


Figure 12. Maximum Safe Operating Area



Unclamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.

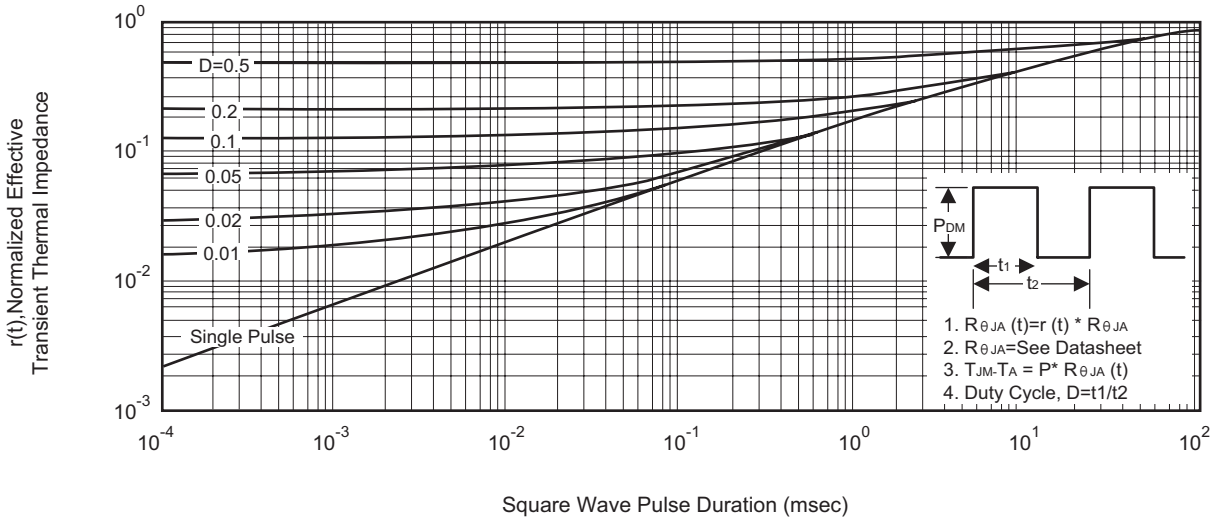
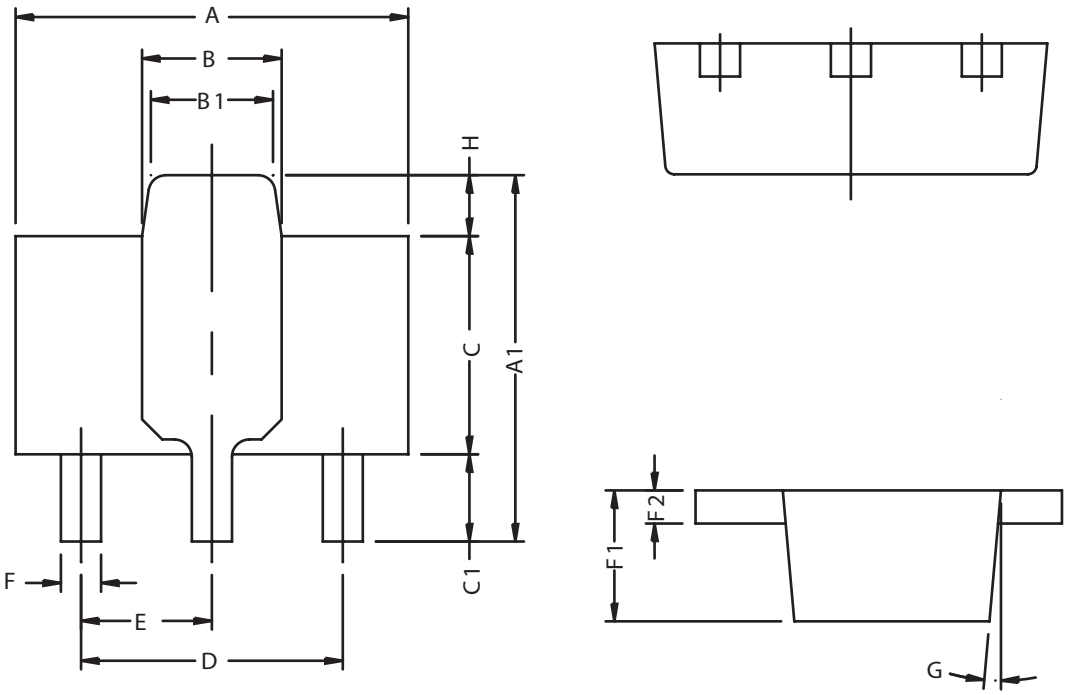


Figure 14. Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS

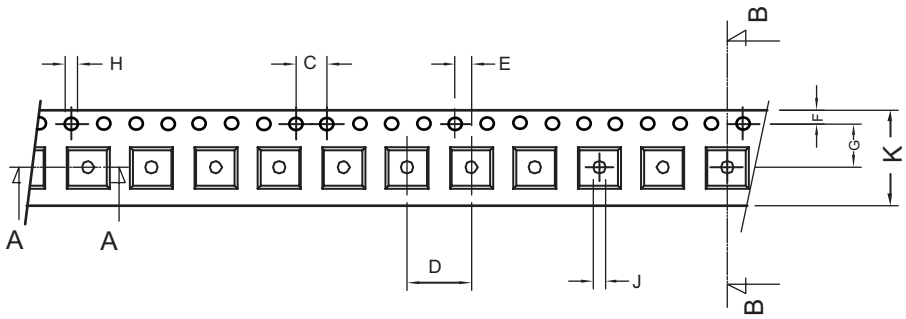
SOT-89

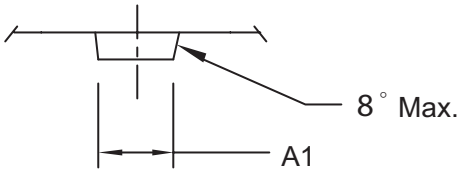


REF.	DIMENSIONS Milimeters	
	MIN.	MAX.
A	4.40	4.60
A1	4.05	4.25
B	1.50	1.70
B1	1.30	1.50
C	2.40	2.60
C1	0.89	1.20
D	3.00 REF.	
E	1.50 REF.	
F	0.40	0.52
F1	1.40	1.60
F2	0.35	0.41
G	5° TYP.	
H	0.70 REF.	

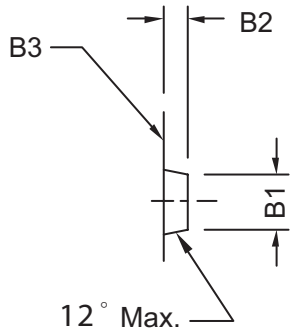
SOT-89 Tape

SOT-89 Carrier Tape





SECTION A-A



SECTION B-B

unit:㎜

PACKAGE	A1	B1	B2	C	D	E	B3	F	G	H	J	K	10C
SOP 8N 150㎜	4.85 ±0.10	4.45 ±0.10	1.85 ±0.10	4.0 ±0.10	8.0 ±0.10	2.0 ±0.05	0.254 ±0.02	1.75 ±0.10	5.5 ±0.05	1.50 ±0.10	1.5 ±0.25	12.0 +0.30 -0.10	40.0 ±0.20