SamHop Microelectronics Corp.

STE334S

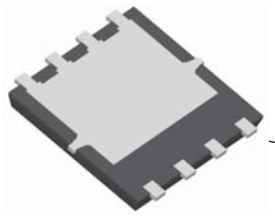
Ver 1.0

N-Channel Logic Level Enhancement Mode Field Effect Transistor

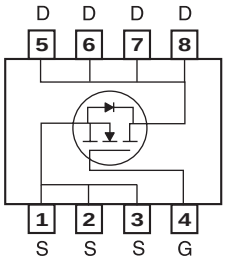
PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
30V	18A	4.7 @ VGS=10V
		8.3 @ VGS=4.5V

FEATURES

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



Power Pak 5 x 6



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

Symbol	Parameter		Limit	Units
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Drain Current-Continuous	T_A=25°C	18	A
		T_A=70°C	14.4	A
I_{DM}	-Pulsed [a]		63	A
P_D	Maximum Power Dissipation	T_A=25°C	3.1	W
		T_A=70°C	2	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	40	°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	30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V , 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	1.7	3	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V , I_D=9A		3.8	4.7	m ohm
		V_{GS}=4.5V , I_D=6.7A		6.3	8.3	m ohm
g_{FS}	Forward Transconductance	V_{DS}=10V , I_D=9A		30		S
DYNAMIC CHARACTERISTICS [b]						
C_{ISS}	Input Capacitance	V_{DS}=15V,V_{GS}=0V f=1.0MHz		900		pF
C_{OSS}	Output Capacitance			284		pF
C_{RSS}	Reverse Transfer Capacitance			228		pF
SWITCHING CHARACTERISTICS [b]						
$t_{D(ON)}$	Turn-On Delay Time	V_{DD}=15V I_D=1A V_{GS}=10V R_{GEN}= 6 ohm		30		ns
t_r	Rise Time			38		ns
$t_{D(OFF)}$	Turn-Off Delay Time			71		ns
t_f	Fall Time			37		ns
Q_g	Total Gate Charge	V_{DS}=15V,I_D=9A,V_{GS}=10V		26		nC
		V_{DS}=15V,I_D=9A,V_{GS}=4.5V		13		nC
Q_{gs}	Gate-Source Charge	V_{DS}=15V,I_D=9A, V_{GS}=10V		2.6		nC
Q_{gd}	Gate-Drain Charge			7.7		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=3A		0.76	1.2	V

Notes

a.Pulse Test:Pulse Width ≤ 300us, Duty Cycle ≤ 2%.
b.Guaranteed by design, not subject to production testing.

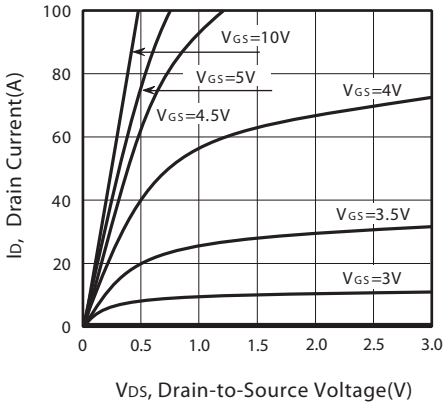


Figure 1. Output Characteristics

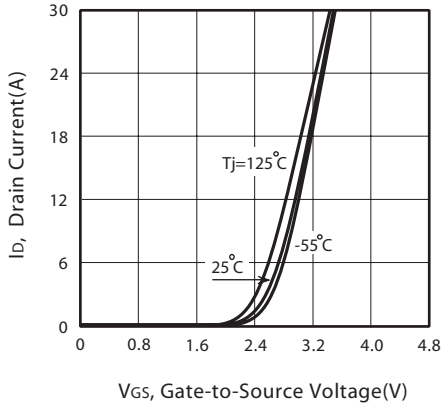


Figure 2. Transfer Characteristics

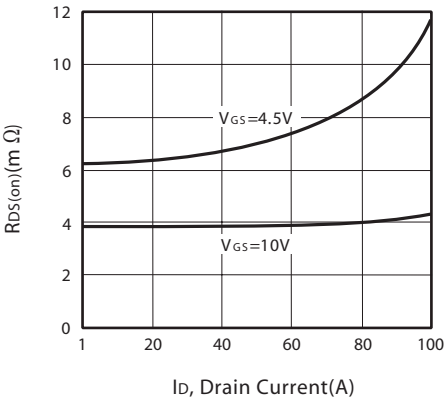


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

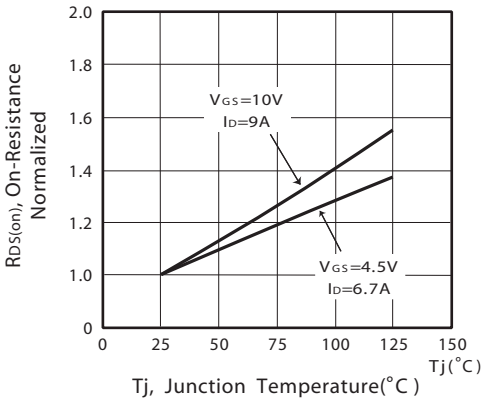


Figure 4. On-Resistance Variation with Drain Current and Temperature

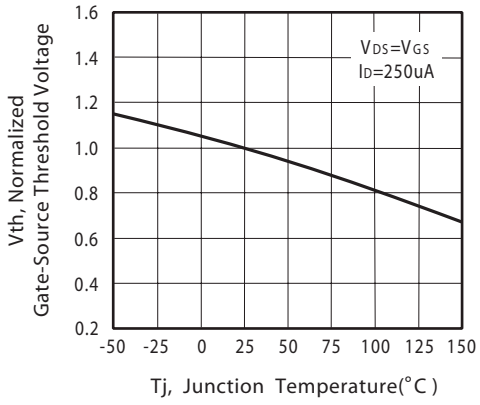


Figure 5. Gate Threshold Variation with Temperature

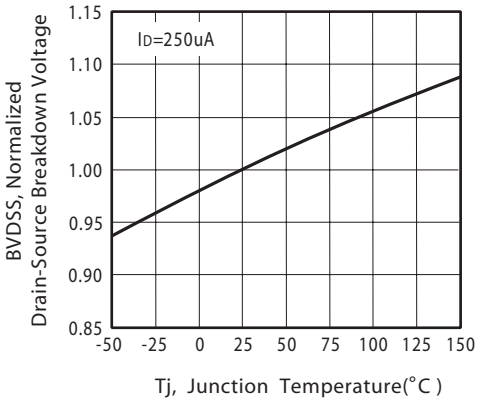


Figure 6. Breakdown Voltage Variation with Temperature

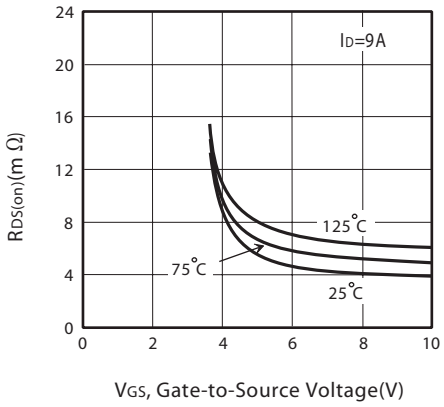


Figure 7. On-Resistance vs. Gate-Source Voltage

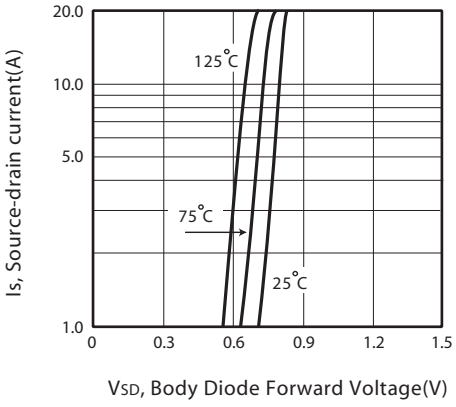


Figure 8. Body Diode Forward Voltage Variation with Source Current

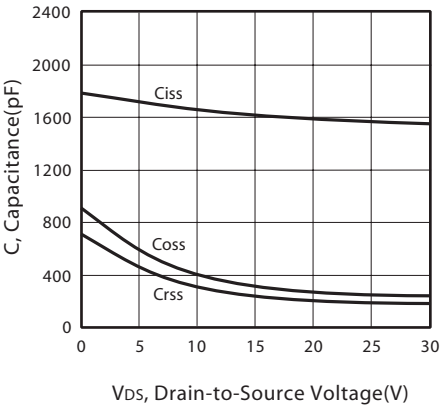


Figure 9. Capacitance

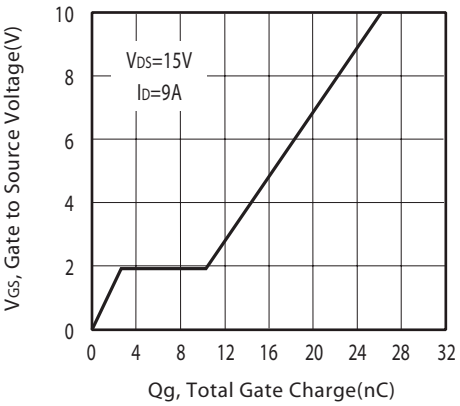


Figure 10. Gate Charge

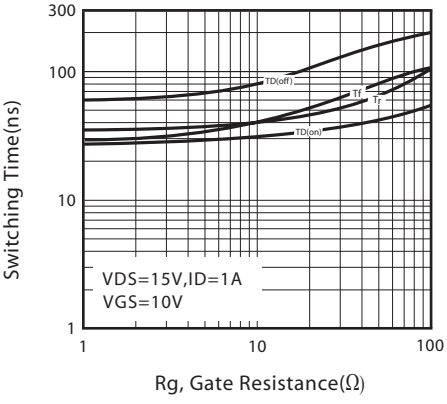


Figure 11. switching characteristics

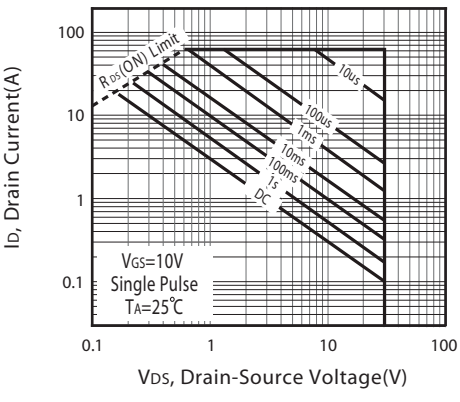


Figure 12. Maximum Safe Operating Area

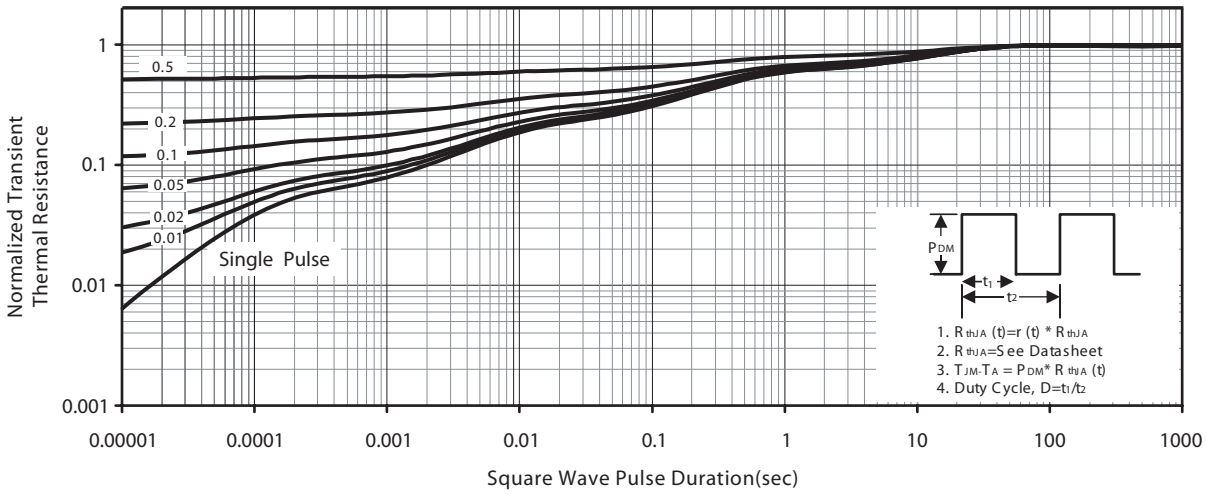
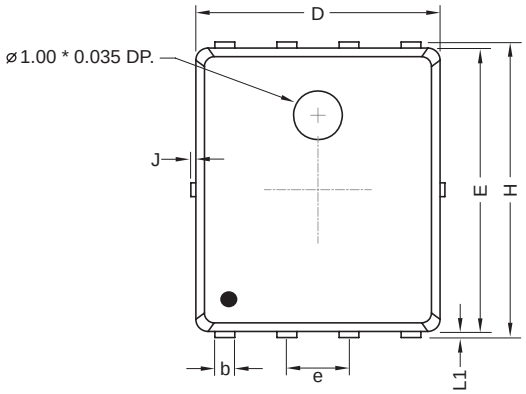


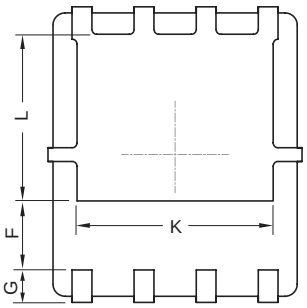
Figure 13. Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS

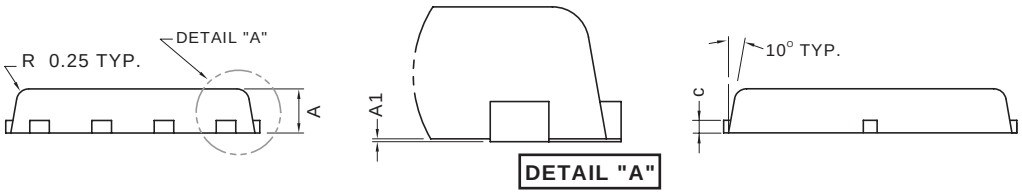
Power Pak 5 x 6



TOP VIEW



BOTTOM VIEW



SIDE VIEW

SYMBOLS	MILLIMETERS	
	MIN	MAX
A	0.800	1.000
A1	0.000	0.050
b	0.350	0.490
c	0.254 Ref.	
D	4.900	5.100
F	1.400 Ref.	
E	5.700	5.900
e	1.270 BSC.	
H	5.950	6.200
L1	0.100	0.180
G	0.600 Ref.	
K	4.000 Ref.	
J	—	0.150
L	3.400 Ref.	