



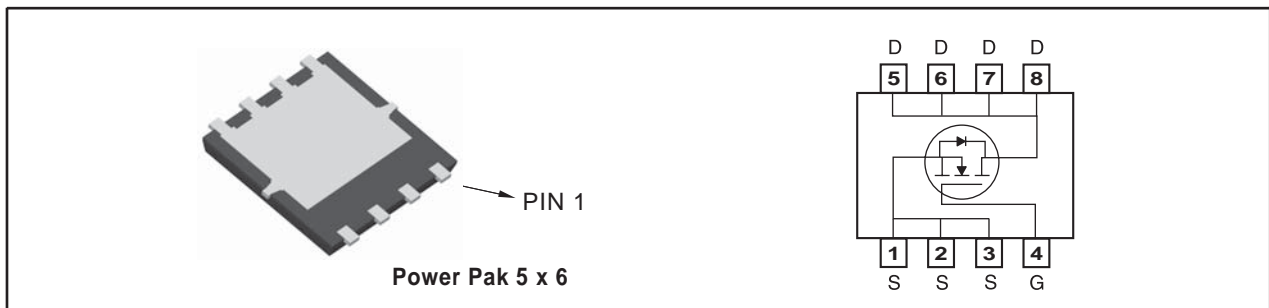
## N-Channel Logic Level Enhancement Mode Field Effect Transistor

### PRODUCT SUMMARY

V <sub>DSS</sub>	I <sub>D</sub>	R <sub>DS(ON)</sub> (mΩ) Max
30V	18A	4.7 @ V <sub>GS</sub> =10V
		8.3 @ V <sub>GS</sub> =4.5V

### FEATURES

- Super high dense cell design for low R<sub>DS(ON)</sub>.
- Rugged and reliable.
- Surface Mount Package.



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Limit	Units
V <sub>DS</sub>	Drain-Source Voltage	30	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Drain Current-Continuous	T <sub>A</sub> =25°C	18
		T <sub>A</sub> =70°C	14.4
I <sub>DM</sub>	-Pulsed <sup>a</sup>	63	A
P <sub>D</sub>	Maximum Power Dissipation	T <sub>A</sub> =25°C	3.1
		T <sub>A</sub> =70°C	2
T <sub>J</sub> , T <sub>STG</sub>	Operating Junction and Storage Temperature Range	-55 to 150	°C

### THERMAL CHARACTERISTICS

R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	40	°C/W
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# STE334S

Ver 1.0

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			1	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V			±100	nA
<b>ON CHARACTERISTICS</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1	1.7	3	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =9A		3.8	4.7	m ohm
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =6.7A		6.3	8.3	m ohm
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =9A		30		S
<b>DYNAMIC CHARACTERISTICS<sup>b</sup></b>						
C <sub>ISS</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V f=1.0MHz		900		pF
C <sub>OSS</sub>	Output Capacitance			284		pF
C <sub>RSS</sub>	Reverse Transfer Capacitance			228		pF
<b>SWITCHING CHARACTERISTICS<sup>b</sup></b>						
t <sub>D(ON)</sub>	Turn-On Delay Time	V <sub>DD</sub> =15V I <sub>D</sub> =1A		30		ns
t <sub>r</sub>	Rise Time			38		ns
t <sub>D(OFF)</sub>	Turn-Off Delay Time	V <sub>GS</sub> =10V R <sub>GEN</sub> = 6 ohm		71		ns
t <sub>f</sub>	Fall Time			37		ns
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, I <sub>D</sub> =9A, V <sub>GS</sub> =10V		26		nC
		V <sub>DS</sub> =15V, I <sub>D</sub> =9A, V <sub>GS</sub> =4.5V		13		nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =15V, I <sub>D</sub> =9A, V <sub>GS</sub> =10V		2.6		nC
Q <sub>gd</sub>	Gate-Drain Charge			7.7		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS</b>						
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =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.

Dec,06,2012

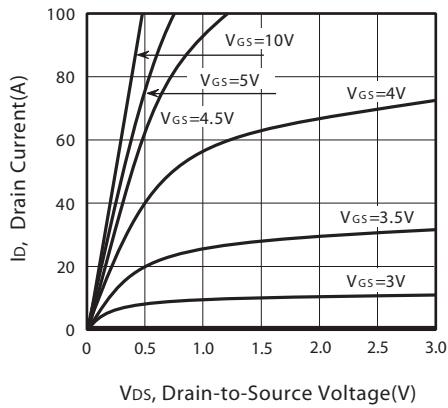


Figure 1. Output Characteristics

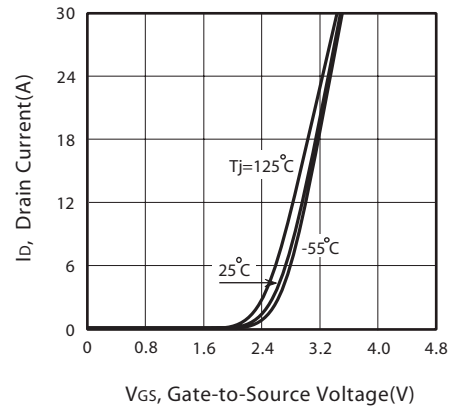


Figure 2. Transfer Characteristics

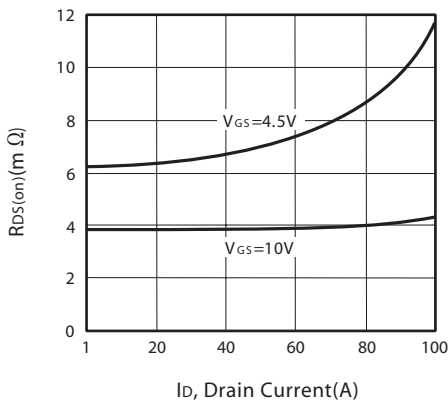


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

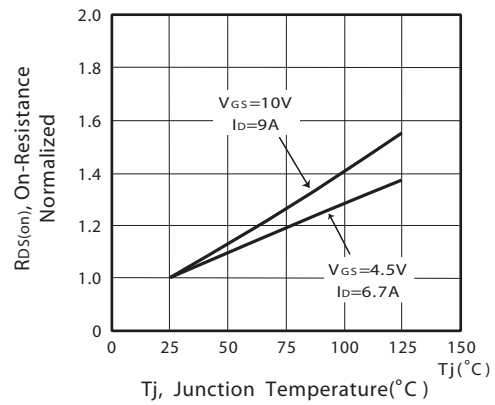


Figure 4. On-Resistance Variation with Drain Current and Temperature

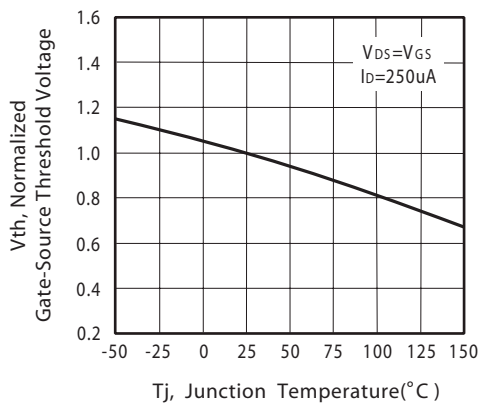


Figure 5. Gate Threshold Variation with Temperature

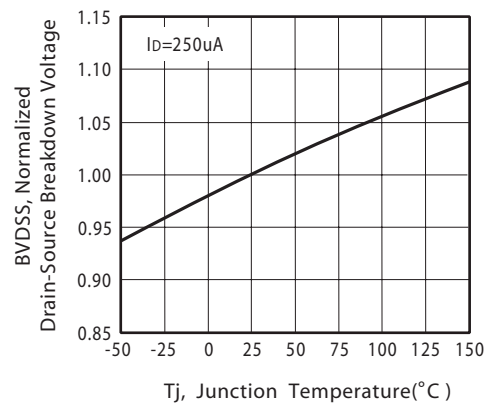
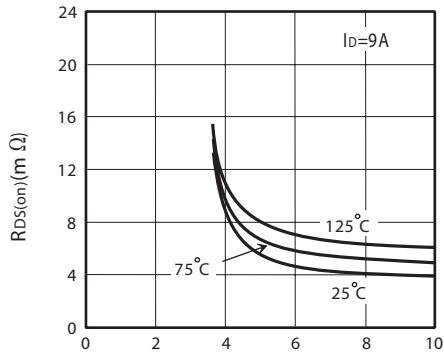
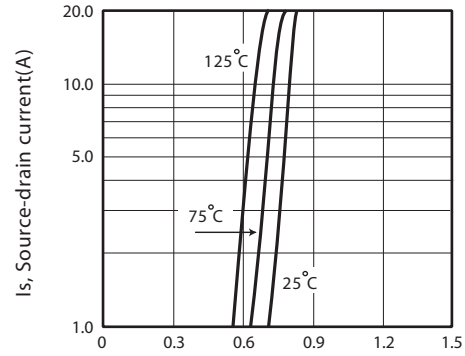


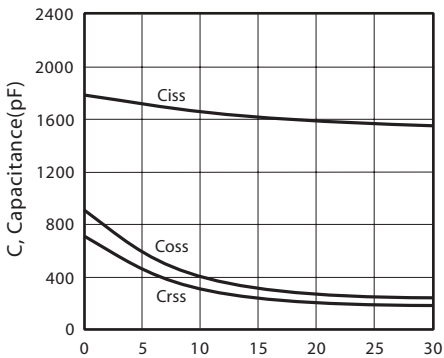
Figure 6. Breakdown Voltage Variation with Temperature



V<sub>GS</sub>, Gate-to-Source Voltage(V)  
 Figure 7. On-Resistance vs. Gate-Source Voltage



V<sub>SD</sub>, Body Diode Forward Voltage(V)  
 Figure 8. Body Diode Forward Voltage Variation with Source Current



V<sub>DS</sub>, Drain-to-Source Voltage(V)  
 Figure 9. Capacitance

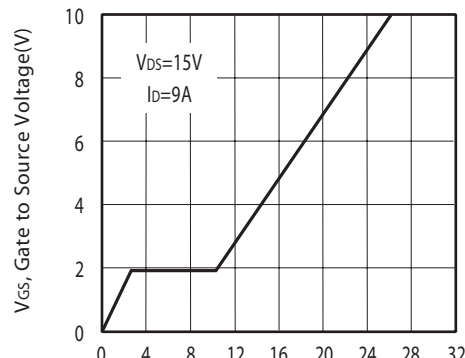


Figure 10. Gate Charge

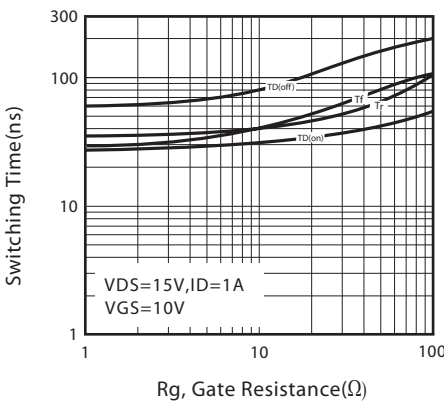


Figure 11. switching characteristics

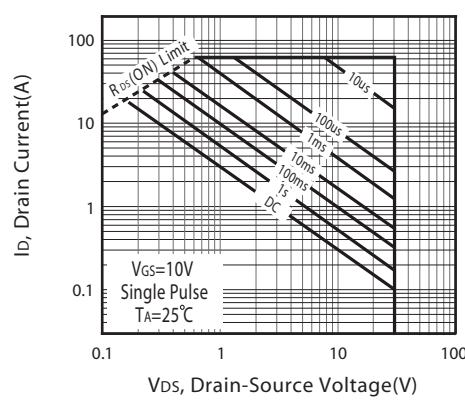


Figure 12. Maximum Safe Operating Area

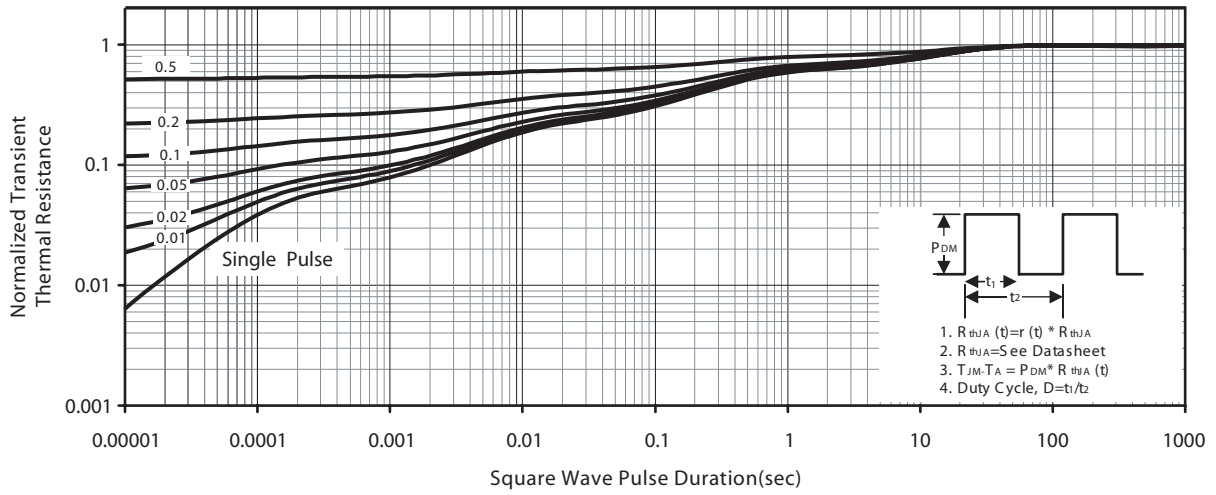
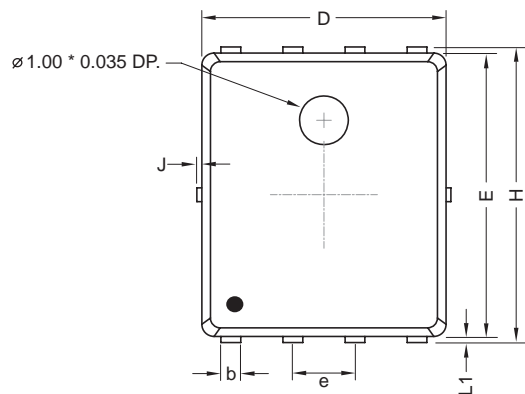


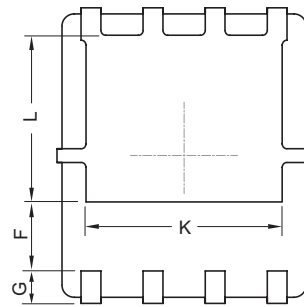
Figure 13. Normalized Thermal Transient Impedance Curve

## PACKAGE OUTLINE DIMENSIONS

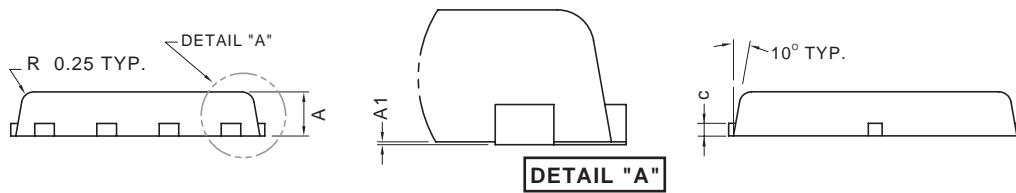
### Power Pak 5 x 6



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.	