



- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent Cdv/dt effect decline
- ★ Advanced high cell density Trench technology

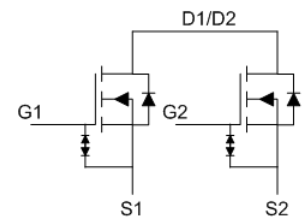
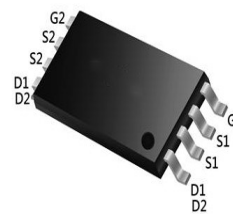
**Product Summary**

BVDSS	RDSON	ID
20V	10 mΩ	8A

**Description**

The XXW8814A is the low RDSON trenched N-CH MOSFETs with robust ESD protection. This product is suitable for Lithium-ion battery pack applications.

The XXW8814A meet the RoHS and Green Product requirement with full function reliability approved.

**TSSOP8 Pin Configuration**

**Absolute Maximum Ratings** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Symbol	Parameter	Max.	Units	
$V_{DSS}$	Drain-Source Voltage	20	V	
$V_{GSS}$	Gate-Source Voltage	$\pm 12$	V	
$I_D$	Continuous Drain Current	$T_A = 25^\circ\text{C}$	8.0	A
		$T_A = 100^\circ\text{C}$	5.5	A
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	24	A	
$P_D$	Power Dissipation	$T_A = 25^\circ\text{C}$	1.63	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	111	$^\circ\text{C}/\text{W}$	
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$	

**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	20	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =3.5A		10	13	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =3.5A		13	17	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	0.5	---	1.2	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =16V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	μA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =3.5A	---	20	---	S
Q <sub>g</sub>	Total Gate Charge (4.5V)	V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =7A	---	11.3	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	1.89	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	3.56	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =10V, V <sub>GS</sub> =4.5V, R <sub>G</sub> =3.3Ω I <sub>D</sub> =3.5A	---	8	---	ns
T <sub>r</sub>	Rise Time		---	17	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	27	---	
T <sub>f</sub>	Fall Time		---	8.8	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz	---	955	---	pF
C <sub>oss</sub>	Output Capacitance		---	200	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	150	---	

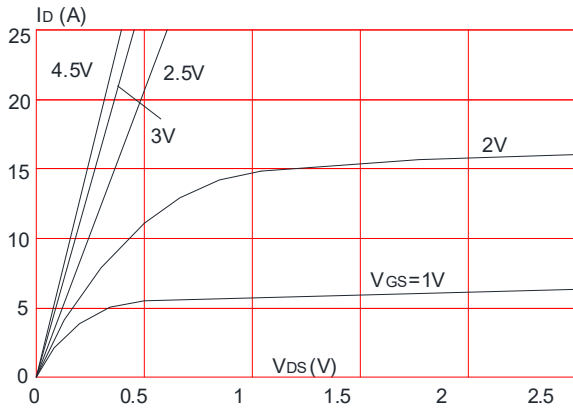
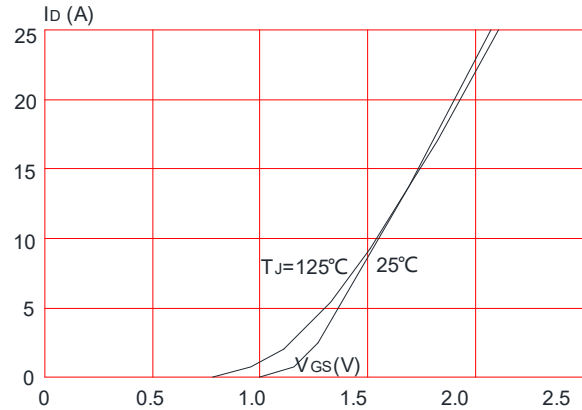
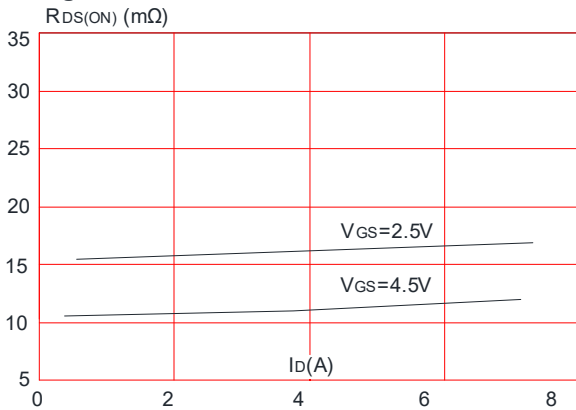
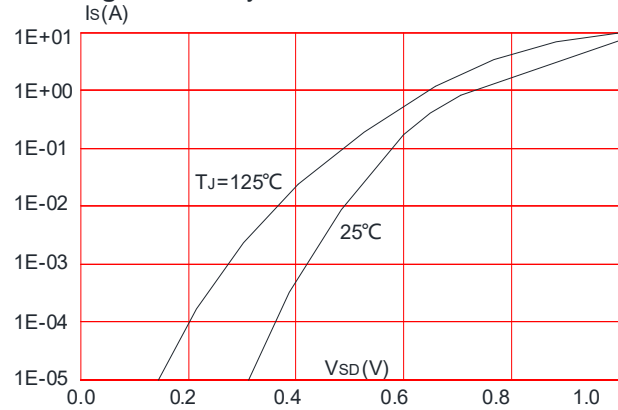
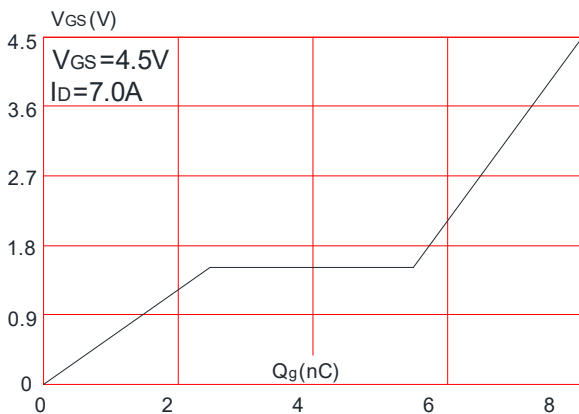
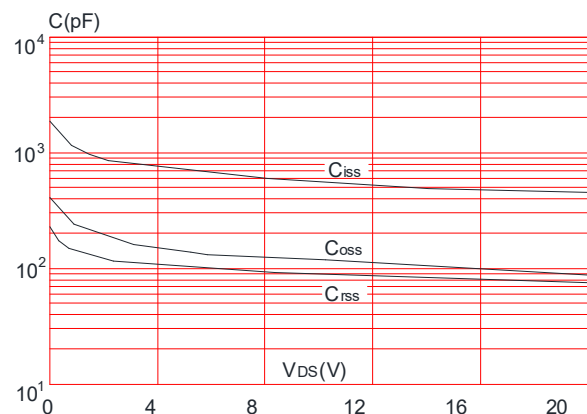
**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current <sup>1,4</sup>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	8	A
V <sub>SD</sub>	Diode Forward Voltage <sup>2</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C	---	---	1.2	V

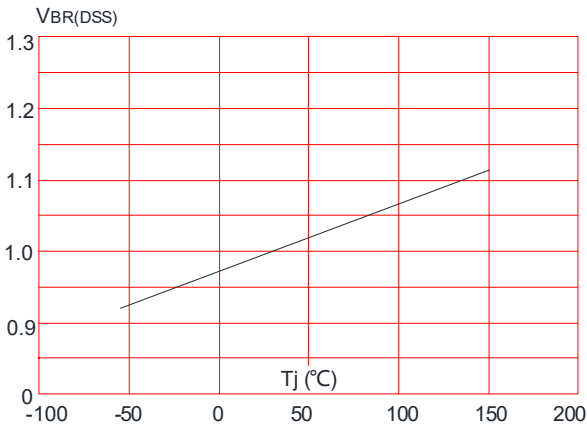
Note :

- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The power dissipation is limited by 150°C junction temperature
- 4.The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

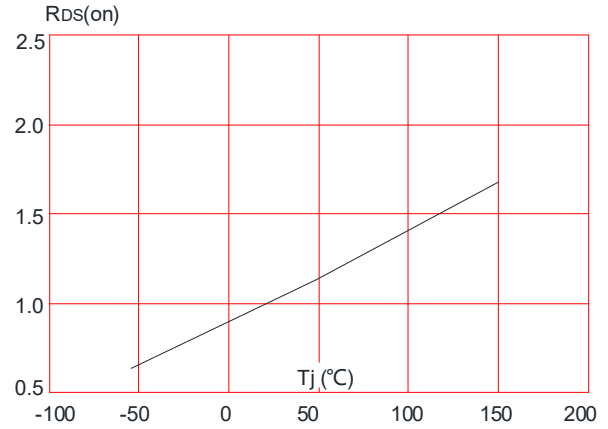
## Typical Performance Characteristics

**Figure 1: Output Characteristics**

**Figure 2: Typical Transfer Characteristics**

**Figure 3: On-resistance vs. Drain Current**

**Figure 4: Body Diode Characteristics**

**Figure 5: Gate Charge Characteristics**

**Figure 6: Capacitance Characteristics**


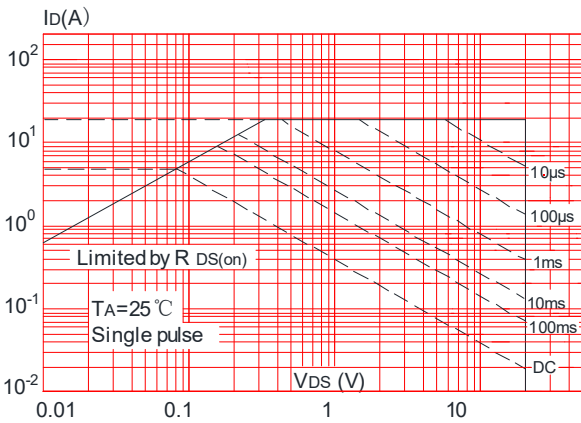
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



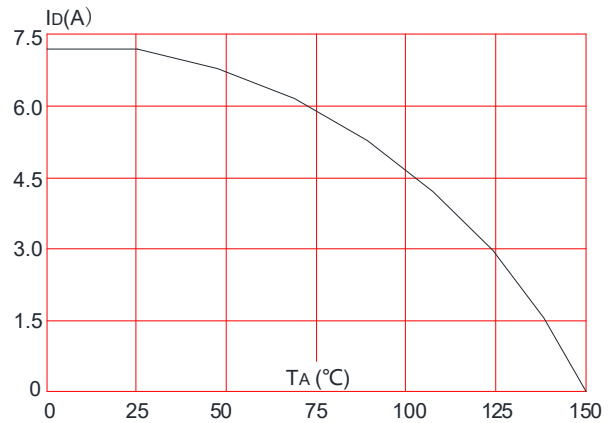
**Figure 8: Normalized on Resistance vs. Junction Temperature**



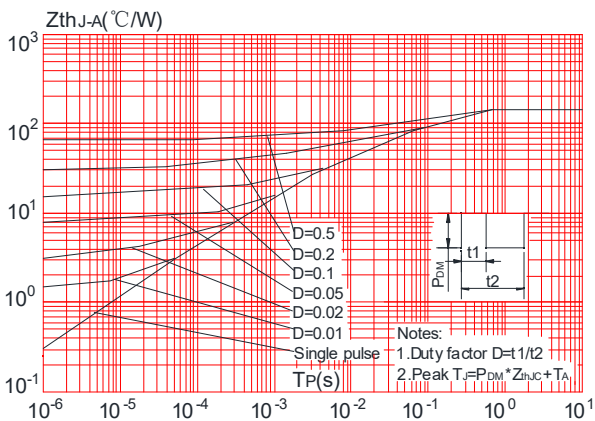
**Figure 9: Maximum Safe Operating Area**

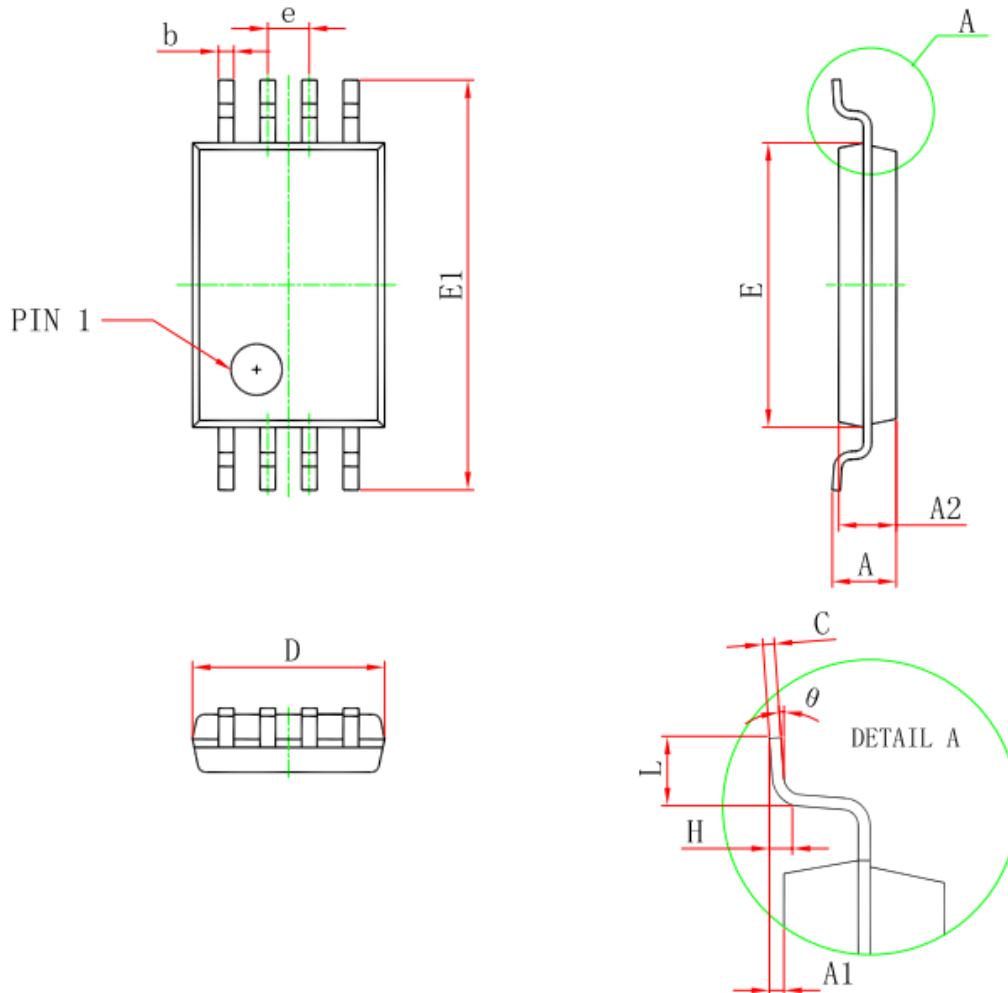


**Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature**



**Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient**



**TSSOP8 Package Outline Dimensions**


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
D	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
b	0.190	0.300	0.007	0.012
e	0.090	0.200	0.004	0.008
E1	6.250	6.550	0.246	0.258
A		1.200		0.047
A2	0.800	1.000	0.031	0.039
A1	0.050	0.150	0.002	0.006
e	0.65 (BSC)		0.026 (BSC)	
L	0.500	0.700	0.020	0.028
H	0.25(TYP)		0.01(TYP)	
$\theta$	1°	7°	1°	7°