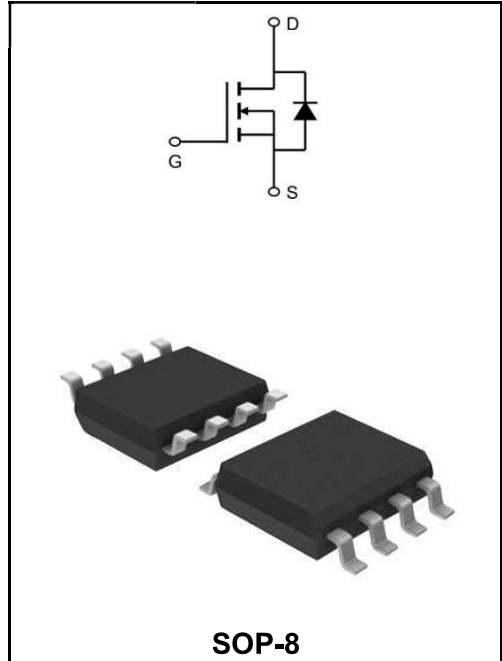


30V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	12A
V_{DSS}	30V
R_{DS(on)-typ(@V_{GS}=10V)}	< 12mΩ (Type:8.5 mΩ)



Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW4406AS	SOP-8	YFW 4406AS XXXXX	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V _{GS} @ 10V ¹ @T _A =25°C	I_D	12	A
Continuous Drain Current, V _{GS} @ 10V ¹ @T _A =70°C	I_D	8	A
Pulsed Drain Current ^{note1}	I_{DM}	48	A
Single Pulse Avalanche Energy ^{note2}	E_{AS}	16	mJ
Total Power Dissipation ⁴ @T _A =25°C	P_D	3	W
Thermal Resistance Junction to ambient	R_{θJA}	46	°C/W
Operating and Storage Temperature Range	T_J , T_{STG}	-55 to +150	°C

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	V(BR)DSS	30	33	-	V
Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	I_{DSS}	-	-	1.0	μA
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	V_{GS(th)}	1.2	1.6	2.5	V
Static Drain-Source On-Resistance note3	$V_{GS}=10V, I_D=13A$	R_{DS(ON)}	-	8.5	12	mΩ
	$V_{GS}=4.5V, I_D=10A$		-	13	18	
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	900	-	pF
Output Capacitance		C_{oss}	-	140	-	
Reverse Transfer Capacitance		C_{rss}	-	120	-	
Total Gate Charge	$V_{DS}=15V$ $I_D=10A$ $V_{GS}=10V$	Q_g	-	19	-	nC
Gate-Source Charge		Q_{gs}	-	6.3	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	4.5	-	
Turn-on delay time	$V_{DS}=15V$ $I_D=6A$ $R_{GEN}=3\Omega$ $V_{GS}=10V$	t_{d(on)}	-	6	-	ns
Turn-on Rise Time		T_r	-	5	-	
Turn-Off Delay Time		t_{d(OFF)}	-	25	-	
Turn-on Fall Time		t_f	-	7	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	12	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	48	A
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time	$I_F=10A, di/dt=100A/\mu s$	t_{rr}	-	7	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	6.3	-	nC

Note :

- 1、 The data tested by surface mounted on a 1 inch FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , Pulse Width≤300μs, Duty Cycle≤0.5%
- 3、 The EAS data shows Max. rating . The test condition is T_J=25°C, V_{GS}=10V, R_G=25Ω, L=0.5mH, I_{AS}=8A
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

Typical Characteristics

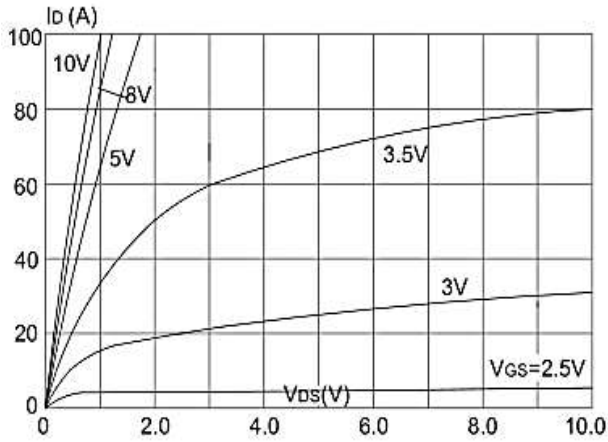


Figure 1: Output Characteristics

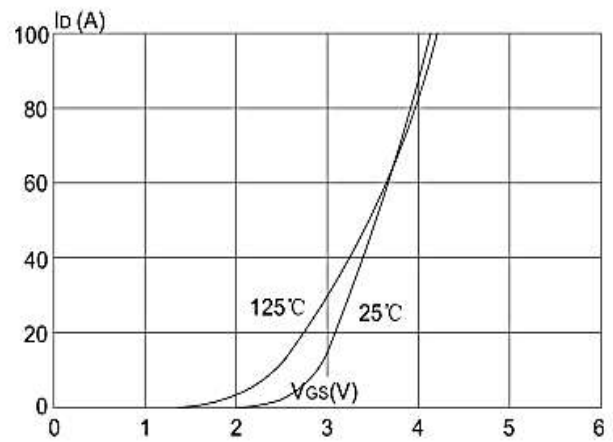


Figure 2: Typical Transfer Characteristics

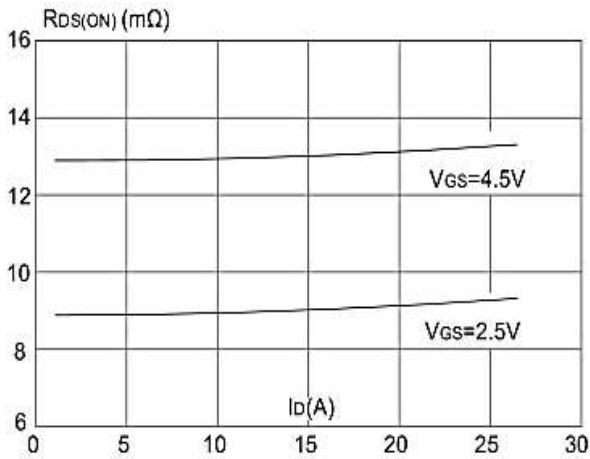


Figure 3: On-resistance vs. Drain Current

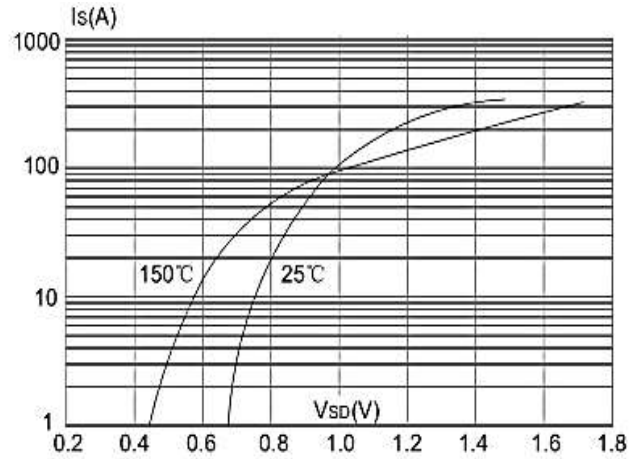


Figure 4: Body Diode Characteristics

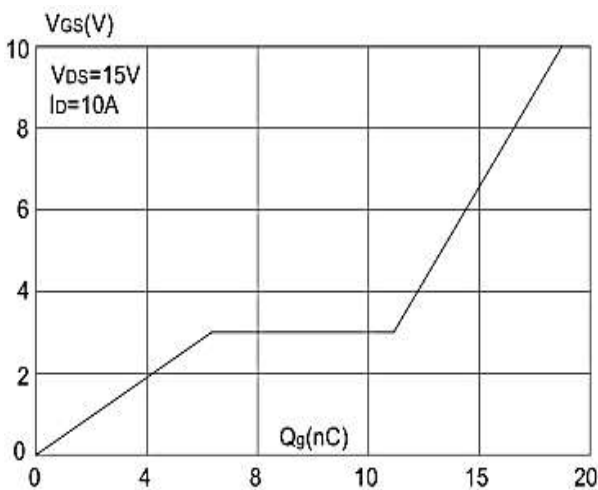


Figure 5: Gate Charge Characteristics

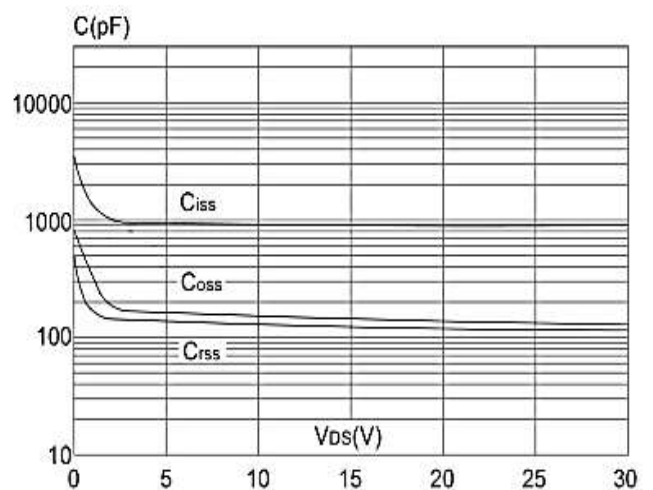


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

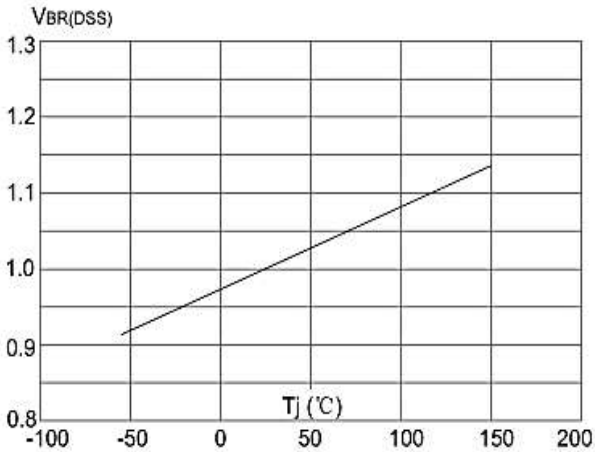


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

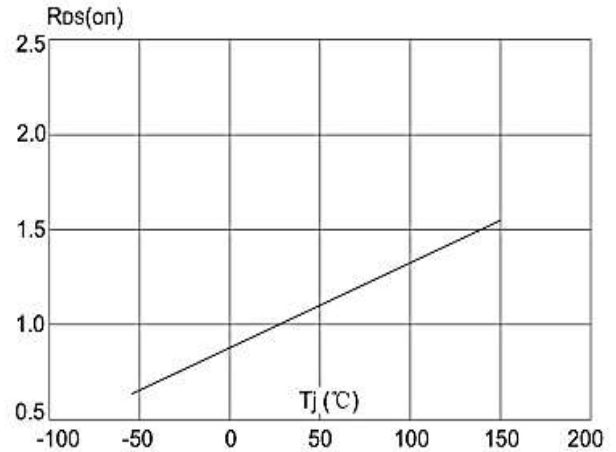


Figure 8: Normalized on Resistance vs. Junction Temperature

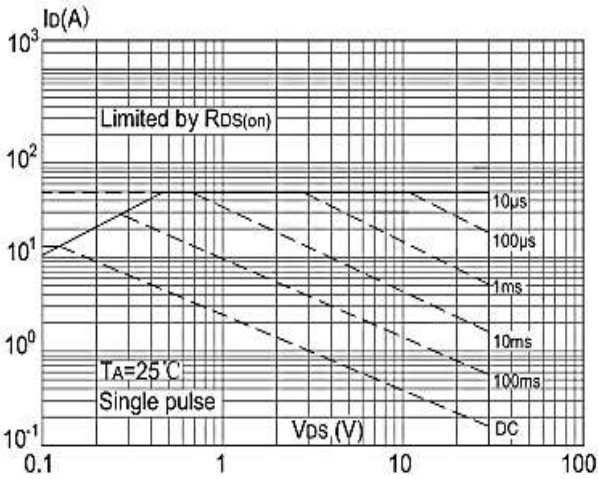


Figure 9: Maximum Safe Operating Area

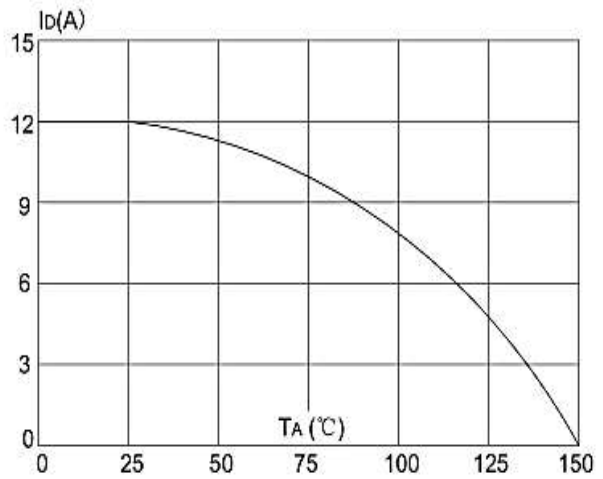


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

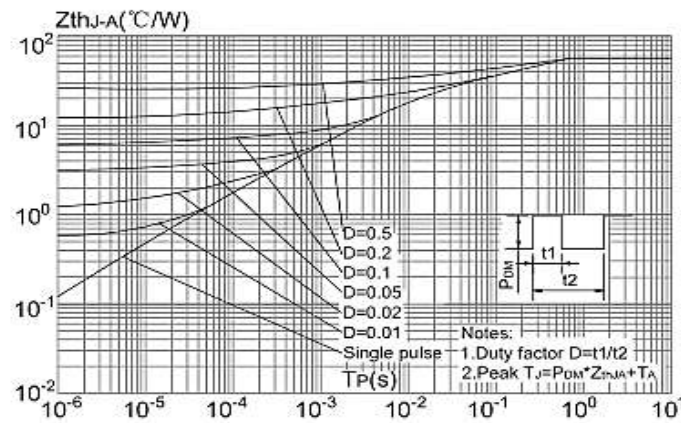
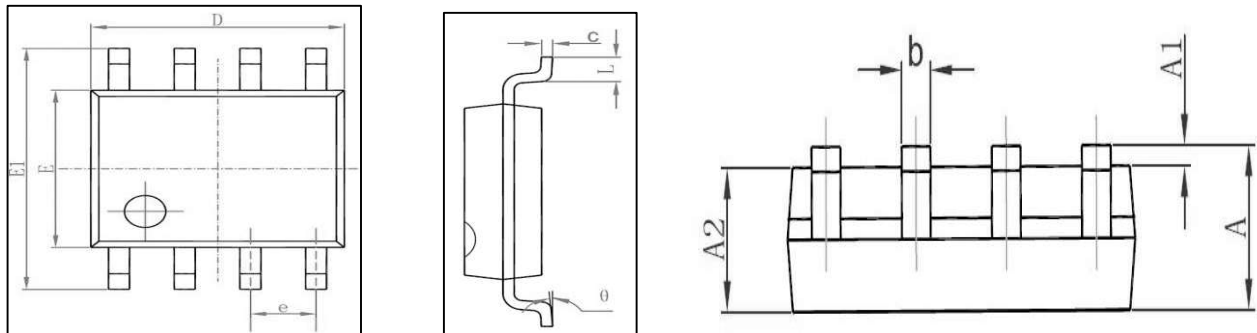
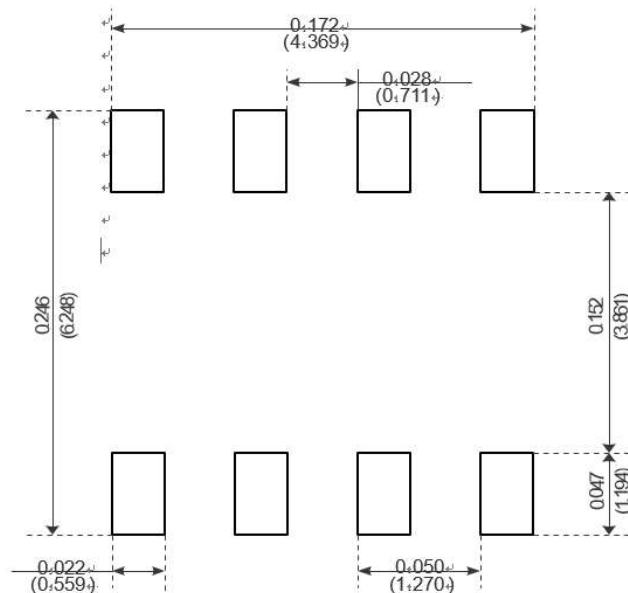


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



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