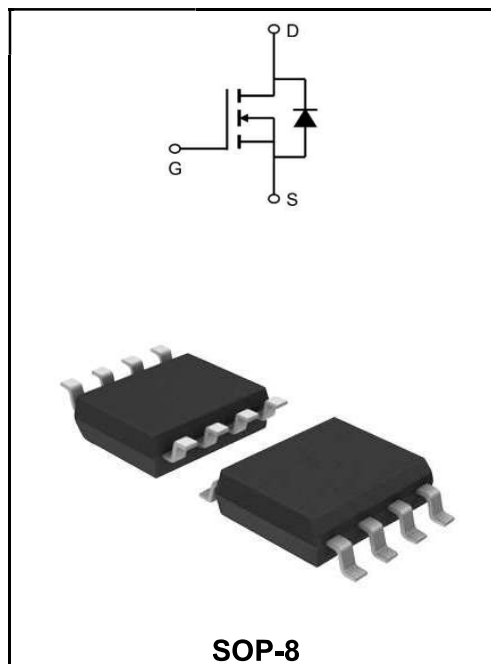


30V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

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



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, $V_{GS} @ 10V^1 @ T_A=25^\circ C$	I_D	12	A
Continuous Drain Current, $V_{GS} @ 10V^1 @ T_A=70^\circ C$	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 @ $T_A=25^\circ C$	P_D	3	W
Thermal Resistance Junction to ambient	$R_{\theta JA}$	46	$^\circ C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$

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 =250uA	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} =±20V, V _{DS} =0V	I _{GSS}	-	-	±100	nA
Gate -Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	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} = 3Ω 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/μs	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 $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$
- 3、The EAS data shows Max. rating . The test condition is T_J=25℃, V_{GS}=10V, R_G=25 Ω , L=0.5mH, I_{AS}=8A
- 4、The power dissipation is limited by 150℃ 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

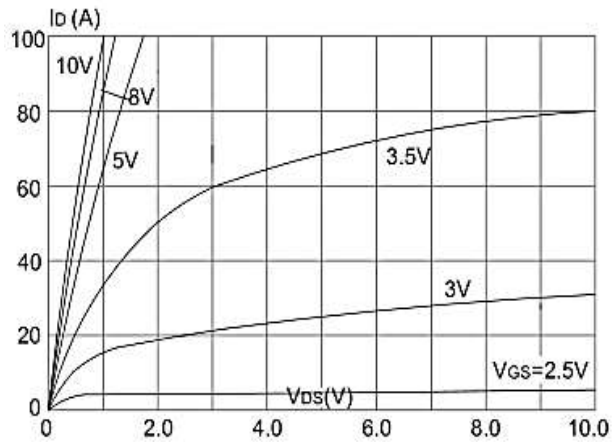


Figure1: Output Characteristics

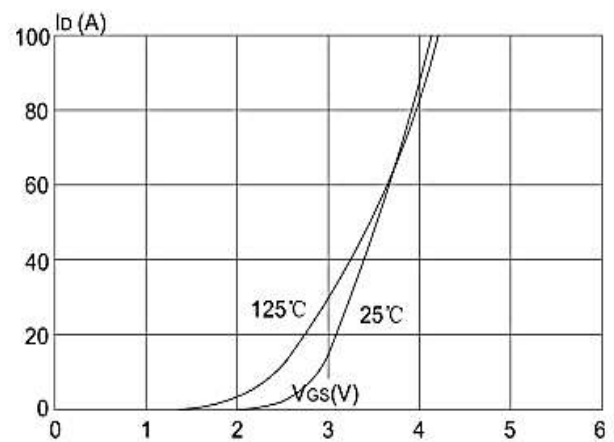


Figure 2: Typical Transfer Characteristics

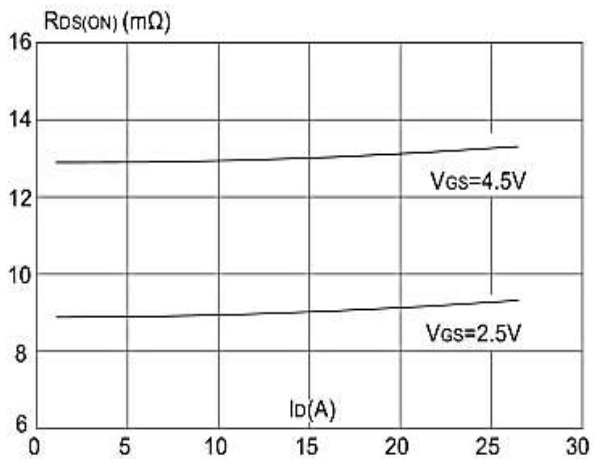


Figure 3: On-resistance vs. Drain Current

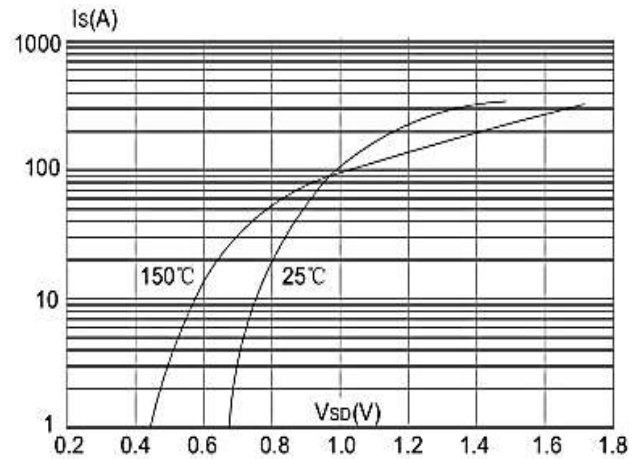


Figure 4: Body Diode Characteristics

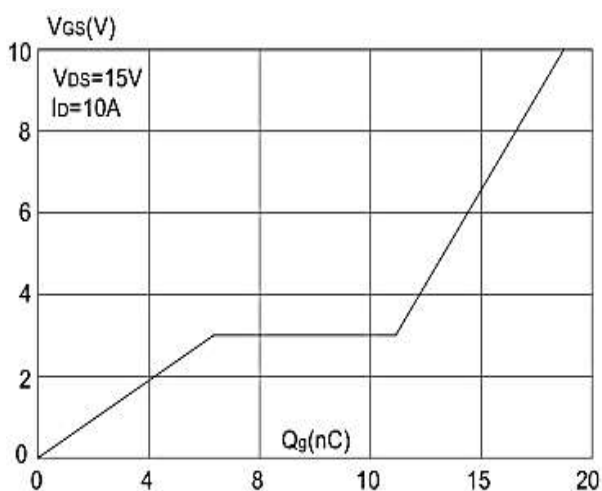


Figure 5: Gate Charge Characteristics

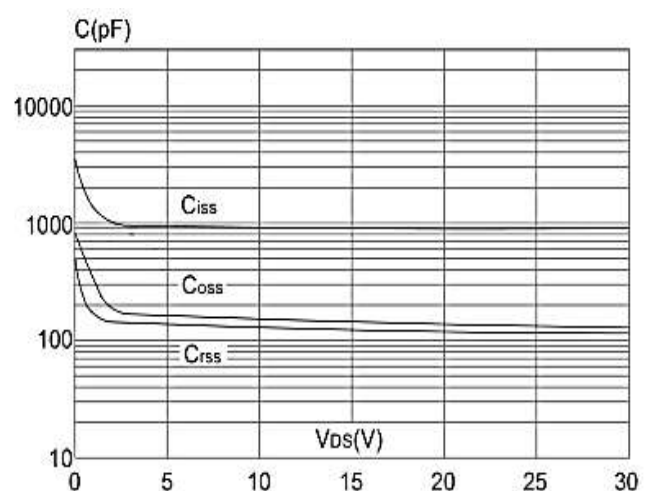


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

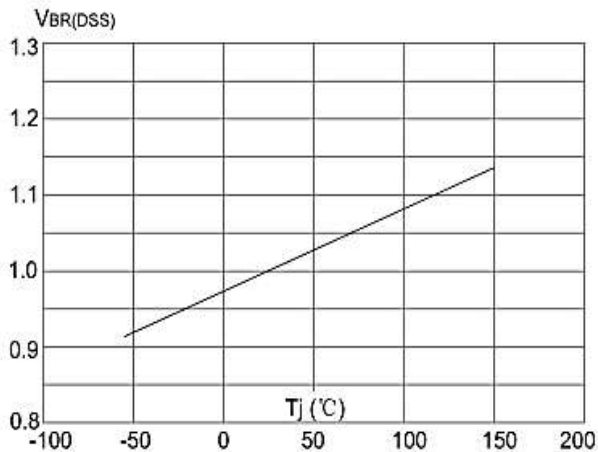


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

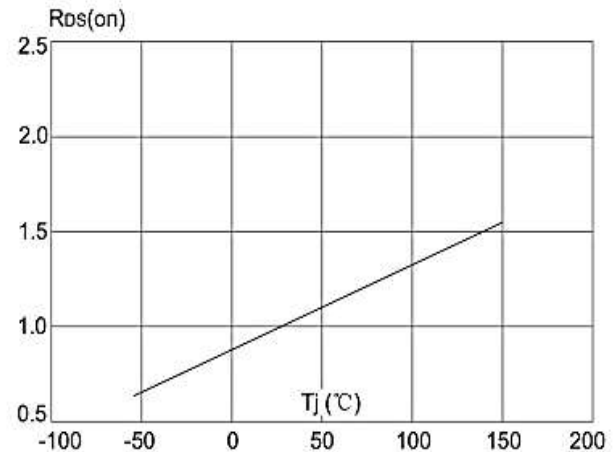


Figure 8: Normalized on Resistance vs. Junction Temperature

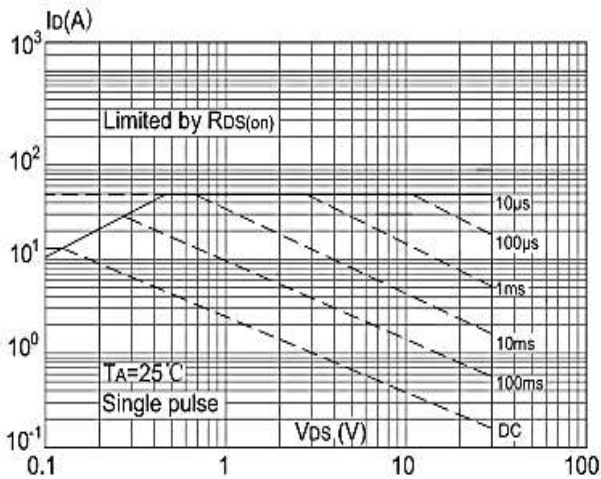


Figure 9: Maximum Safe Operating Area

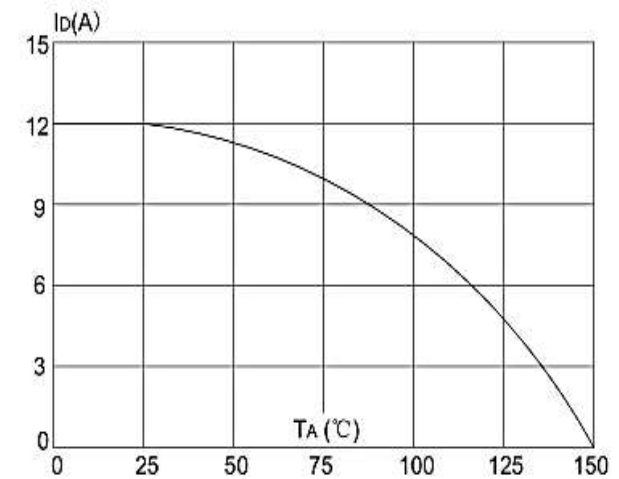


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

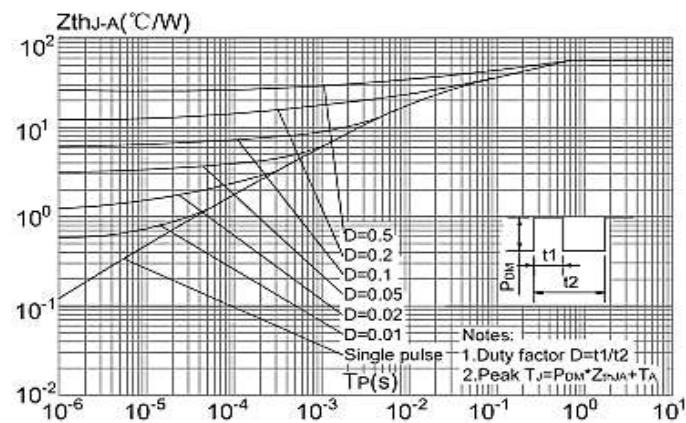
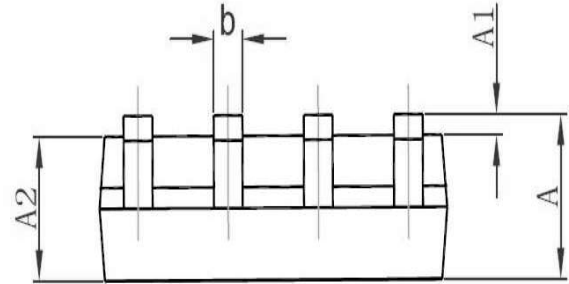
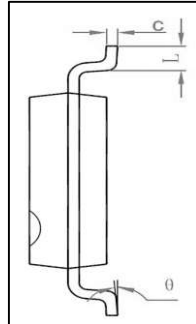
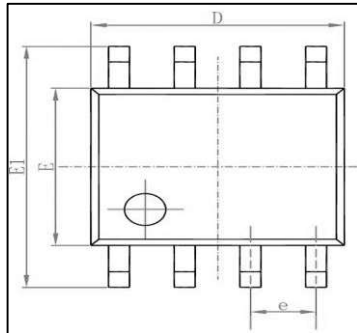
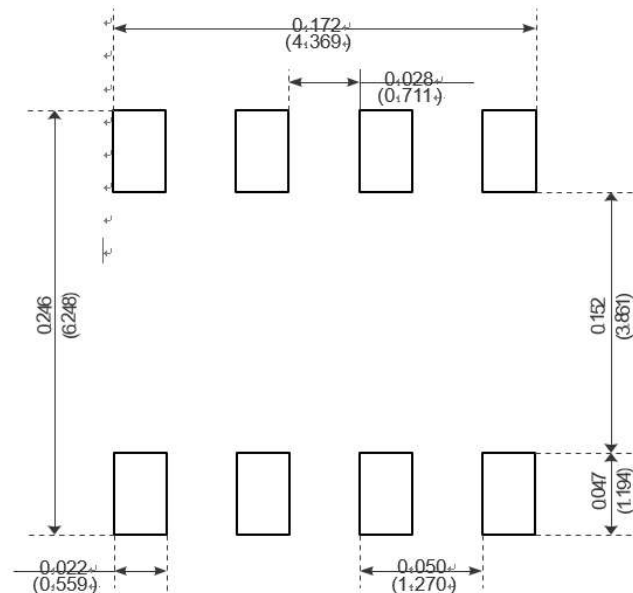


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

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°



Recommended Minimum Pads