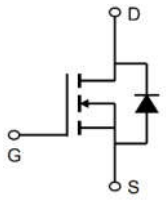
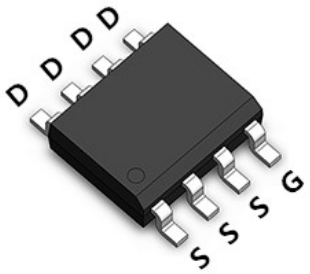
20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	15A
V_{DSS}	20V
R_{DSON}-typ(@V_{GS}=4.5V)	< 8.0mΩ(Type:6.3 mΩ)





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Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW15N02S	SOP-8	YFW 15N02S XXXXX	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	20	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current T_C=25℃	I_D	15	A
Continuous Drain Current T_C=100℃	I_D	12	A
Pulsed Drain Current[note1]	I_{DM}	45	A
Single Pulse Avalanche Energy[note2]	E_{AS}	36	mJ
Total Power Dissipation T_C=25℃	P_D	31	W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	4.84	°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=250uA	**V(BR)DSS**	20	22	-	**V**
Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V	**I_{DSS}**	-	-	1.0	**μA**
Gate to Body Leakage Current	V_{GS}=±12V, V_{DS}=0V	**I_{GSS}**	-	-	±100	**nA**
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	**$V_{GS(th)}$**	0.4	0.7	1.1	**V**
Static Drain-Source On-Resistance note3	V_{GS}=4.5V, I_D=25A	**$R_{DS(ON)}$**	-	6.3	8.0	**mΩ**
	V_{GS}=2.5V, I_D=10A		-	8.8	13	
Input Capacitance	V_{DS}=10V V_{GS}=0V f=1.0MHz	**C_{iss}**	-	1458	-	**pF**
Output Capacitance		**C_{oss}**	-	238	-	
Reverse Transfer Capacitance		**C_{rss}**	-	212	-	
Total Gate Charge	V_{DS}=10V I_D=25A V_{GS}=4.5V	**Q_g**	-	19	-	**nC**
Gate-Source Charge		**Q_{gs}**	-	3	-	
Gate-Drain("Miller") Charge		**Q_{gd}**	-	6.4	-	
Turn-on delay time	V_{DS} =10V I_D= 10A R_{GEN} = 3Ω V_{GS}=4.5V	**$t_{d(on)}$**	-	10	-	**ns**
Turn-on Rise Time		**T_r**	-	21	-	
Turn-Off Delay Time		**$t_{d(OFF)}$**	-	39	-	
Turn- Off Fall Time		**t_f**	-	19	-	
Maximum Continuous Drain to Source Diode Forward Current		**I_S**	-	-	50	**A**
Maximum Pulsed Drain to Source Diode Forward Current		**I_{SM}**	-	-	200	**A**
Drain to Source Diode Forward Voltage	V_{GS}=0V , I_S=30A	**V_{SD}**	-	-	1.2	**V**
Body Diode Reverse Recovery Time	I_F=20A,dI/dt=100A/μs	**t_{rr}**	-	25	-	**ns**
Body Diode Reverse Recovery Charge		**Q_{rr}**	-	20	-	**nC**

Notes:
1、Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2、EAS condition: T_J=25℃, V_{DD}=10V, V_G=4.5V, L=0.5mH, R_G=25Ω, I_{AS}=12A
3、Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Ratings and Characteristic Curves

Typical Characteristics

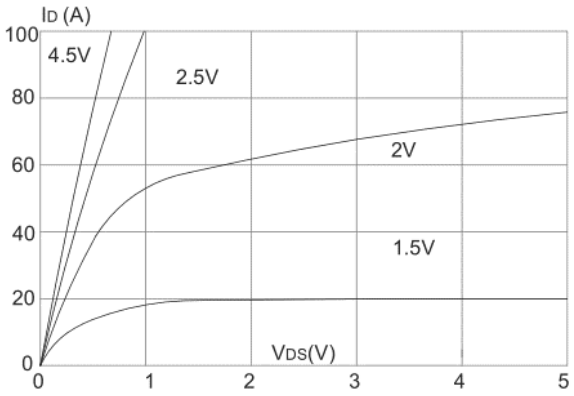

Figure1: Output Characteristics

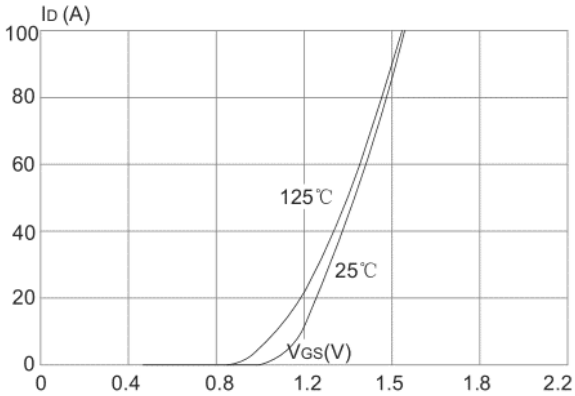

Figure 2: Typical Transfer Characteristics

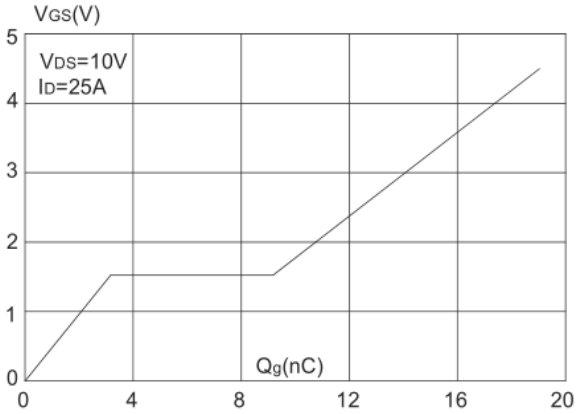

Figure 3: On-resistance vs. Drain Current

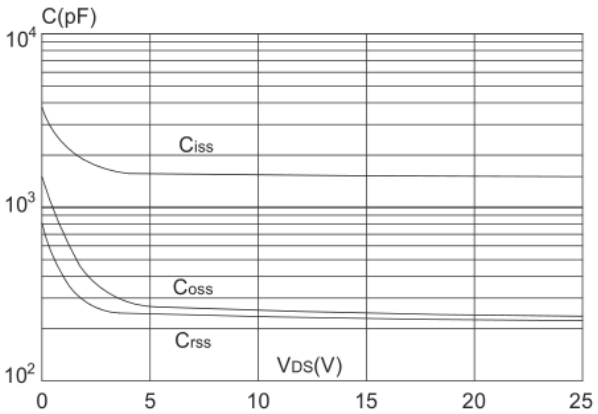

Figure 4: Body Diode Characteristics

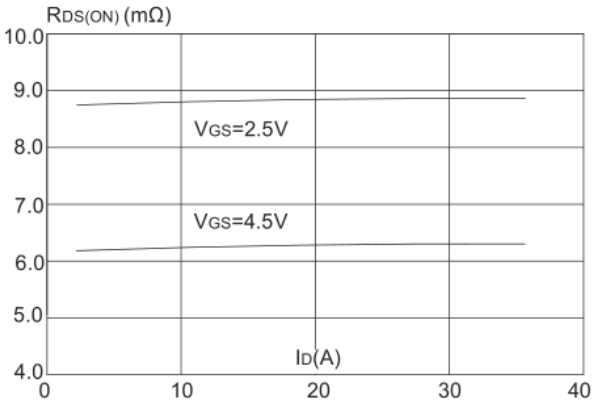

Figure 5: Gate Charge Characteristics

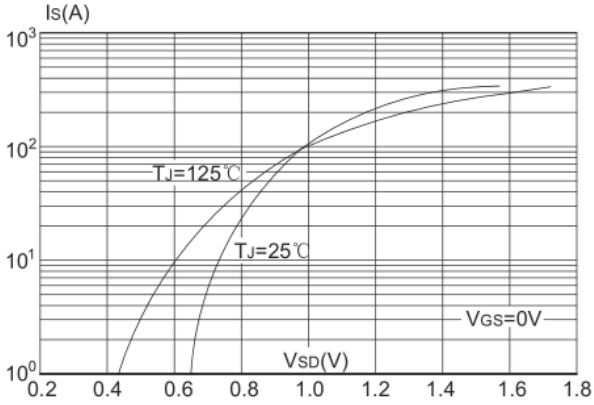

Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

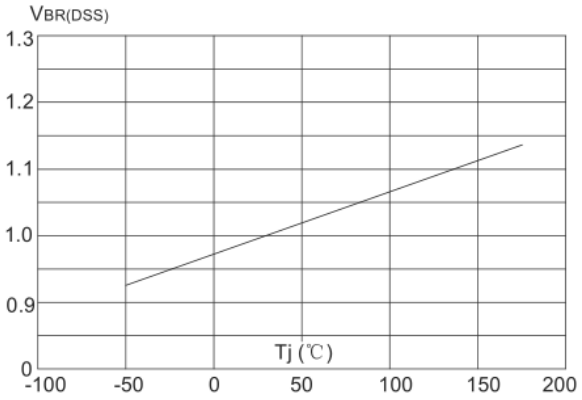

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

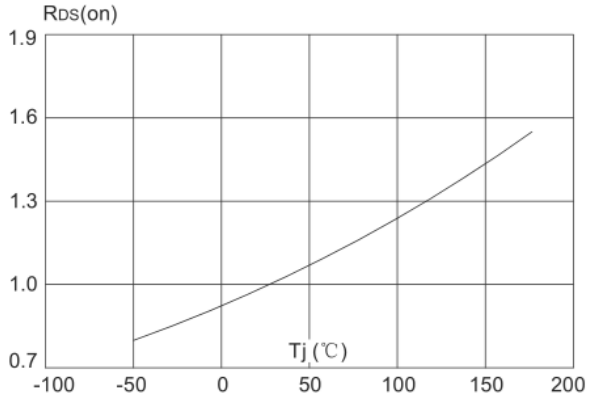

Figure 8: Normalized on Resistance vs. Junction Temperature

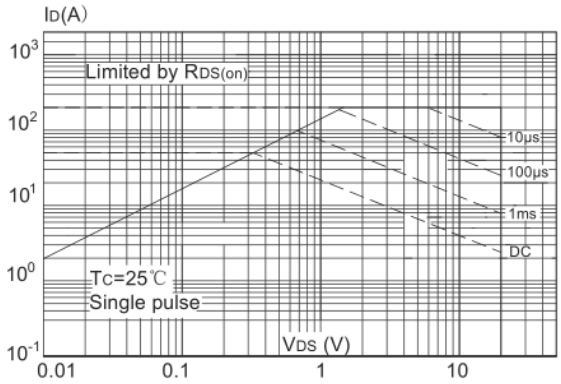

Figure 9: Maximum Safe Operating Area

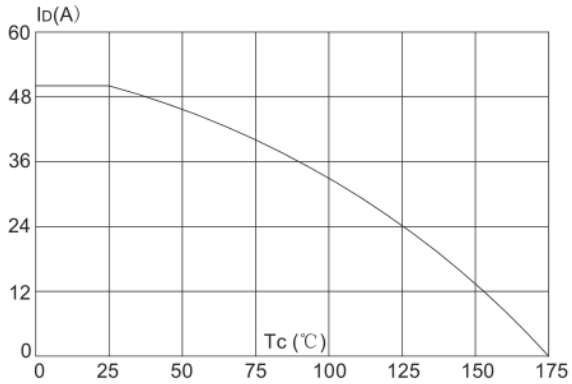

Figure 10: Maximum Continuous Drain Current vs. Case Temperature

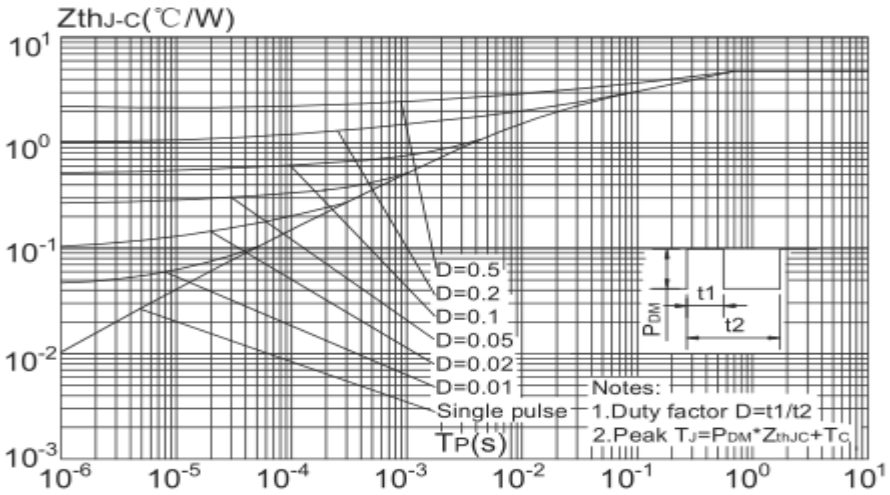

Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Outline Dimensions Millimeters

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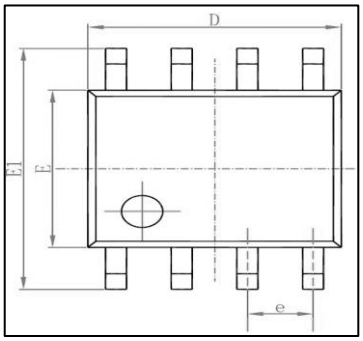
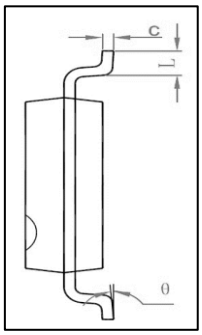
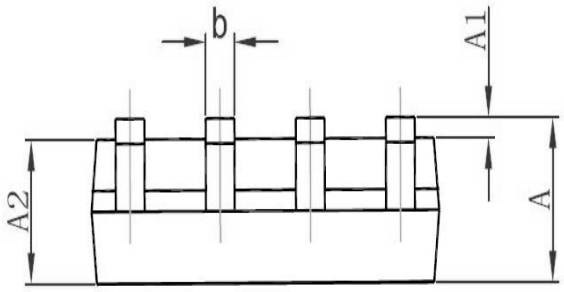
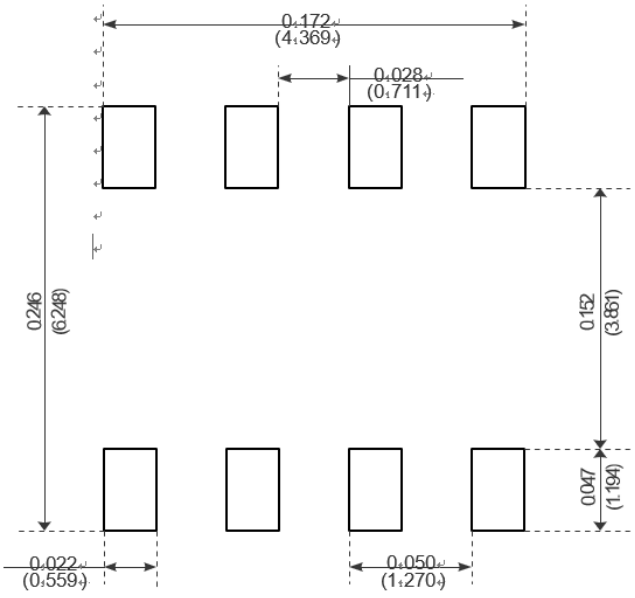






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050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



Recommended Minimum Pads