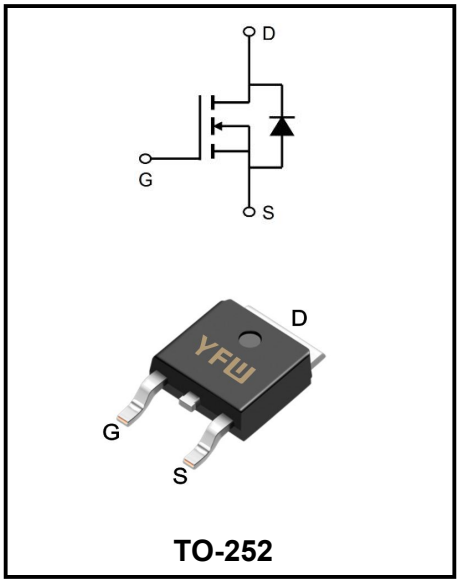
30V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	180A
V_{DSS}	30V
R_{DSON}-typ(@V_{GS}=10V)	＜2.7mΩ(Typ:2.1 mΩ)



TO-252

FEATURES

Adopt advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

APPLICATIONS

- Load switch
- PWM Application
- Power Management

MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275℃ maximum,10s per JESD 22-B106

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
Continue Drain Current	I_D	180	A
Pulsed Drain Current (Note1)	I_{DM}	720	A
Total Power Dissipation	P_D	98	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	305	mJ
Operating Junction Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	27	°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

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	BV_{DSS}	30	-	-	V
Drain-Source Leakage Current	V_{DS} = 30 V, V_{GS} = 0 V	I_{DSS}	-	-	1	μA
Gate Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	$V_{GS(th)}$	1.0	-	2.5	V
Drain-Source On-State Resistance	V_{GS}=10V, I_D=30A	$R_{DS(ON)}$	-	2.1	2.7	mΩ
	V_{GS}=4.5V, I_D=20A		-	3.5	5	mΩ
Input Capacitance(Note2)	V_{DS}=15V V_{GS}=0V f=1MHz	C_{iss}	-	5100	-	pF
Output Capacitance(Note2)		C_{oss}	-	573	-	
Reverse Transfer Capacitance(Note2)		C_{rss}	-	475	-	
Total Gate Charge	V_{DS}=15V V_{GS}=10V I_D=30A	Q_g	-	95	-	nC
Gate-Source Charge		Q_{gs}	-	20	-	
Gate-Drain Charge		Q_{gd}	-	21	-	
Turn-on delay time	V_{DD}=15V V_{GS}=10V R_G=3Ω I_D=30A	$t_{d(on)}$	-	17	-	ns
Rise Time		T_r	-	30	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	55	-	
Fall Time		t_f	-	20	-	
Maximun Body-Diode Continuous Current		I_S	-	-	180	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	720	A
Drain-Source Diode Forward Voltage	V_{GS}=0V , I_S=30A , T_J=25℃	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time	I_F= 30A di / dt = 100 A/μs	t_{rr}	-	23	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	14	-	nC

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

Ratings and Characteristic Curves

Figure 1: Output Characteristics

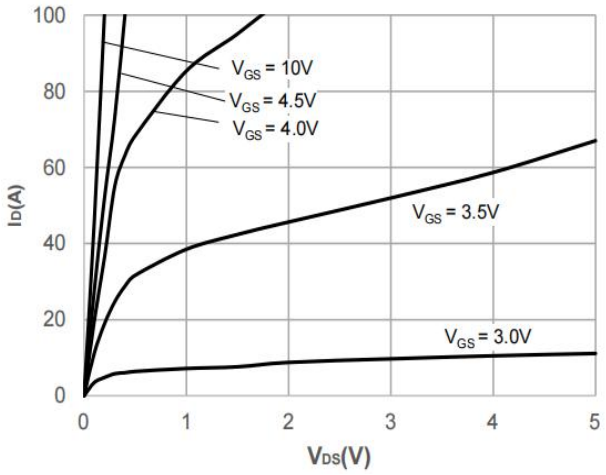


Figure 2: Typical Transfer Characteristics

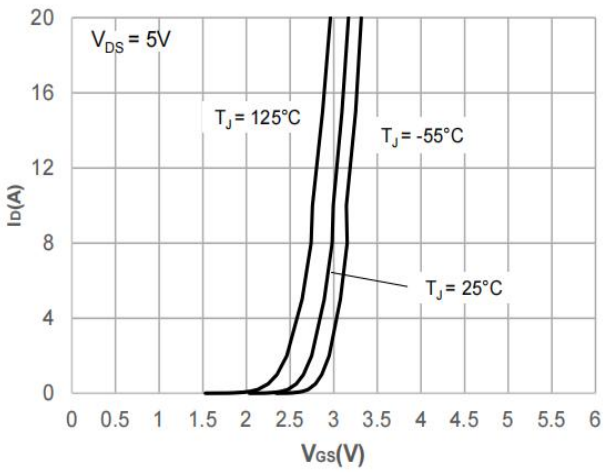


Figure 3: On-resistance vs. Drain Current

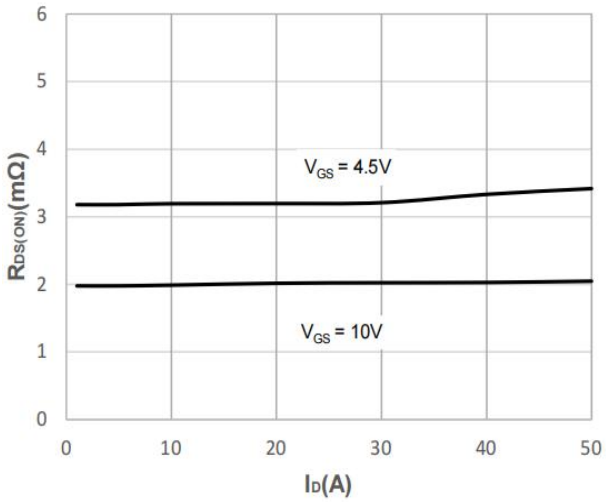


Figure 4: Body Diode Characteristics

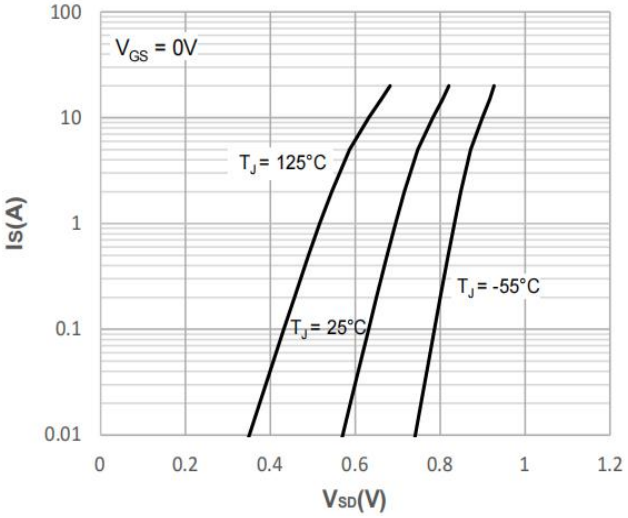


Figure 5: Gate Charge Characteristics

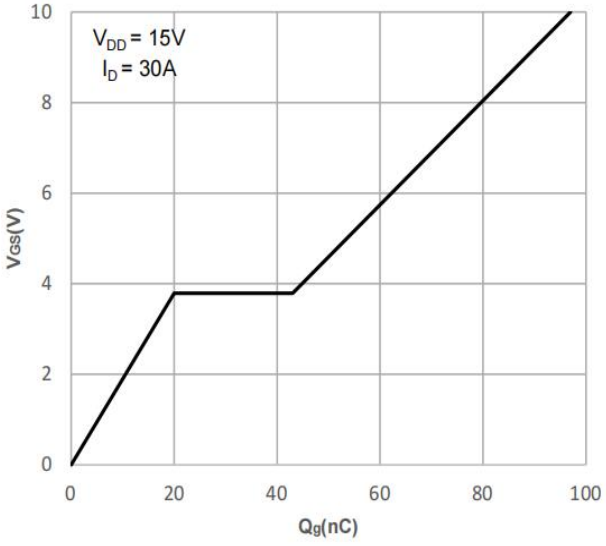
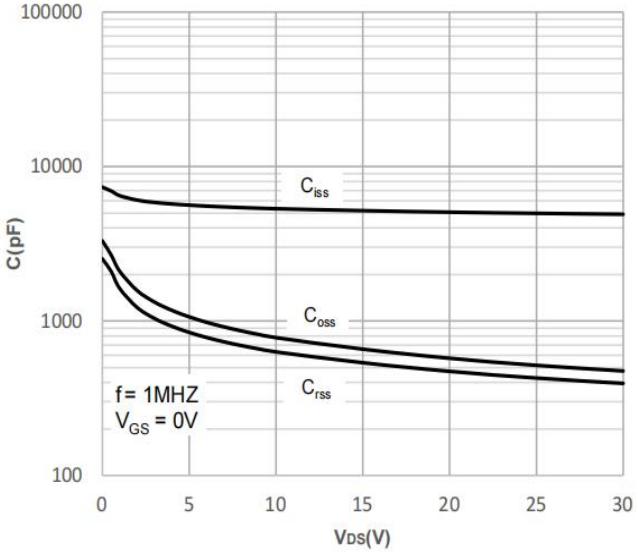


Figure 6: Capacitance Characteristics



Ratings and Characteristic Curves

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

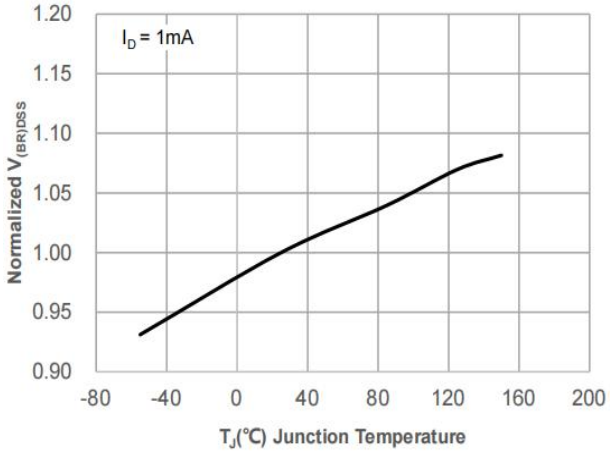


Figure 8: Normalized on Resistance vs. Junction Temperature

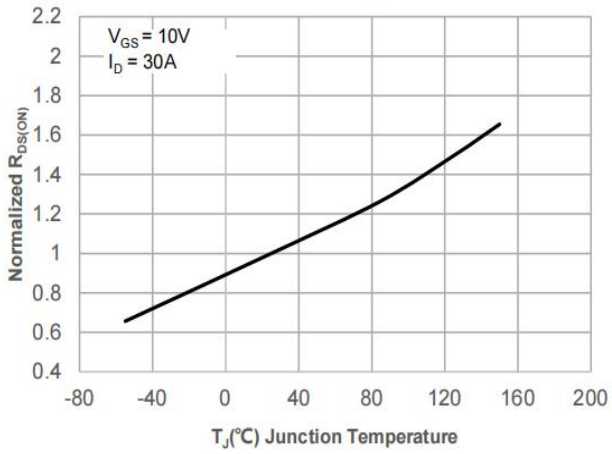


Figure 9: Maximum Safe Operating Area

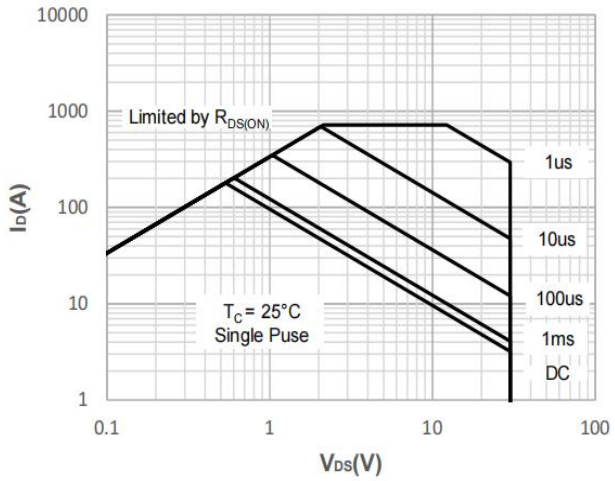


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

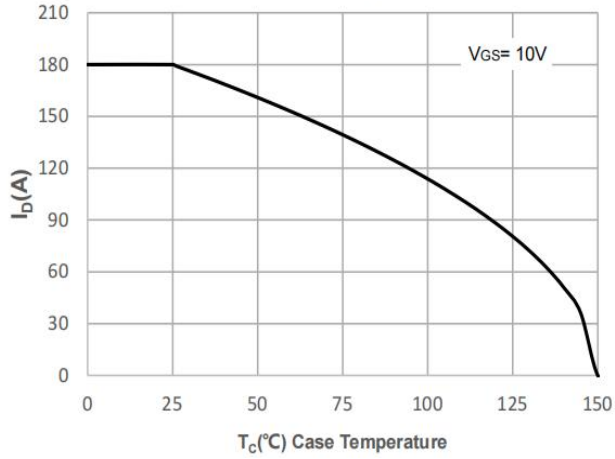


Figure 11: Normalized Maximum Transient Thermal Impedance

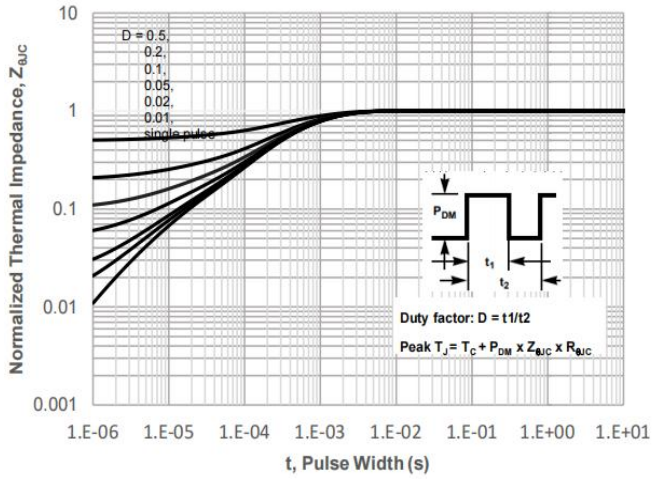
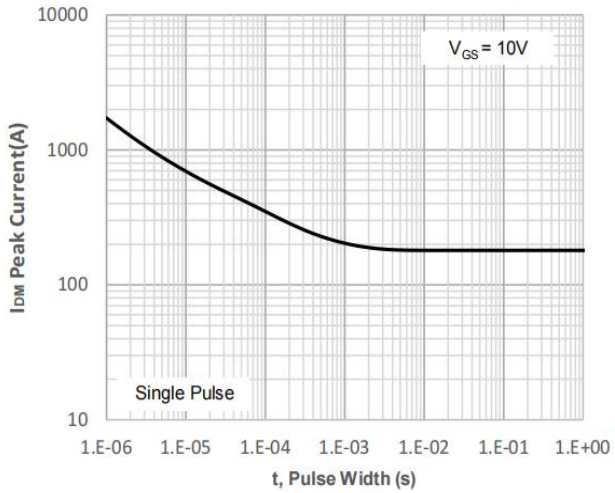
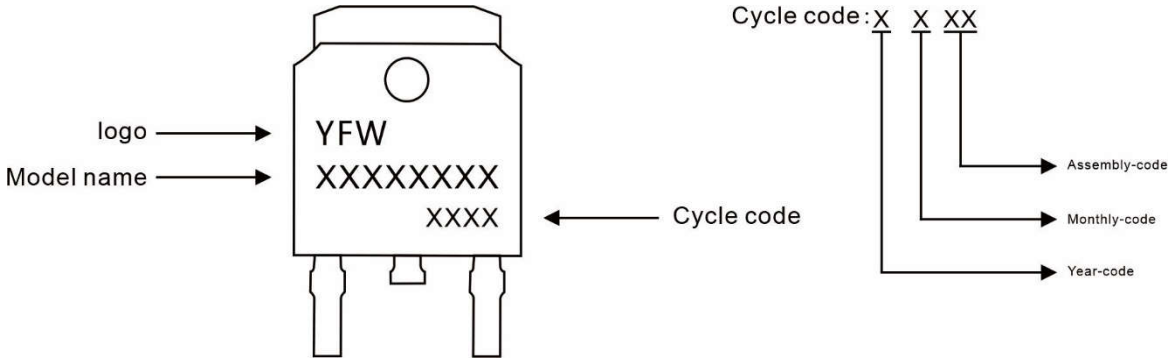


Figure 12: Peak Current Capacity



Marking Diagram

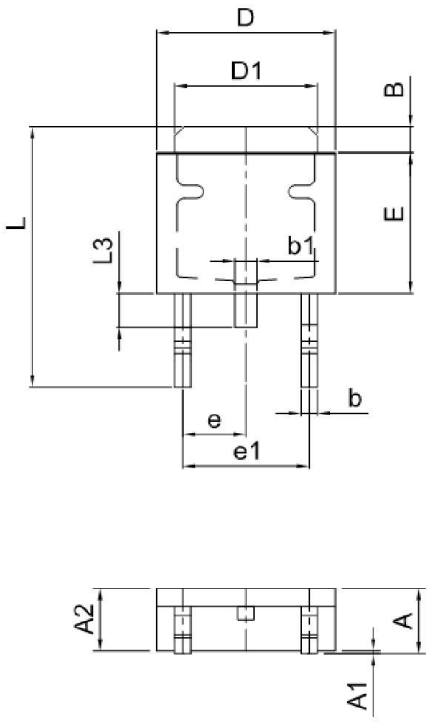


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW180N03AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

Package Dimensions

TO-252



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	10.00	11.00	0.393	0.433
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

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