

650V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	10A
V_{DSS}	650V
R_{DS(on)-typ}(@V_{GS}=10V)	<1.05Ω(Typ:0.872Ω)

FEATURES

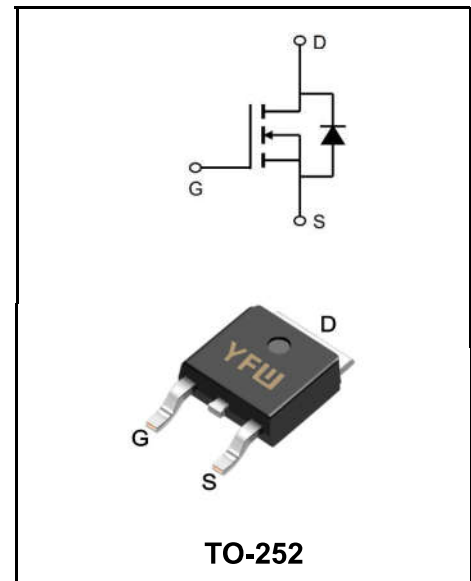
- ♦Fast Switching
- ♦Low ON Resistance
- ♦Low Gate Charge
- ♦100% Single Pulse avalanche energy Test

APPLICATIONS

- ♦Power switch circuit of adaptor and charger.

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°C maximum,10s per JESD 22-B106



TO-252

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
		252	
Drain-Source Voltage	V_{DS}	650	V
Gate - Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D	10	A
Pulsed Drain Current(note1)	I_{DM}	40	A
Power Dissipation	P_D	130	W
Single Pulse Avalanche Energy(note1)	E_{AS}	500	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction-to-case	R_{θJC}	0.9	°C/W
Thermal Resistance, Junction ambient	R_{θJA}	100	°C/W

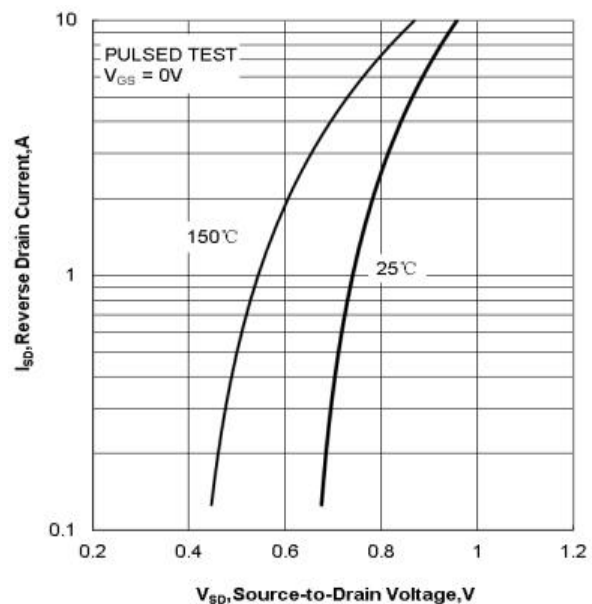
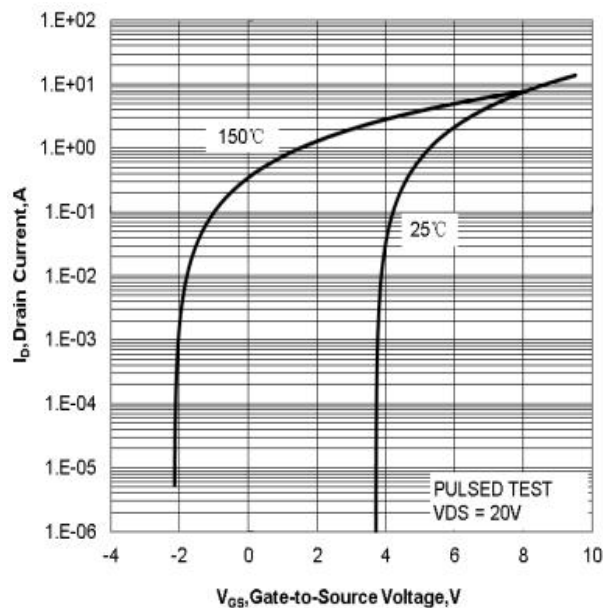
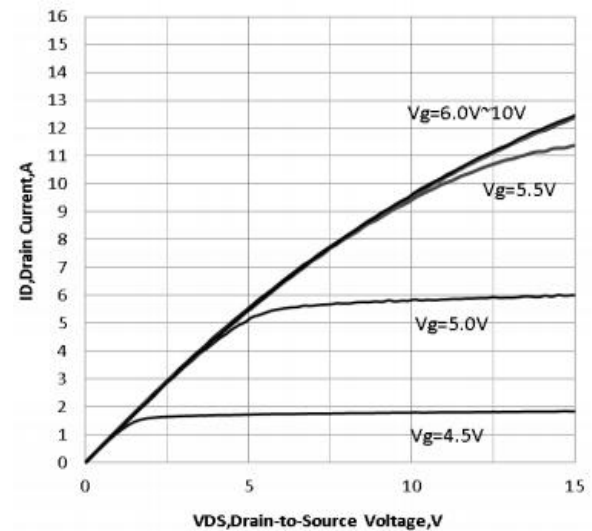
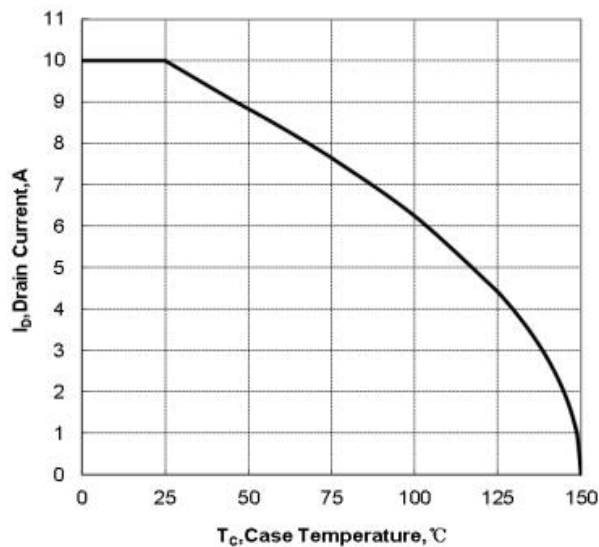
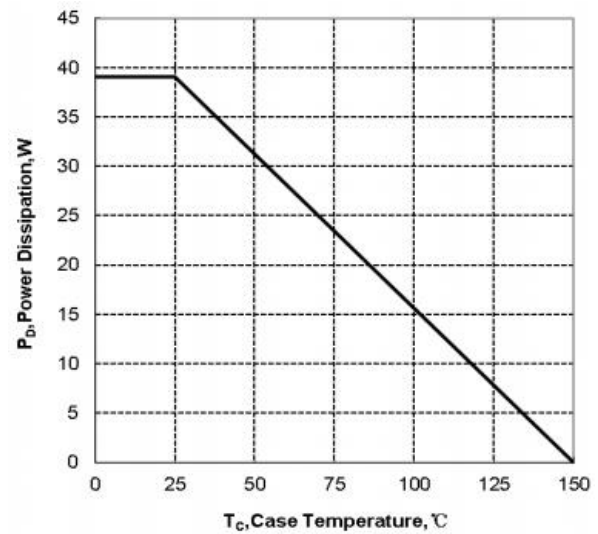
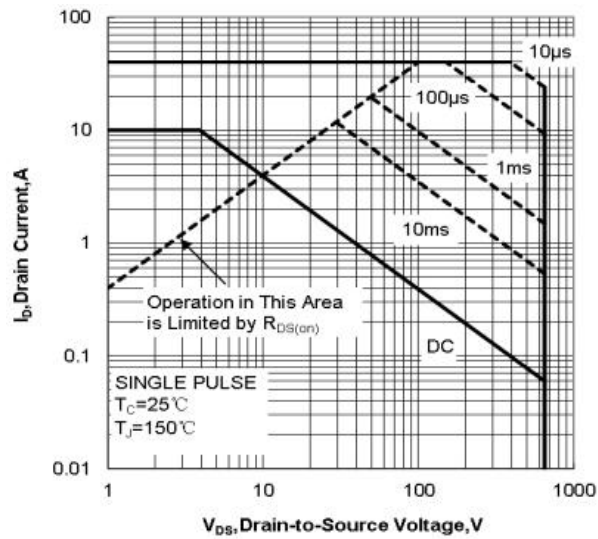
Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

Maximum Ratings at Tc=25°C unless otherwise specified

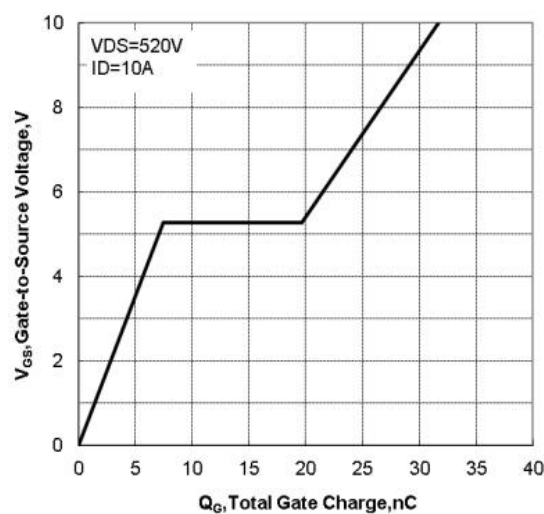
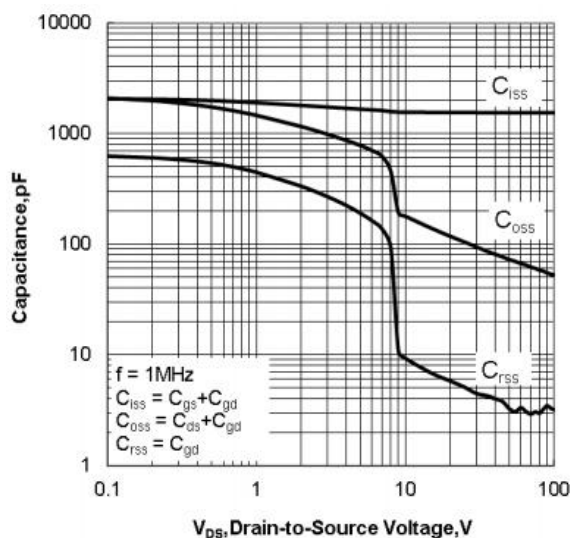
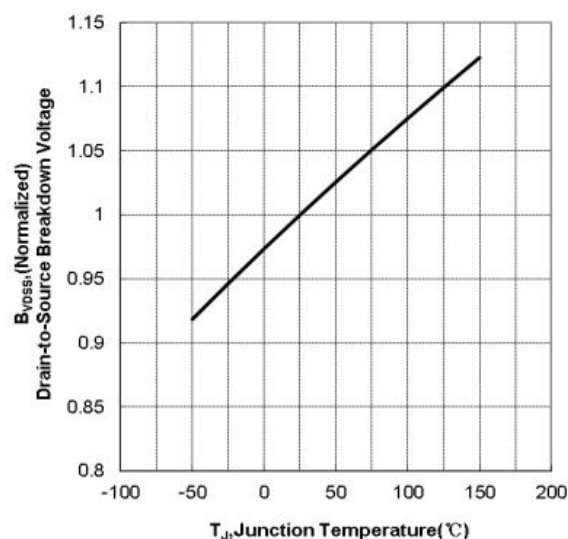
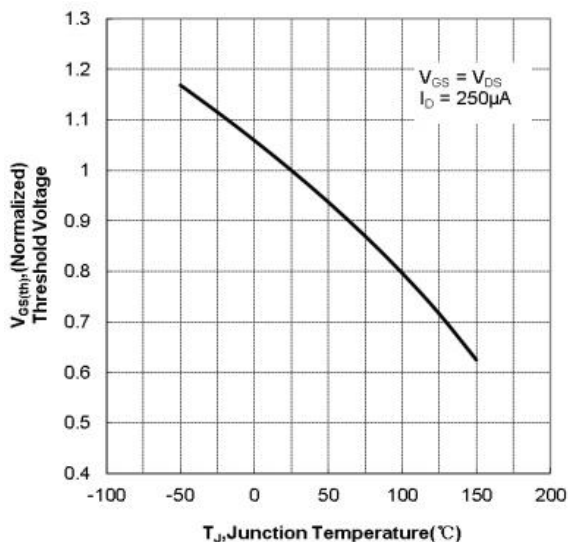
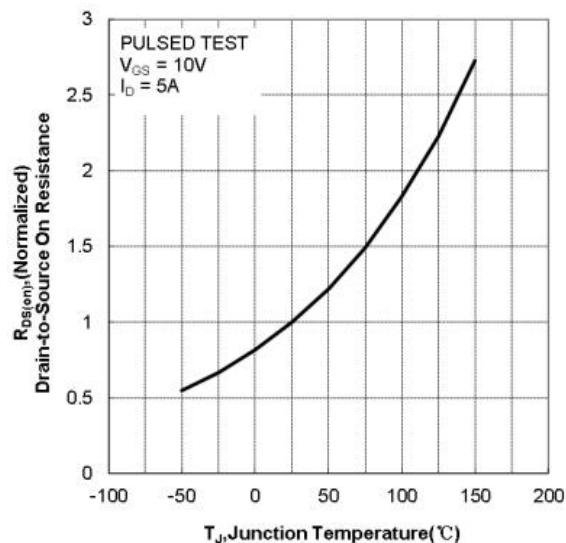
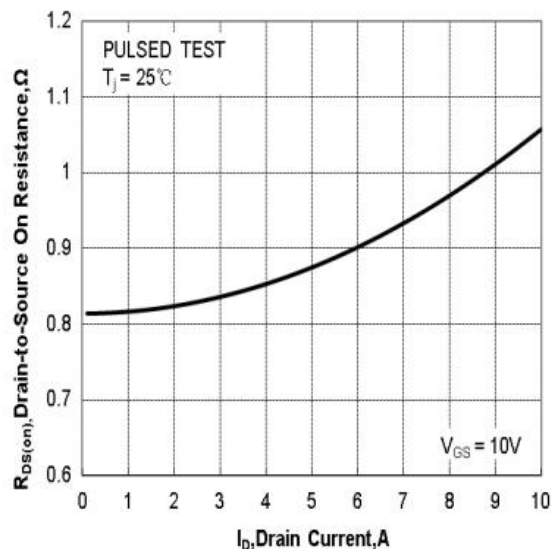
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	650	690	-	V
Zero Gate Voltage Drain Current	$V_{DS} = 650V, V_{GS} = 0V$	I_{DSS}	-	-	1	μA
Gate Source Leakage	$V_{GS} = \pm 30V, V_{DS} = 0V$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-Resistance	$V_{GS}=10V, I_D=5A$	$R_{DS(ON)}$	-	0.872	1.05	Ω
Forward Transconductance	$V_{DS} = 15V, I_D = 5A$	g_{fs}	-	9.5	-	S
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	1549	-	pF
Output Capacitance		C_{oss}	-	105	-	
Reverse Transfer Capacitance		C_{rss}	-	5.1	-	
Turn-on delay time(Note2)	$V_{DD}=325V$ $I_D=10A$ $R_G=10\Omega$	$t_{d(on)}$		21		ns
Turn-on Rise Time(Note2)		T_r		26		ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$		39		ns
Turn-on Fall Time(Note2)		t_f		25		ns
Total Gate Charge(Note2)	$V_{DD}=520V$ $I_D=10A$ $V_{GS}=10V$	Q_g	-	32	-	nC
Gate to Source Charge(Note2)		Q_{gs}	-	8	-	
Gate to Drain Charge(Note2)		Q_{gd}	-	12	-	
Maximun Body-Diode Continuous Current(Note2)	$T_j=25^\circ C$	I_S	-	-	10	A
Maximun Body-Diode Pulsed Current(Note2)	$T_j=25^\circ C$	I_{SM}	-	-	40	A
Body Diode Voltage	$I_{SD} = 10A$	V_{SD}	-	-	1.5	V
Reverse Recovery Time	$V_{GS} = 0V, I_S = 10A$ $di_F/dt = 100A/\mu s$	t_{rr}	-	315	-	nS
Reverse Recovery Charge		Q_{rr}	-	4.2	-	uC

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

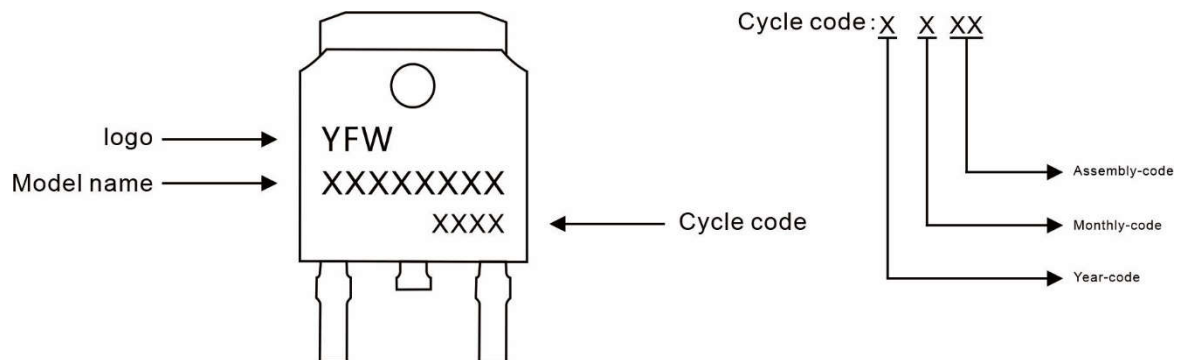
Ratings and Characteristic Curves



Ratings and Characteristic Curves



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW10N65AD	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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