

60V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

MAIN CHARACTERISTICS

I_D	50A
V_{DSS}	60V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 17mΩ (Type: 14 mΩ)

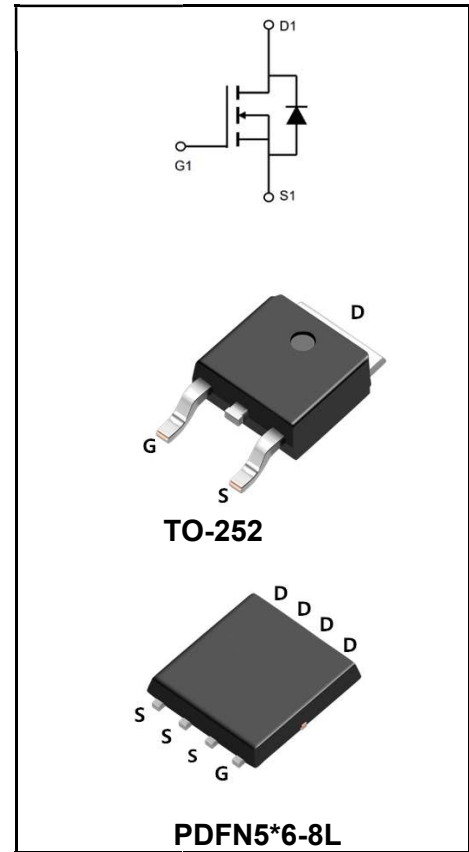
FEATURES

- ◆Fast Switching
- ◆Low ON Resistance
- ◆Low Gate Charge
- ◆100% Single Pulse avalanche energy Test
- ◆LeadfreeincomplywithEURoHS2011/65/EUdirectives



MECHANICAL DATA

- ◆Case: Molded plastic
- ◆Mounting Position: Any
- ◆Molded Plastic: UL Flammability Classification Rating 94V-0
- ◆Solder bath temperature 275°C maximum, 10s per JESD22-106
- ◆Case: TO-252, PDFN5*6-8L



PRODUCT SPECIFICATION CLASSIFICATION

Part Number	Package	Marking	Pack
YFW50N06AD	TO-252	YFW 50N06AD XXXXX	2500PCS/Tape
YFW50N06NF	PDFN5*6-8L	YFW 50N06NF XXXXX	5000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continue Drain Current	I_D	50	A
Pulsed Drain Current (Note1)	I_{DM}	100	A
Power Dissipation	P_D	45	W
Single Pulse Avalanche Energy (Note5)	E_{AS}	60	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	R_{θJC}	3	°C/W
Thermal Resistance, Junction to Ambient	R_{θJA}	62	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	BV_{DSS}	60	-	-	V
Drain-Source Leakage Current	V _{DS} = 60 V, V _{GS} = 0 V	I_{DSS}	-	-	1	uA
	V _{DS} =60V, Tc=125°C		-	-	100	uA
Gate Leakage Current	V _{GS} = ± 20 V, V _{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	V_{GS(th)}	1	-	2	V
Drain-Source On-State Resistance(Note3)	V _{GS} = 10 V, I _D = 20 A	R_{DS(on)}	-	14	17	mΩ
	V _{GS} = 4.5 V, I _D = 10 A		-	18	22	mΩ
Forward Transconductance	V _{DS} = 50 V, I _D = 30A	g_{fs}	-	20	-	S
Input Capacitance	V _{GS} = 0 V, V _{DS} = 15 V, f = 1MHz	C_{iss}	-	1714	-	pF
Output Capacitance		C_{oss}	-	120	-	
Reverse Transfer Capacitance		C_{rss}	-	88	-	
Turn-on Delay Time	V _{DD} = 30V V _{GS} = 10 V, R _G = 3.3, I _D = 15A ,	td(ON)	-	7.5	-	nS
Rise Time		tr	-	45	-	
Turn-Off Delay Time		td(OFF)	-	33	-	
Fall Time		tf	-	7.8	-	
Total Gate Charge	V _{DS} = 48 V, I _D = 15A , V _{GS} = 4.5 V	Q_G	-	20	-	nC
Gate to Source Charge		Q_{GS}	-	7.2	-	
Gate to Drain Charge		Q_{GD}	-	8.1	-	

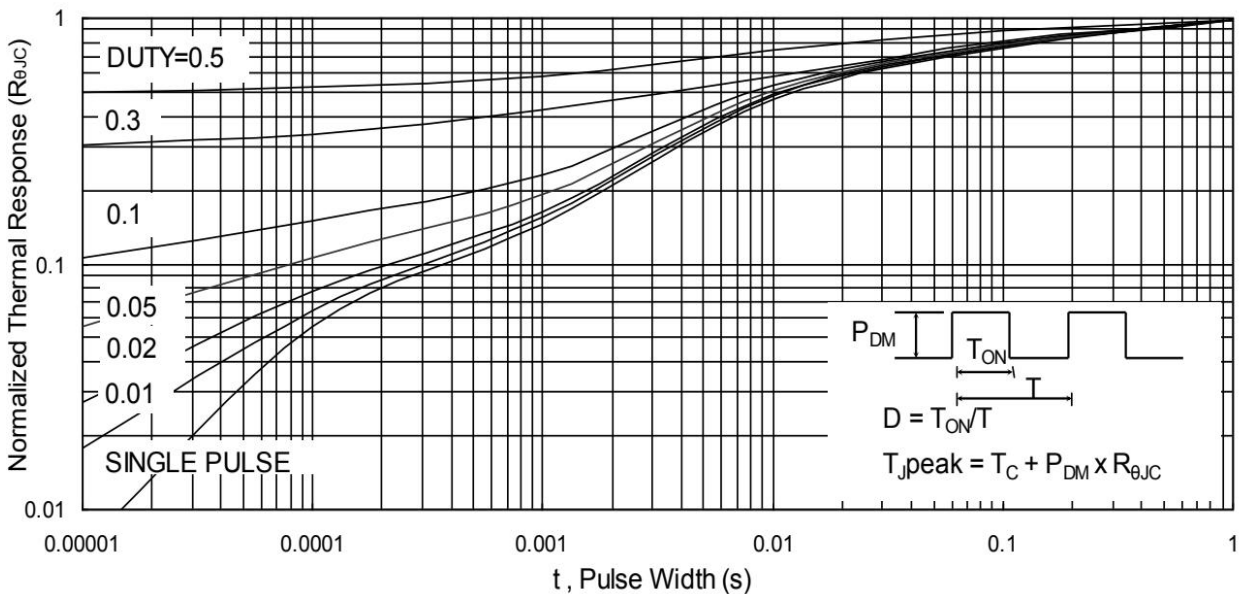
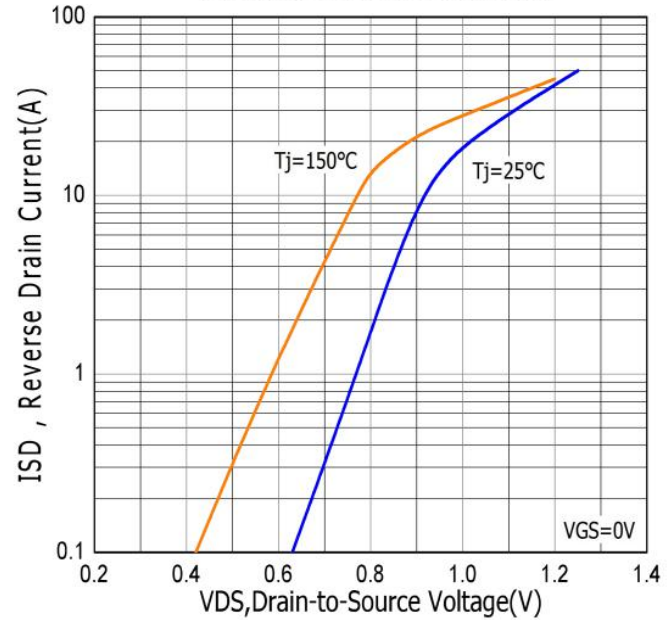
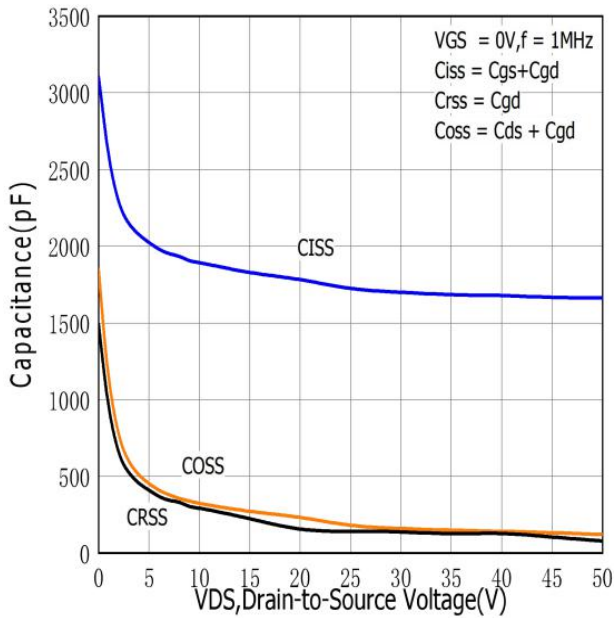
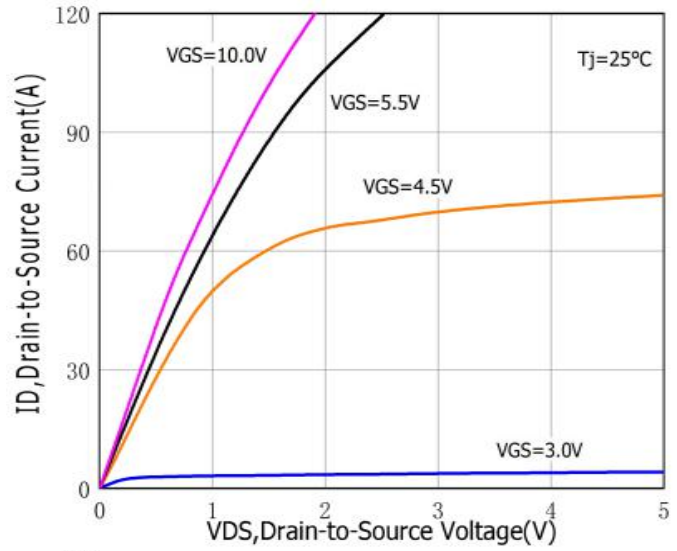
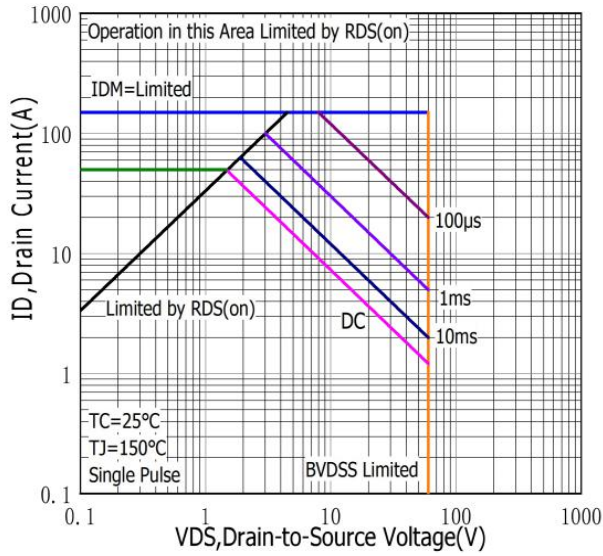
Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Maximun Body-Diode Continuous Current(Note2)		I_S	-	-	50	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	100	A
Drain-Source Diode Forward Voltage(Note3)	I _{SD} = 30 A	V_{SD}	-	-	1.2	V
Reverse Recovery Time	I _S = I _F I _{SD} = 20 A, V _{GS} = 0 V, dI _F / dt = 100 A/μs(Note3)	trr	-	15	-	nS
Reverse Recovery Charge		Qrr	-	12	-	uC

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition: Tj=25 , VDD= °C 30V, VG=10V, L=0.1mH, Rg=2

RATINGS AND CHARACTERISTIC CURVES



Package Outline Dimensions millimeters

TO-252

	Dim.	Min.	Max.
	A	2.1	2.5
	B	0.95	1.55
	C	0.4	0.6
	D	6.4	6.7
	D1	5.1	5.8
	E	5.8	6.4
	E1	Typ 2.3	
	E2	Typ 4.6	
	B1	0.6	0.8
	B2	0.75	0.95
	O	--	0.15
	L1	9.0	11.0
	L2	1.3	1.7
L3	0.70	0.95	
All Dimensions in millimeter			

PDFN5*6-8L

	Dim.	Min.	Max.
	A	4.8	5.2
	B	0.25	0.35
	C	1	1.2
	C1	Typ 0.254	
	C2	Typ 0.254	
	E	Typ 1.27	
	L	6	6.3
	L1	5.7	6
	L2	Max 0.2	
	R	Typ 13°	
All Dimensions in millimeter			