

400V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

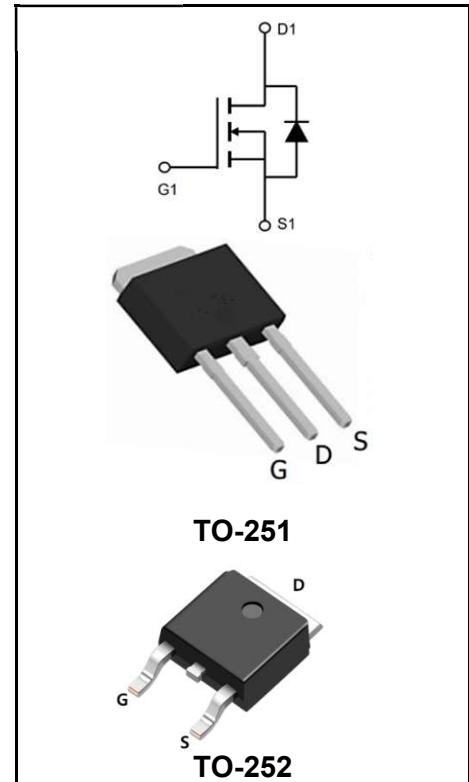
I_D	5A
V_{DSS}	400V
$R_{DS(ON)-typ}(@V_{GS}=10V)$	<1.2 Ω (Type:1 Ω)

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 temperature275°C maximum,10s per JESD22-106



Product Specification Classification

Part Number	Package	Marking	Pack
YFW5N40AMJ	TO-251	YFW 5N40AMJ XXXXX	80PCS/Tube
YFW5N40AD	TO-252	YFW 5N40AD XXXXX	2500PCS/Tape

Maximum Ratings At Tc=25°C Unless Otherwise Specified

Characteristics	Symbols	Value	Units
		251/252	
Drain-Source Voltage	V_{DS}	400	V
Gate-Source Voltage	V_{GS}	±30	V
Continue Drain Current	I_D	5	A
- Continuous(Tc=100°C)		3.1	
Pulsed Drain Current (Note1)	I_{DM}	20	A
Power Dissipation	P_D	62	W
-Derate above 25°C		0.42	
Single Pulse Avalanche Energy (Note2)	E_{AS}	180	mJ
Avalanche Current (Note 1)	I_{AR}	5	A
Repetitive Avalanche Energy (Note 1)	E_{AR}	8.5	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	R_{θJC}	2.5	°C/W
Thermal Resistance, Junction to Ambient	R_{θJA}	82	°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}	400	-	-	V
Breakdown Voltage Temperature Coefficient	I _D =250μA (Referenced to 25°C)	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	-	0.65	-	V/°C
Drain-Source Leakage Current	V _{DS} = 400 V, V _{GS} = 0 V	I_{DSS}	-	-	1	uA
	V _{DS} =400V, Tc=125°C		-	-	10	uA
Gate Leakage Current	V _{GS} = ± 30 V, V _{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	V_{GS(th)}	2	-	4	V
Drain-Source On-State Resistance	V _{GS} = 10 V, I _D = 2.5 A	R_{DS(on)}	-	1	1.2	Ω
Forward Transconductance	V _{DS} = 15 V, I _D = 2.5A	g_{fs}	-	4.6	-	S
Input Capacitance	V _{GS} = 0 V, V _{DS} = 25 V, f = 1MHz	C_{iss}	-	462	-	pF
Output Capacitance		C_{OSS}	-	71	-	
Reverse Transfer Capacitance		C_{rss}	-	5.1	-	
Turn-on Delay Time	I _D = 5 A, V _{DD} = 200 V, R _G = 10 Ω(Note3,4)	td(ON)	-	14	-	nS
Rise Time		tr	-	20	-	
Turn-Off Delay Time		td(OFF)	-	31	-	
Fall Time		tf	-	12	-	
Total Gate Charge	I _D = 5A, V _{DD} = 320 V, V _{GS} = 10 V(Note3,4)	Q_G	-	12.6	-	nC
Gate to Source Charge		Q_{GS}	-	4.1	-	
Gate to Drain Charge		Q_{GD}	-	4	-	

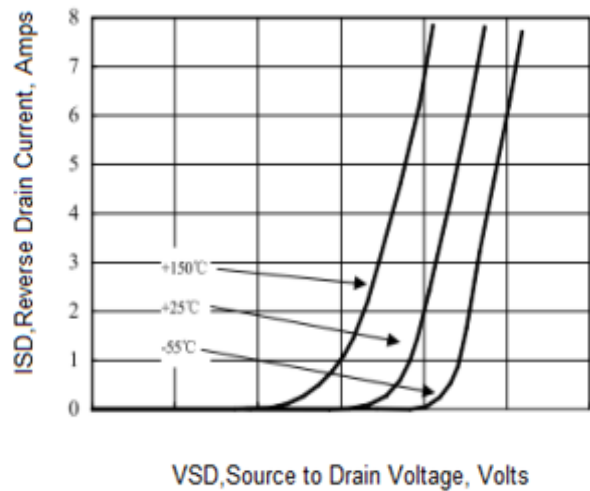
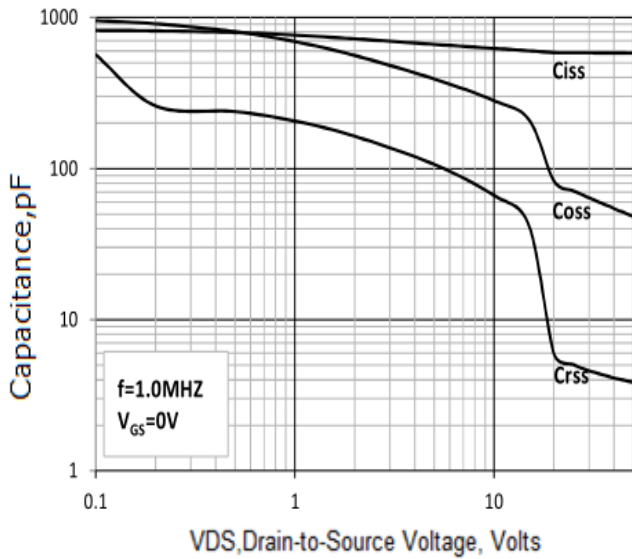
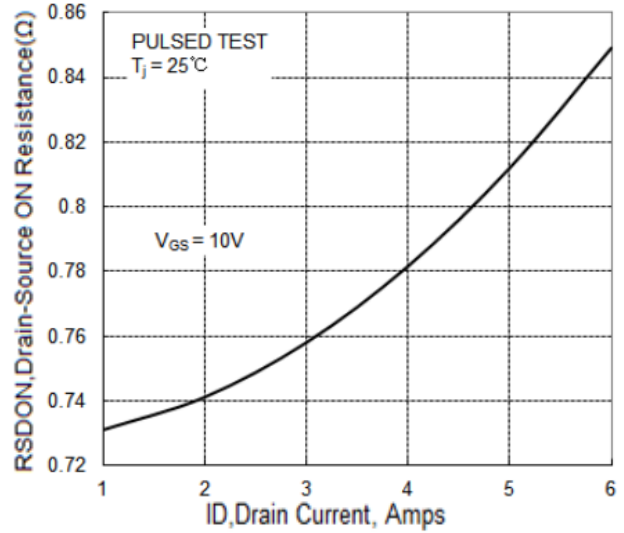
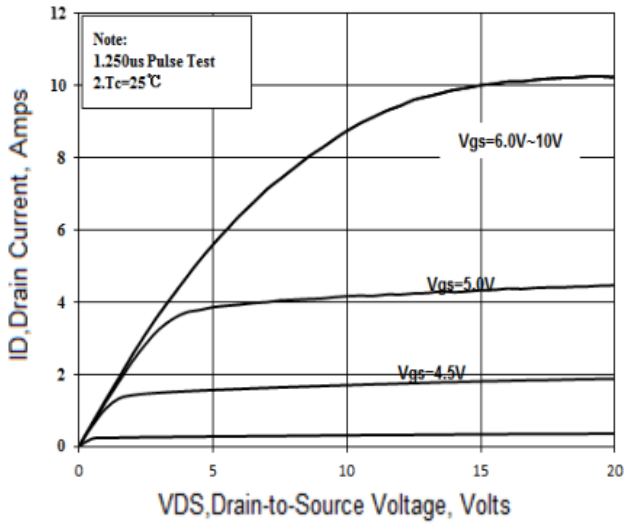
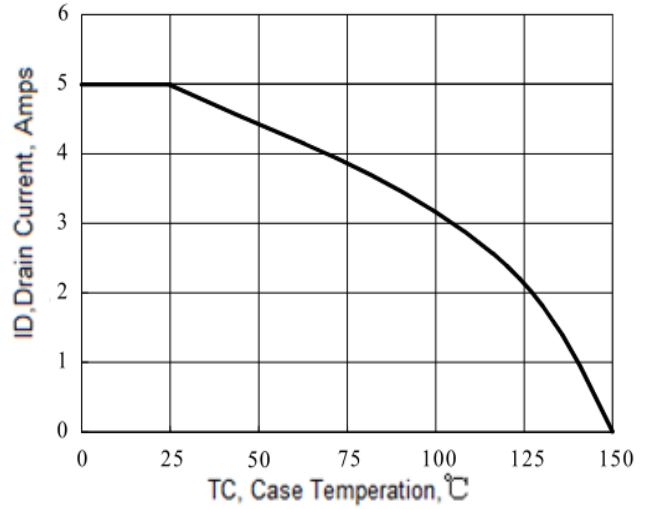
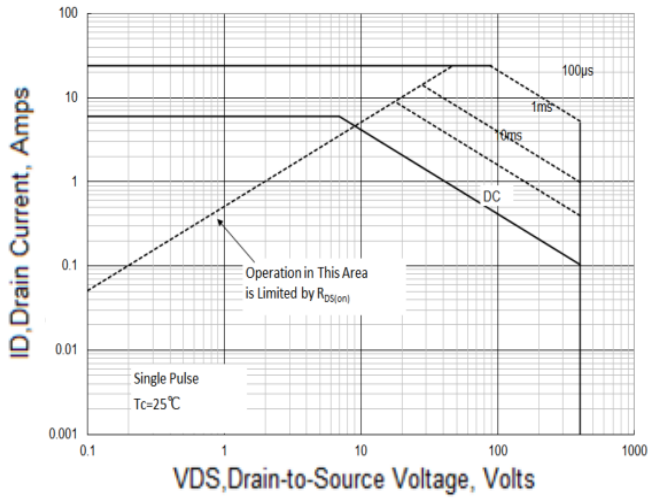
Source-Drain Diode Characteristics At Ta=25°C Unless Otherwise Specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Maximun Body-Diode Continuous Current		I_S	-	-	5	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	24	A
Drain-Source Diode Forward Voltage	$I_{SD} = 5 \text{ A}$	V_{SD}	-	-	1.5	V
Reverse Recovery Time	$I_{SD} = 5 \text{ A}, V_{GS} = 0 \text{ V},$ $di_f / dt = 100 \text{ A}/\mu\text{s}$	trr	-	240	-	nS
Reverse Recovery Charge		Qrr	-	1.2	-	uC

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. IAS = 5 A, VDD = 50 V, L = 15mH, RG = 25Ω, starting TJ = 25°C.
3. ulse test: Pulse Width ≤ 300 μ s, Duty Cycle ≤ 2%.
4. Essentially Independent of Operating Temperature.

Ratings and Characteristic Curves



Package Outline Dimensions Millimeters

TO-252

	Dim.	Min.	Typ.	Max.
	A	2.10	-	2.50
	A2	0	-	0.10
	B	0.66	-	0.86
	B2	5.18	-	5.48
	C	0.40	-	0.60
	C2	0.44	-	0.58
	D	5.90	-	6.30
	D1	5.30REF		
	E	6.40	-	6.80
	E1	4.63	-	-
	G	4.47	-	4.67
	H	9.50	-	10.70
	L	1.09	-	1.21
	L2	1.35	-	1.65
V1	-	7°	-	
V2	0°	-	6°	
All Dimensions in millimeter				

TO-251

	Dim.	Min.	Max.
	A	2.2	2.4
	A2	0.95	1.15
	A3	0.45	0.65
	B	0.65	0.85
	C	0.45	0.55
	D	6.45	6.75
	D2	5.2	5.4
	E	5.8	6
	E2	0.95	1.25
	E	Typ 2.3	
	E1	Typ 4.6	
L	4	4.2	
L1	1.2	1.5	
All Dimensions in millimeter			