

650V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	2A
V_{DSS}	650V
$R_{DS(ON)-typ}(@V_{GS}=10V)$	<4.8Ω (Type:4 Ω)

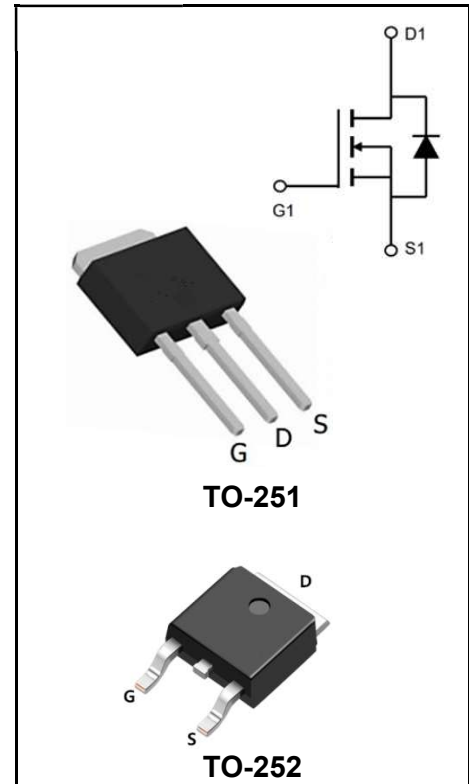
Features

- ♣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°Cmaximum,10s per JESD22-106



Product Specification Classification

Part Number	Package	Marking	Pack
YFW2N65AMJ	TO-251	YFW 2N65AMJ XXXXX	80PCS/Tube
YFW2N65AD	TO-252	YFW 2N65AD XXXXX	2500PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
		251/252	
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continue Drain Current	I_D	2	A
- Continuous(Tc=100°C)		1.3	
Pulsed Drain Current (Note1)	I_{DM}	8	A
Power Dissipation	P_D	35	W
-Derate above 25°C		0.35	
Single Pulse Avalanche Energy (Note2)	E_{AS}	65	mJ
Avalanche Current (Note 1)	I_{AR}	2	A
Repetitive Avalanche Energy (Note 1)	E_{AR}	2.3	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.57	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS} = 0 V, I_D = 250 \mu A$	BV_{DSS}	650	693	-	V
Breakdown Voltage Temperature Coefficient	$I_D = 250 \mu A$ (Referenced to 25°C)	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	-	0.5	-	V/°C
Drain-Source Leakage Current	$V_{DS} = 650 V, V_{GS} = 0 V$	I_{DSS}	-	-	1	uA
	$V_{DS} = 520 V, T_C = 125^\circ C$		-	-	10	uA
Gate Leakage Current	$V_{GS} = \pm 30 V, V_{DS} = 0 V$	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-State Resistance	$V_{GS} = 10 V, I_D = 1 A$	$R_{DS(on)}$	-	4	4.8	Ω
Forward Transconductance	$V_{DS} = 15 V, I_D = 2 A$	g_{fs}	-	2.5	-	S
Input Capacitance	$V_{GS} = 0 V, V_{DS} = 25 V,$ $f = 1 MHz$	C_{iss}	-	295	-	pF
Output Capacitance		C_{oss}	-	32	-	
Reverse Transfer Capacitance		C_{rss}	-	6	-	
Turn-on Delay Time		$td(ON)$	-	8	-	
Rise Time	$I_D = 2 A, V_{DD} = 325 V,$ $R_G = 10 \Omega$ (Note3,4)	tr	-	6	-	nS
Turn-Off Delay Time		$td(OFF)$	-	30	-	
Fall Time		tf	-	11	-	
Total Gate Charge	$I_D = 2 A, V_{DD} = 520 V,$ $V_{GS} = 10 V$ (Note3,4)	Q_G	-	10.8	-	nC
Gate to Source Charge		Q_{GS}	-	1.5	-	
Gate to Drain Charge		Q_{GD}	-	4	-	

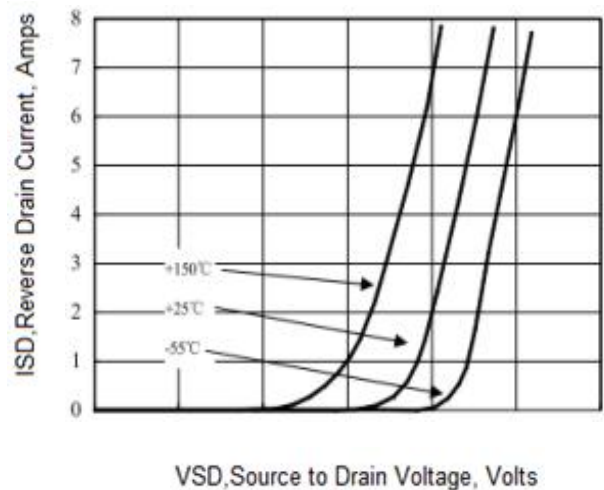
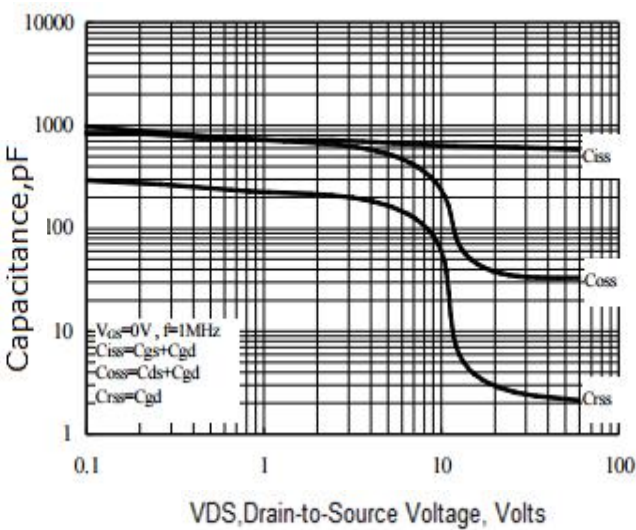
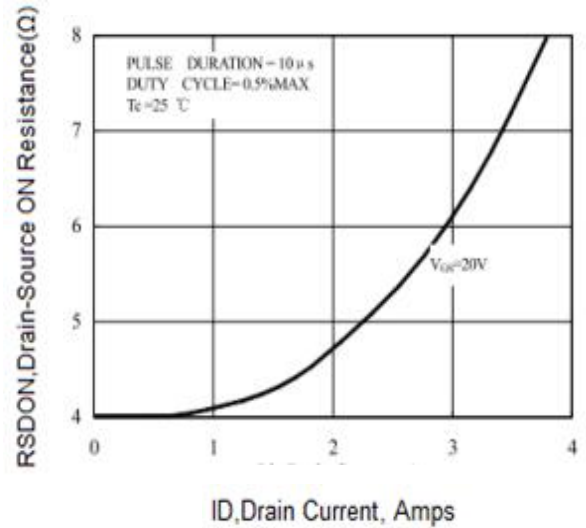
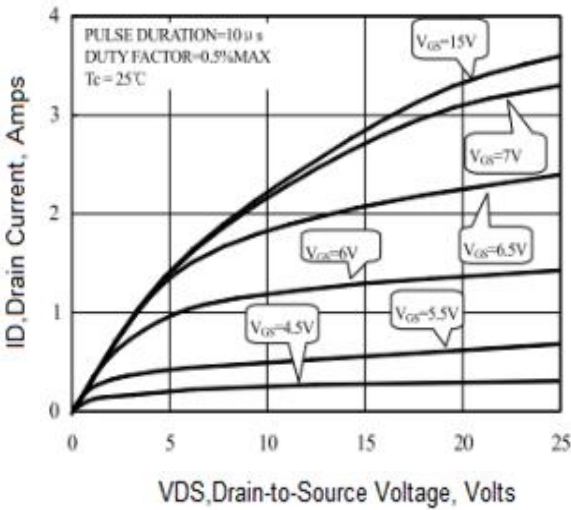
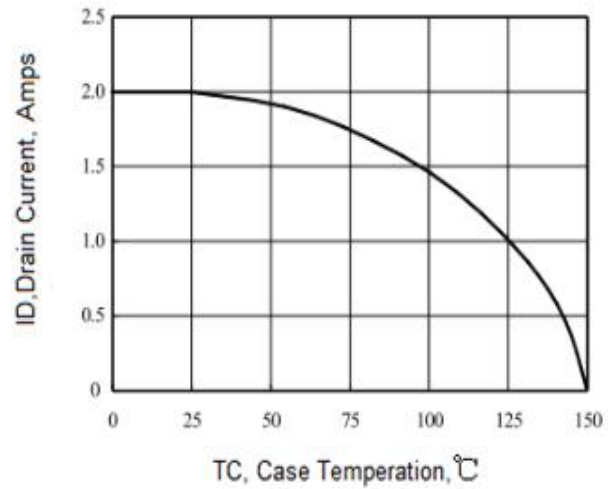
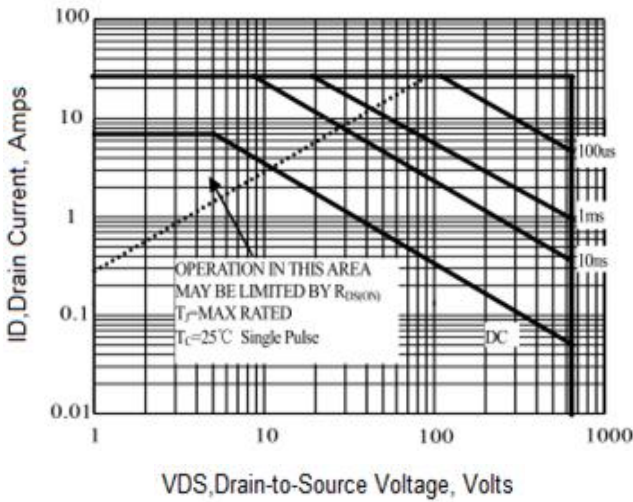
Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Maximun Body-Diode Continuous Current		I_S	-	-	2	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	8	A
Drain-Source Diode Forward Voltage	$I_{SD} = 2\text{ A}$	V_{SD}	-	-	1.4	V
Reverse Recovery Time	$I_{SD} = 2\text{ A}, V_{GS} = 0\text{ V},$ $di_F / dt = 100\text{ A}/\mu\text{s}$	trr	-	430	-	nS
Reverse Recovery Charge		Qrr	-	1.1	-	uC

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. IAS = 2 A, VDD = 50 V, L = 33mH, 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			