

30V N-CHANNEL ENHANCEMENT MODE MOSFET

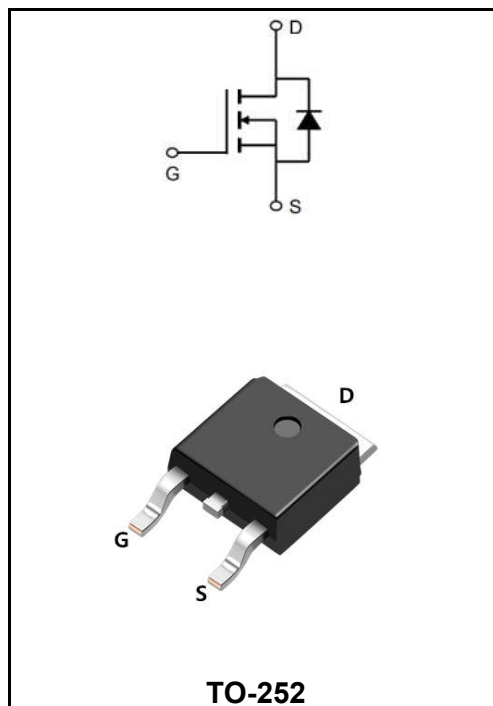
MAIN CHARACTERISTICS

I_D	100A
V_{DSS}	30V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 6.0m Ω (Type: 4.8 m Ω)



Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply



Product Specification Classification

Part Number	Package	Marking	Pack
YFW100N03AD	TO-252	YFW 100N03AD XXXXX	2500PCS/Tape

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
Continuous Drain Current, V_{GS} @ 10V ¹ @T _C =25°C	I_D	100	A
Continuous Drain Current, V_{GS} @ 10V ¹ @T _C =75°C	I_D	59	A
Pulsed Drain Current ²	I_{DM}	240	A
Single Pulse Avalanche Energy ³	E_{AS}	56	mJ
Avalanche Current	I_{AS}	15	A
Total Power Dissipation ⁴ @T _C =25°C	P_D	46	W
Total Power Dissipation ⁴ @T _A =25°C	P_D	2.72	W
Storage Temperature Range	T_{STG}	-55 to +175	°C
Operating Junction Temperature Range	T_J	-55 to +175	°C
Thermal Resistance, Junction-to-Ambient ¹	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	2.72	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	V(BR)DSS	30	32	-	V
Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	I_{DSS}	-	-	1.0	μA
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	V_{GS(th)}	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=30A$	R_{DS(on)}	-	4.8	6.0	mΩ
	$V_{GS}=4.5V, I_D=20A$		-	7.5	12	
Input Capacitance	$V_{DS}=15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	1614	-	pF
Output Capacitance		C_{oss}	-	245	-	
Reverse Transfer Capacitance		C_{rss}	-	215	-	
Total Gate Charge	$V_{DS}=15V$ $I_D=30A$ $V_{GS}=10V$	Q_g	-	33.7	-	nC
Gate-Source Charge		Q_{gs}	-	8.5	-	
Gate-Drain("Miller") Charge		Q_{gd}	-	7.5	-	
Turn-on delay time	$V_{DS}=15V$ $I_D=30A$ $R_{GEN}=3\Omega$ $V_{GS}=10V$	t_{d(on)}	-	7.5	-	ns
Turn-on Rise Time		T_r	-	14.5	-	
Turn-Off Delay Time		t_{d(OFF)}	-	35.2	-	
Turn-Off Fall Time		t_f	-	9.6	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	70	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	280	A
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=30A,$	V_{SD}	-	-	1.2	V

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、The EAS data shows Max. rating . The test condition is VDD=25V,VGS=10V,L=0.1mH,IAS=15A
- 4、The power dissipation is limited by 175°C junction temperature
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

Typical Characteristics

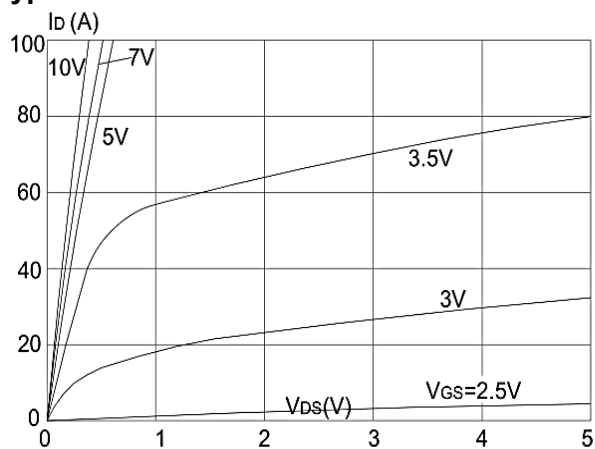


Figure1: Output Characteristics

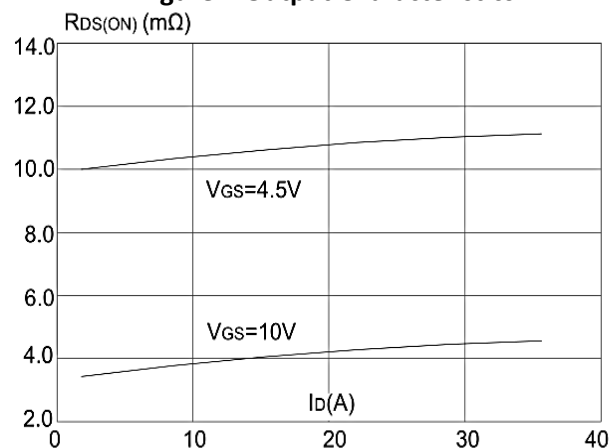


Figure 3: On-resistance vs. Drain Current

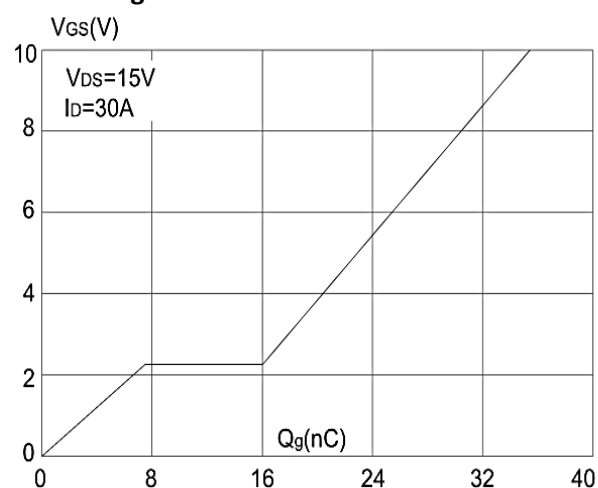


Figure 5: Gate Charge Characteristics

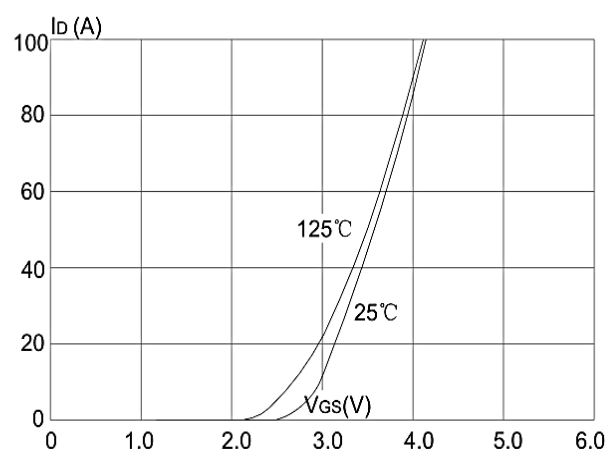


Figure 2: Typical Transfer Characteristics

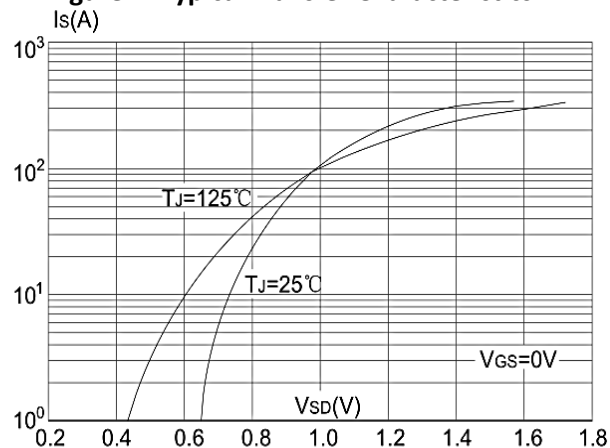


Figure 4: Body Diode Characteristics

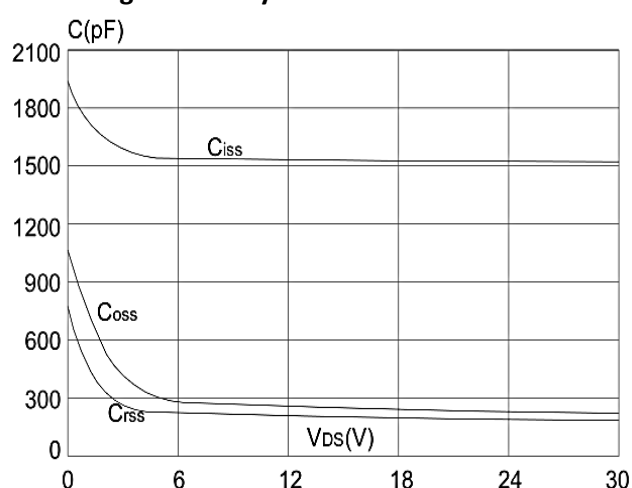


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

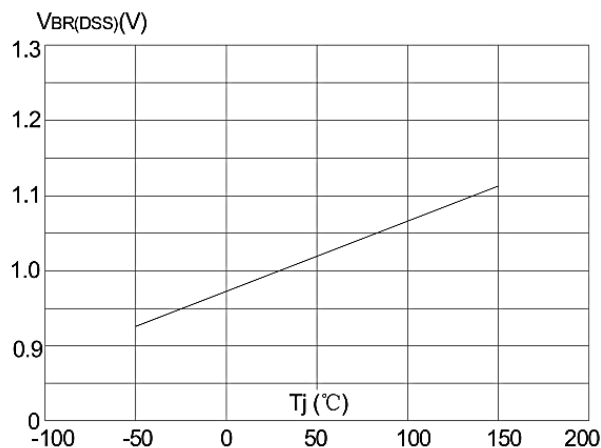


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

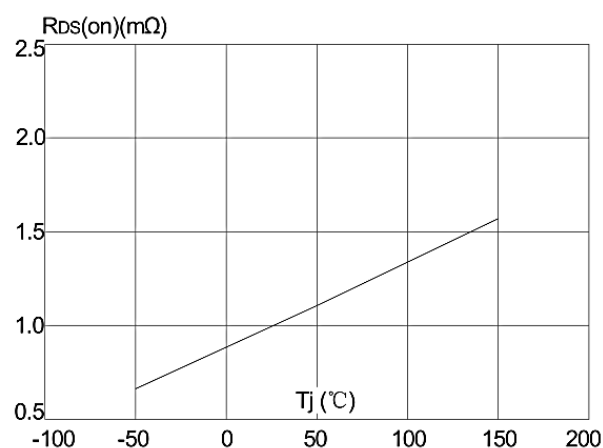


Figure 8: Normalized on Resistance vs. Junction Temperature

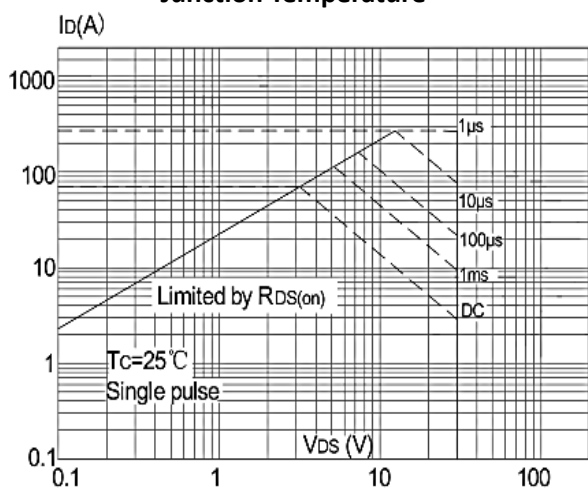


Figure 9: Maximum Safe Operating Area vs. Case Temperature

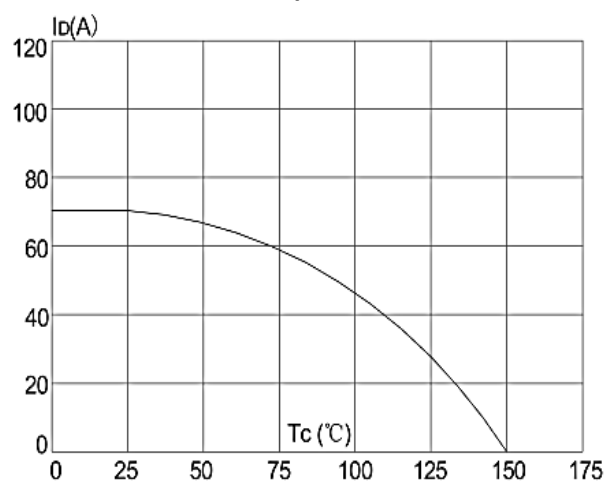


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

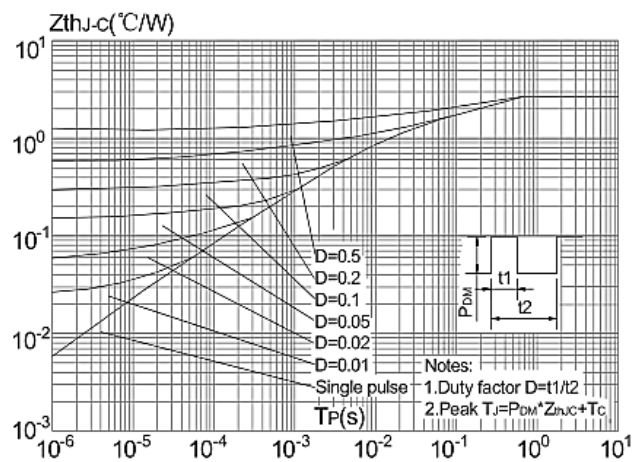
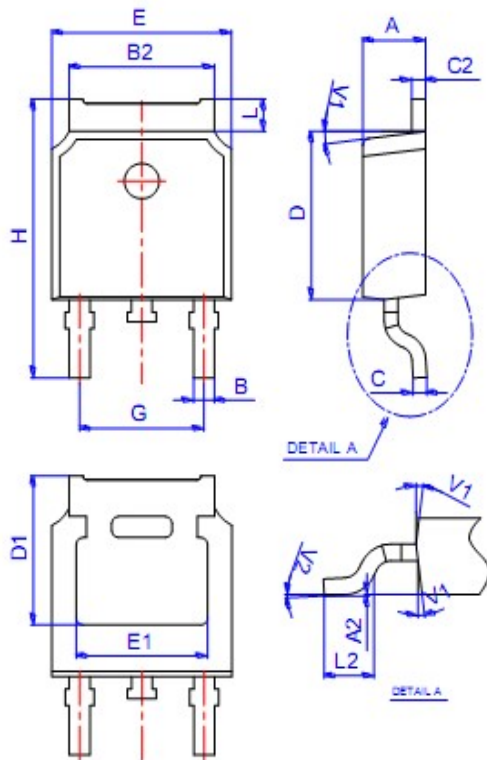


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ca

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