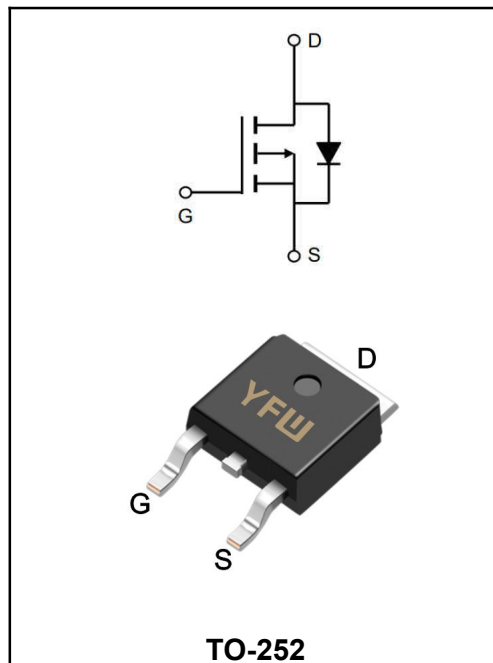


-30V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-50A
V_{DSS}	-30V
$R_{DS(on)-typ}(@V_{GS}=-10V)$	< 16mΩ (Type: 10.5 mΩ)



Application

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

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 _A =25°C	I_D	-50	A
Continuous Drain Current, V_{GS} @ -10V ¹ @ T _A =70°C	I_D	-23	A
Pulsed Drain Current ²	I_{DM}	-120	A
Single Pulse Avalanche Energy ³	E_{AS}	68	mJ
Avalanche Current	I_{AS}	-29.4	A
Total Power Dissipation ⁴ @ T _A =25°C	P_D	310	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance Junction to Case ¹	$R_{\theta JC}$	24	°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 =-250uA	V(BR)DSS	-30	-32.5	-	V
Zero Gate Voltage Drain Current	V _{DS} =-30V, V _{GS} =0V	I _{DSS}	-	-	-1	μA
Gate to Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	I _{GSS}	-	-	±100	nA
Gate -Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	V _{GS(th)}	-1.2	-1.5	-2.5	V
Static Drain-Source on-Resistance note3	V _{GS} =-10V, I _D =-10A	R _{DS(ON)}	-	10.5	16	mΩ
	V _{GS} =-4.5V, I _D =-5A		-	16	20	
Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	R _g	4.9	7.0	9.1	Ω
Input Capacitance	V _{DS} =-24V V _{GS} =10V f=1MHz	C _{iss}	-	2130	-	pF
Output Capacitance		C _{oss}	-	280	-	
Reverse Transfer Capacitance		C _{rss}	-	252	-	
Total Gate Charge	V _{DS} =-24V V _{GS} =-10V I _D =-1A	Q _g	-	22	-	nC
Gate-Source Charge		Q _{gs}	-	4	-	
Gate-Drain(“Miller”) Charge		Q _{gd}	-	5.8	-	
Turn-on delay time	V _{DD} =-24V V _{GS} =-10V I _D =-1A R _{GEN} =7.0Ω	t _{d(on)}	-	9	-	ns
Turn-on Rise Time		T _r	-	13	-	
Turn-Off Delay Time		t _{d(OFF)}	-	48	-	
Turn-Off Fall Time		t _f	-	20	-	
Maximum Continuous Drain to Source Diode Forward Current		I _S	-	-	-29.5	A
Maximum Pulsed Drain to Source Diode Forward Current		I _{SM}	-	-	-44	A
Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =-1A	V _{SD}	-	-0.74	-1.2	V

Note :

- 1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 20Z copper.
- 2、The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 3、The power dissipation is limited by 175°C junction temperature
- 4、EAS condition: T_J=25°C, V_{DD}= -24V, V_G= -10V, R_G=7Ω, L=0.1mH, I_{AS}= -29.5A
- 5、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

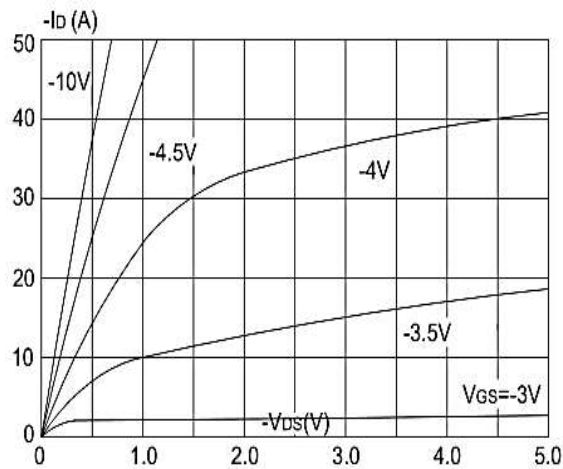


Figure1: Output Characteristics

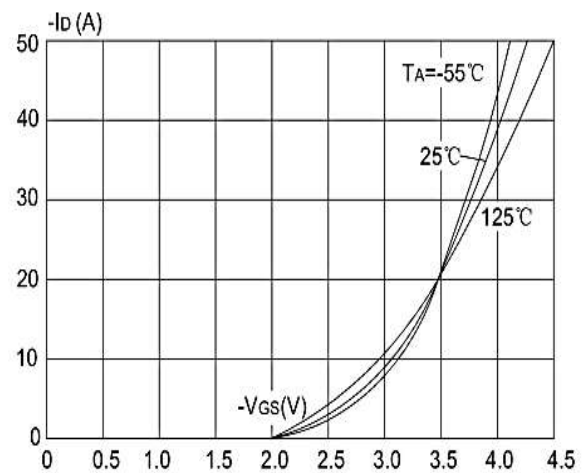


Figure2: Typical Transfer Characteristics

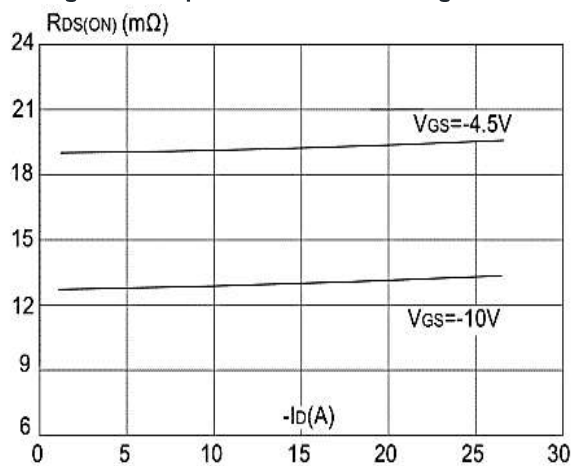


Figure 3: On-resistance vs. Drain Current

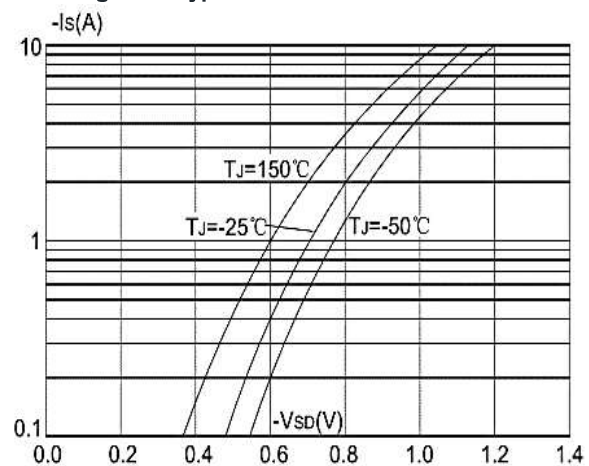


Figure 4: Body Diode Characteristics

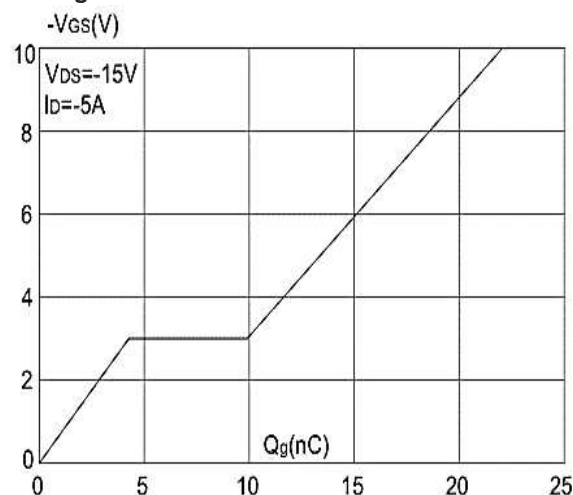


Figure 5: Gate Charge Characteristics

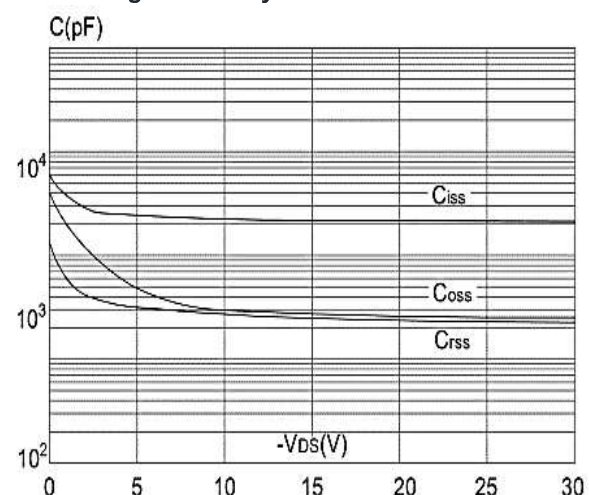


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

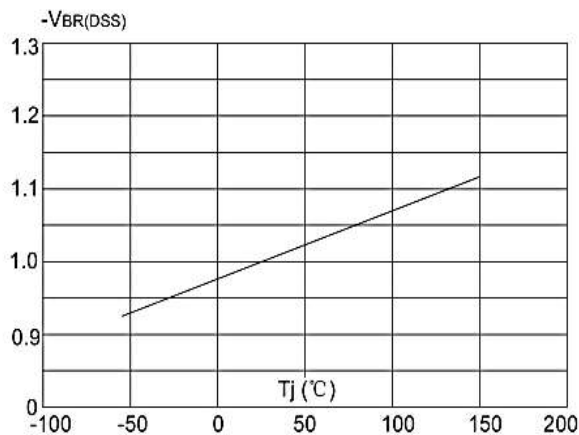


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

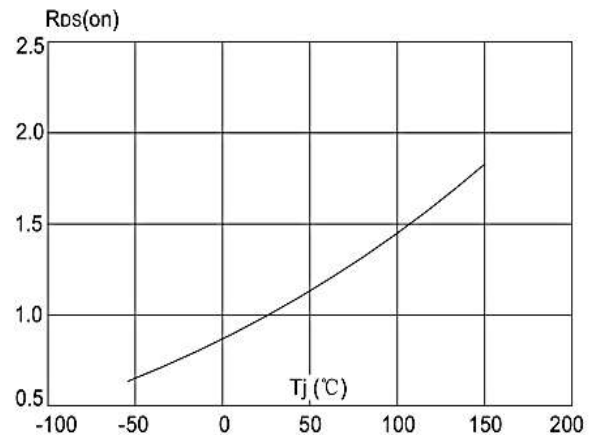


Figure 8: Normalized on Resistance vs. Junction Temperature

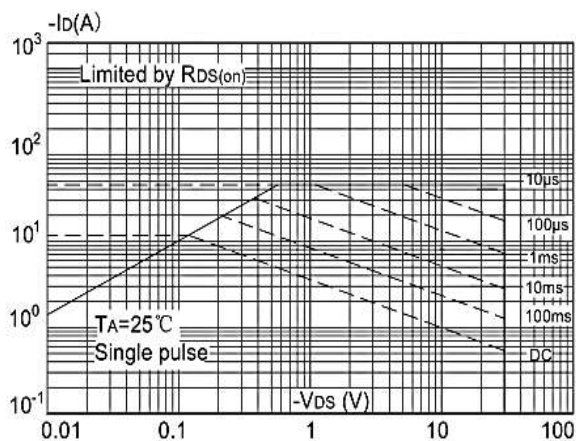


Figure 9: Maximum Safe Operating Area

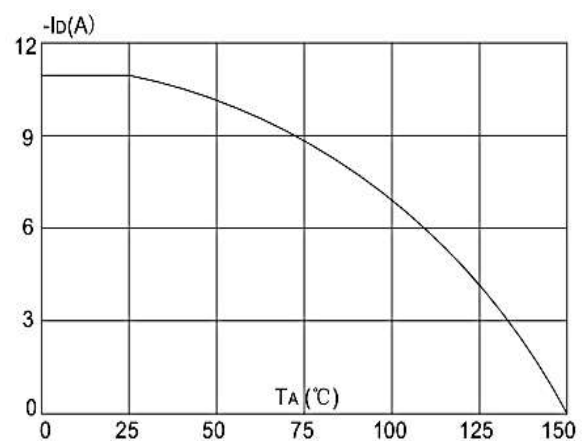


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

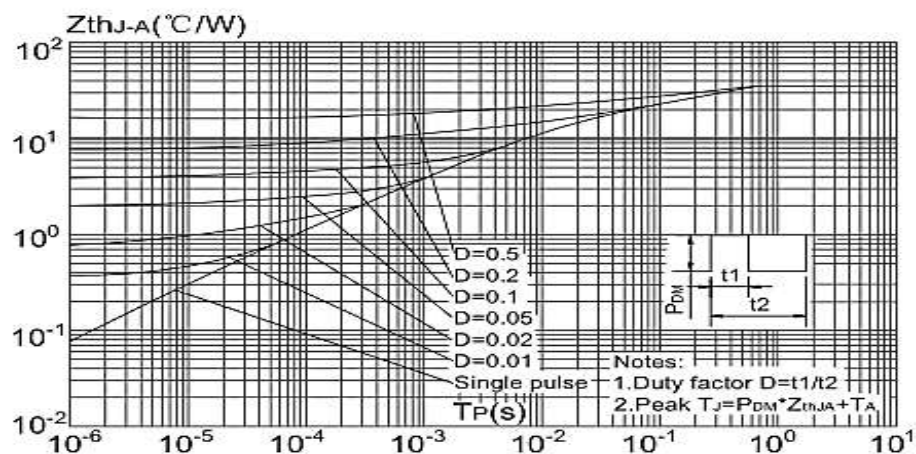
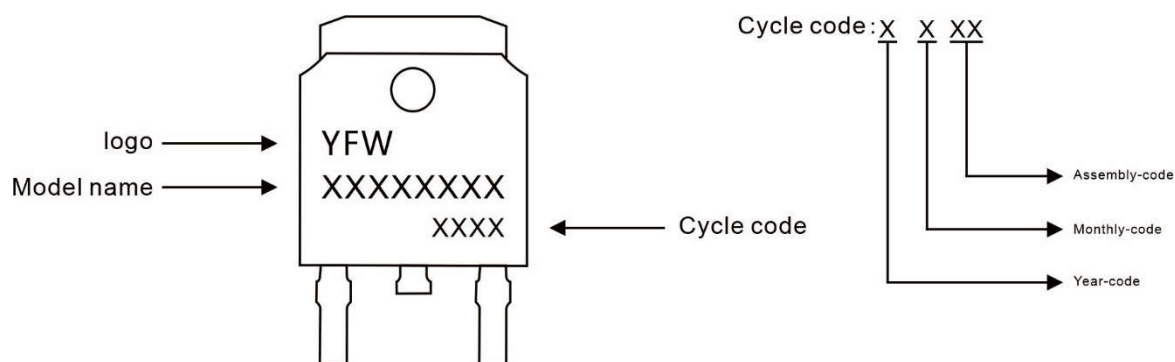


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW50P03AD	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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