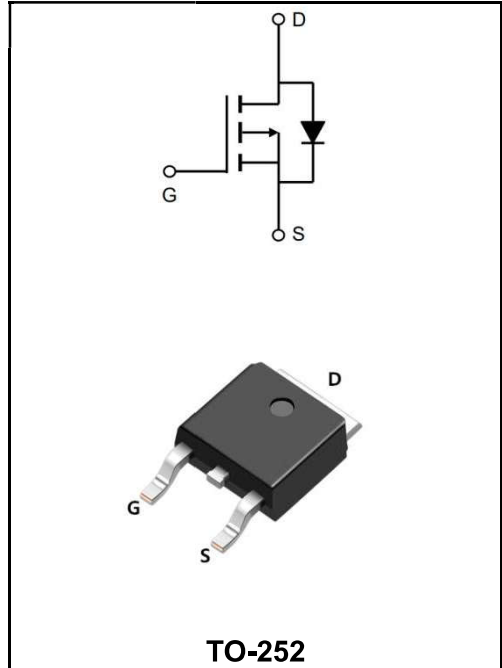


**-30V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	-50A
<b>V<sub>DSS</sub></b>	-30V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=-10V)</sub></b>	< 16mΩ <b>(Type:10.5 mΩ)</b>



**Application**

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

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW50P03AD	TO-252	YFW 50P03AD XXXXX	2500PCS/Tape

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Symbols	Value	Units
Drain-Source Voltage	<b>V<sub>DS</sub></b>	-30	<b>V</b>
Gate - Source Voltage	<b>V<sub>GS</sub></b>	±20	<b>V</b>
Continuous Drain Current, V <sub>GS</sub> @ -10V <sup>1</sup> @T <sub>A</sub> =25°C	<b>I<sub>D</sub></b>	-50	<b>A</b>
Continuous Drain Current, V <sub>GS</sub> @ -10V <sup>1</sup> @T <sub>A</sub> =70°C	<b>I<sub>D</sub></b>	-23	<b>A</b>
Pulsed Drain Current <sup>2</sup>	<b>I<sub>DM</sub></b>	-120	<b>A</b>
Single Pulse Avalanche Energy <sup>3</sup>	<b>E<sub>AS</sub></b>	68	<b>mJ</b>
Avalanche Current	<b>I<sub>AS</sub></b>	-29.4	<b>A</b>
Total Power Dissipation <sup>4</sup> @T <sub>A</sub> =25°C	<b>P<sub>D</sub></b>	310	<b>W</b>
Storage Temperature Range	<b>T<sub>STG</sub></b>	-55 to +150	<b>°C</b>
Operating Junction Temperature Range	<b>T<sub>J</sub></b>	-55 to +150	<b>°C</b>
Thermal Resistance Junction-Ambient <sup>1</sup>	<b>R<sub>θJA</sub></b>	62.5	<b>°C/W</b>
Thermal Resistance Junction to Case <sup>1</sup>	<b>R<sub>θJC</sub></b>	24	<b>°C/W</b>

**Maximum Ratings at Tc=25°C unless otherwise specified**

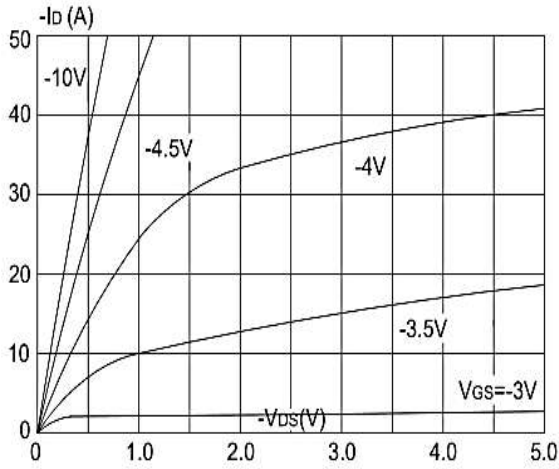
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	<b>V(BR)DSS</b>	-30	-32.5	-	<b>V</b>
Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$	<b>I<sub>DSS</sub></b>	-	-	-1	<b>μA</b>
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	<b>I<sub>GSS</sub></b>	-	-	±100	<b>nA</b>
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	<b>V<sub>GS(th)</sub></b>	-1.2	-1.5	-2.5	<b>V</b>
Static Drain-Source on-Resistance note3	$V_{GS}=-10V, I_D=-10A$	<b>R<sub>DS(on)</sub></b>	-	10.5	16	<b>mΩ</b>
	$V_{GS}=-4.5V, I_D=-5A$		-	16	20	
Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	<b>R<sub>g</sub></b>	4.9	7.0	9.1	<b>Ω</b>
Input Capacitance	$V_{DS}=-24V$ $V_{GS}=10V$ $f=1MHz$	<b>C<sub>iss</sub></b>	-	2130	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	280	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	252	-	
Total Gate Charge	$V_{DS}=-24V$ $V_{GS}=-10V$ $I_D=-1A$	<b>Q<sub>g</sub></b>	-	22	-	<b>nC</b>
Gate-Source Charge		<b>Q<sub>gs</sub></b>	-	4	-	
Gate-Drain("Miller") Charge		<b>Q<sub>gd</sub></b>	-	5.8	-	
Turn-on delay time	$V_{DD}=-24V$ $V_{GS}=-10V$ $I_D=-1A$ $R_{GEN}=7.0\Omega$	<b>t<sub>d(on)</sub></b>	-	9	-	<b>ns</b>
Turn-on Rise Time		<b>T<sub>r</sub></b>	-	13	-	
Turn-Off Delay Time		<b>t<sub>d(OFF)</sub></b>	-	48	-	
Turn-Off Fall Time		<b>t<sub>f</sub></b>	-	20	-	
Maximum Continuous Drain to Source Diode Forward Current		<b>I<sub>S</sub></b>	-	-	-29.5	<b>A</b>
Maximum Pulsed Drain to Source Diode Forward Current		<b>I<sub>SM</sub></b>	-	-	-44	<b>A</b>
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=-1A$	<b>V<sub>SD</sub></b>	-	-0.74	-1.2	<b>V</b>

Note :

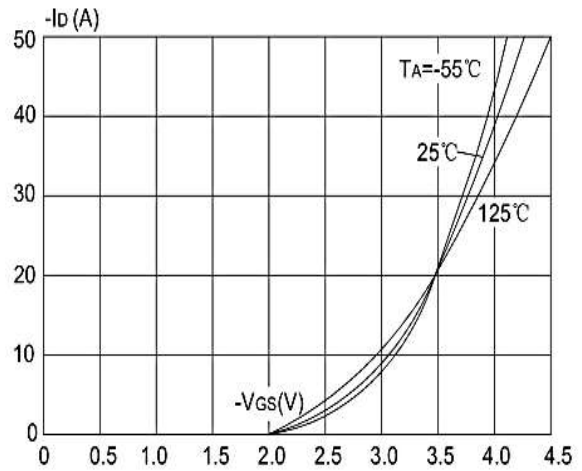
- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 20Z copper.
- 2、 The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 3、 The power dissipation is limited by 175°C junction temperature
- 4、 EAS condition: T<sub>J</sub>=25°C, V<sub>DD</sub>= -24V, V<sub>G</sub>= -10V, R<sub>G</sub>=7Ω, L=0.1mH, I<sub>AS</sub>= -29.5A
- 5、 The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

**Ratings and Characteristic Curves**

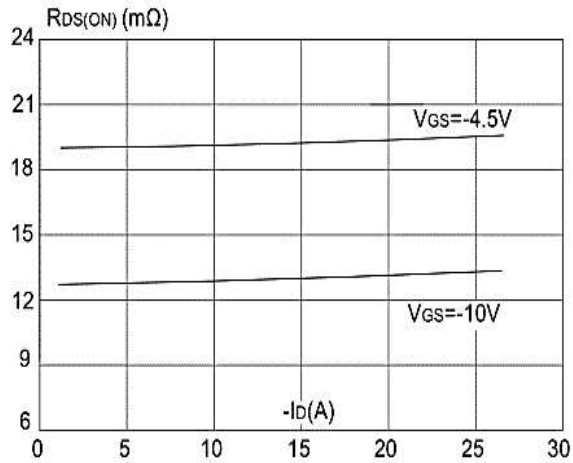
**Typical Characteristics**



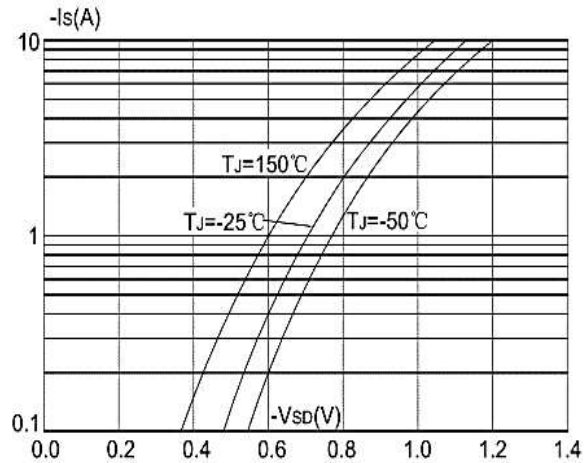
**Figure1: Output Characteristics**



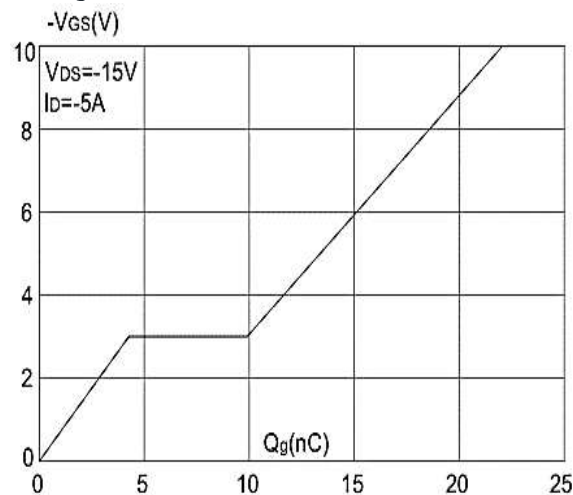
**Figure2: Typical Transfer Characteristics**



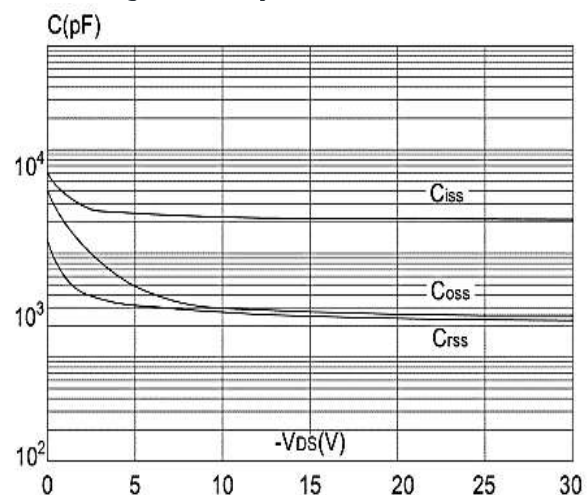
**Figure 3: On-resistance vs. Drain Current**



**Figure 4: Body Diode Characteristics**

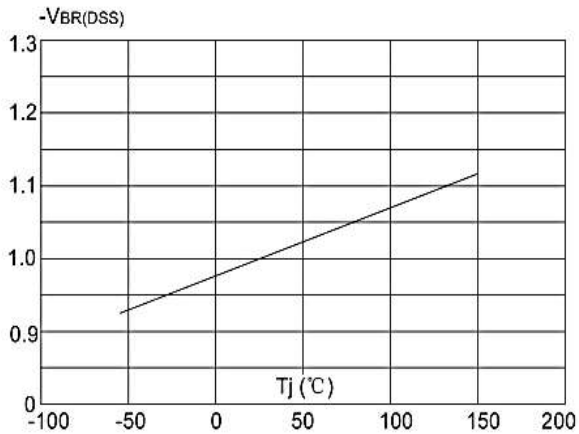


**Figure 5: Gate Charge Characteristics**

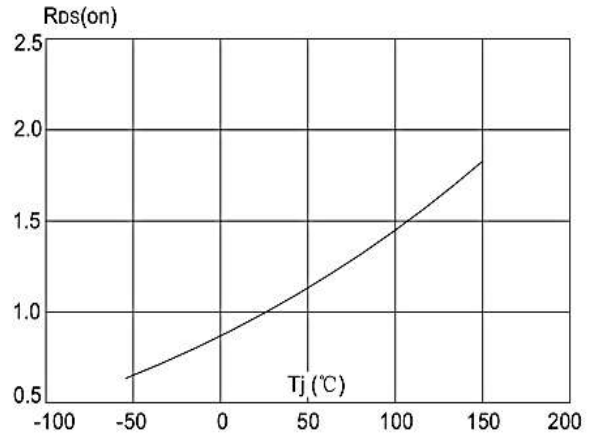


**Figure 6: Capacitance Characteristics**

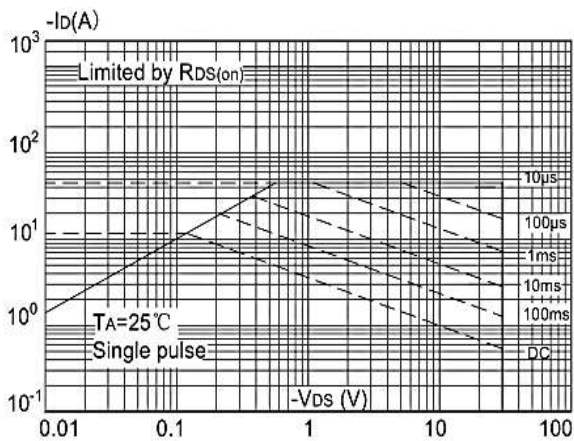
**Ratings and Characteristic Curves**



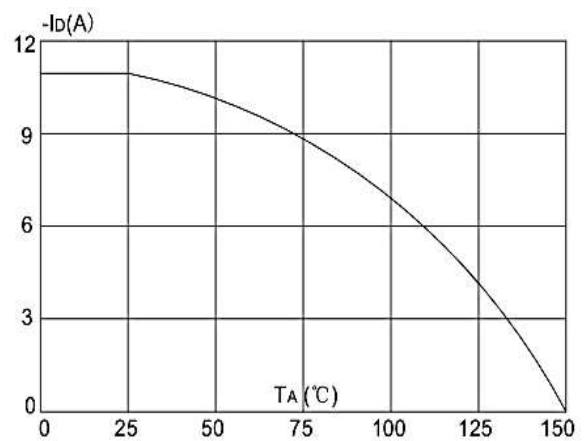
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



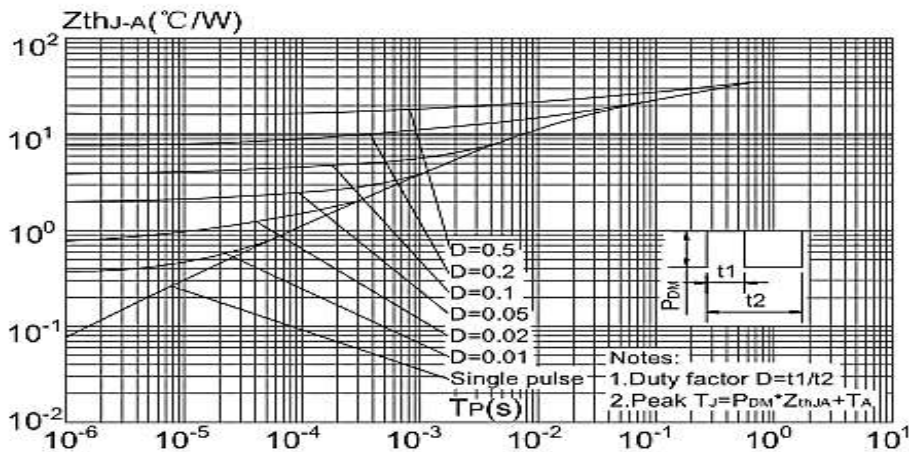
**Figure 8: Normalized on Resistance vs. Junction Temperature**



**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**

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				