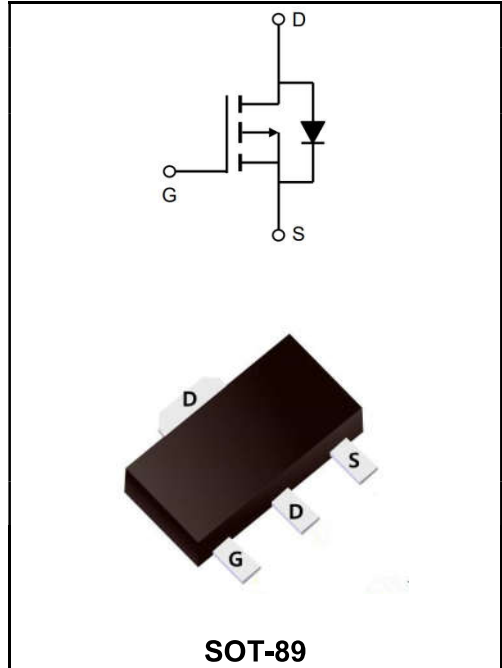


**-30V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

<b>I<sub>D</sub></b>	-6A
<b>V<sub>DSS</sub></b>	-30V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	< 55mΩ ( <b>Type:40 mΩ</b> )



**Application**

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

**Product Specification Classification**

Part Number	Package	Marking	Pack
YFW6P03SI	SOT-89	YFW 6P03SI XXXXX	3000PCS/Tape

**Maximum Ratings at T<sub>c</sub>=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>C</sub> =25°C	<b>I<sub>D</sub></b>	-6.0	<b>A</b>
Continuous Drain Current, V <sub>GS</sub> @ -10V <sup>1</sup> @T <sub>C</sub> =100°C	<b>I<sub>D</sub></b>	-3.3	<b>A</b>
Pulsed Drain Current <sup>note1</sup>	<b>I<sub>DM</sub></b>	-20.4	<b>A</b>
Power Dissipation @T <sub>A</sub> =25°C	<b>P<sub>D</sub></b>	2.15	<b>W</b>
Thermal Resistance Junction to Ambient	<b>R<sub>θJA</sub></b>	70	<b>°C/W</b>
Operating and Storage Temperature Range	<b>T<sub>J</sub> , T<sub>STG</sub></b>	-55 to +150	<b>°C</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	-33	-	<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>	-1.0	-1.6	-2.5	<b>V</b>
Static Drain-Source on-Resistance note2	$V_{GS}=-10V, I_D=-5A$	<b>R<sub>DS(ON)</sub></b>	-	40	55	<b>mΩ</b>
	$V_{GS}=-4.5V, I_D=-4A$		-	65	90	
Input Capacitance	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	<b>C<sub>iss</sub></b>	-	596	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	95	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	68	-	
Total Gate Charge	$V_{DS}=-15V$ $V_{GS}=-5.1V$ $I_D=-10A$	<b>Q<sub>g</sub></b>	-	6.8	-	<b>nC</b>
Gate-Source Charge		<b>Q<sub>gs</sub></b>	-	1	-	
Gate-Drain("Miller") Charge		<b>Q<sub>gd</sub></b>	-	1.4	-	
Turn-on delay time	$V_{DD}=-15V$ $V_{GS}=-10V$ $I_D=-1A$ $R_{GEN}=2.5\Omega$	<b>t<sub>d(on)</sub></b>	-	14	-	<b>ns</b>
Turn-on Rise Time		<b>T<sub>r</sub></b>	-	61	-	
Turn-Off Delay Time		<b>t<sub>d(OFF)</sub></b>	-	19	-	
Turn-Off Fall Time		<b>t<sub>f</sub></b>	-	10	-	
Maximum Continuous Drain to Source Diode Forward Current		<b>I<sub>S</sub></b>	-	-	-5.1	<b>A</b>
Maximum Pulsed Drain to Source Diode Forward Current		<b>I<sub>SM</sub></b>	-	-	-20.4	<b>A</b>
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=-5.1A$	<b>V<sub>SD</sub></b>	-	-0.8	-1.2	<b>V</b>

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width  $\cong 300\mu s$  , duty cycle  $\cong 2\%$
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 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

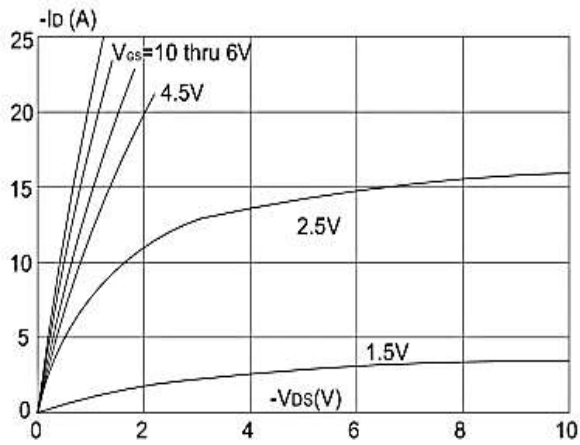


Figure1: Output Characteristics

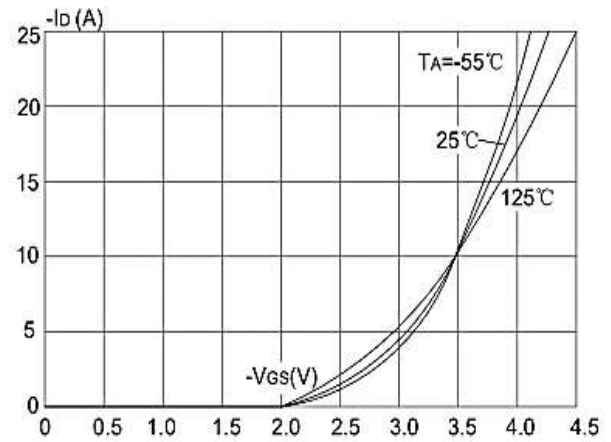


Figure 2: Typical Transfer Characteristics

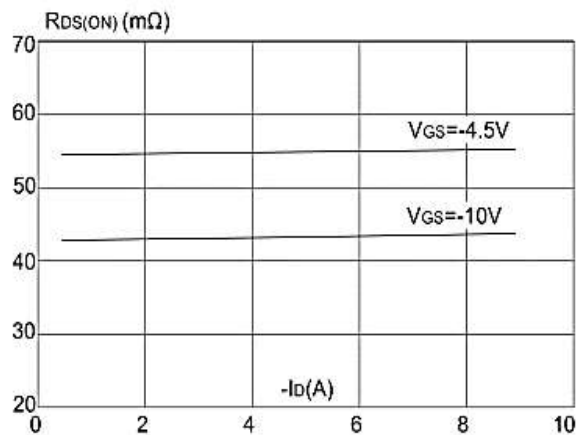


Figure 3: On-resistance vs. Drain Current

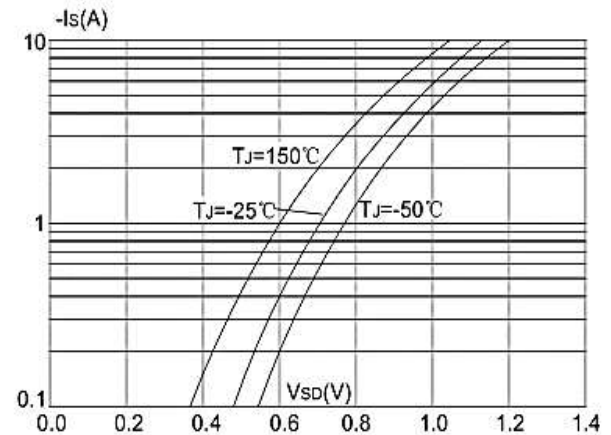


Figure 4: Body Diode Characteristics

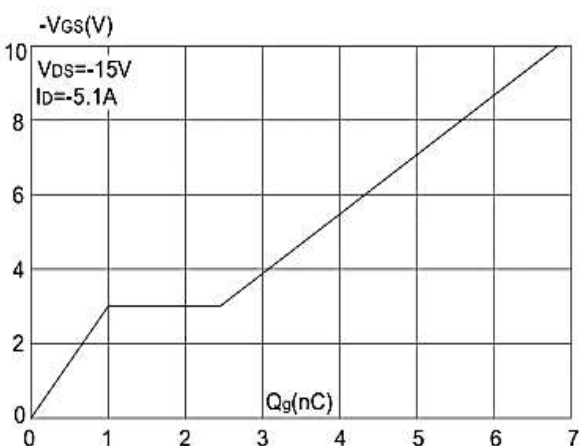


Figure 5: Gate Charge Characteristics

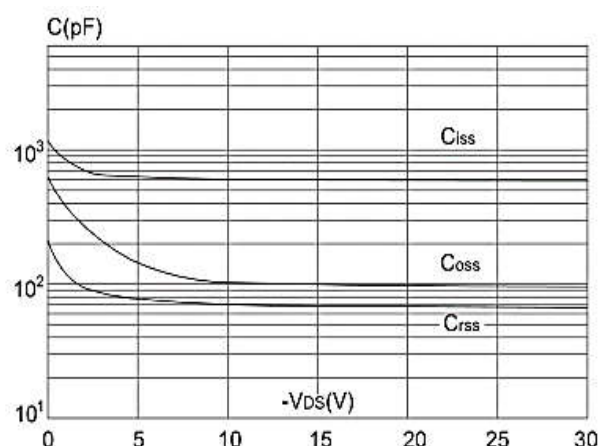
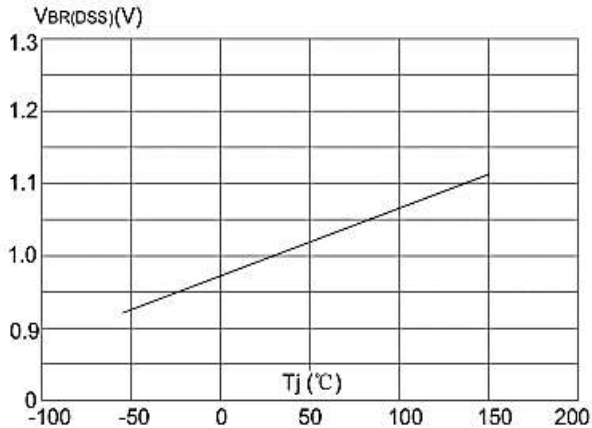
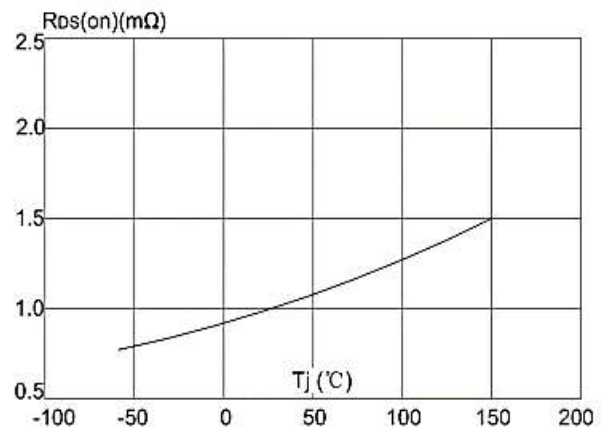


Figure 6: Capacitance Characteristics

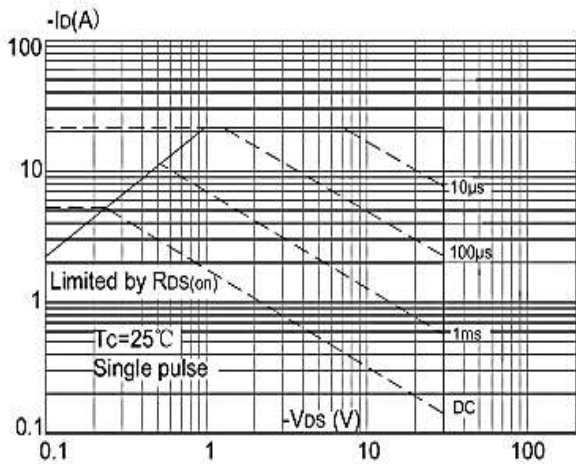
**Ratings and Characteristic Curves**



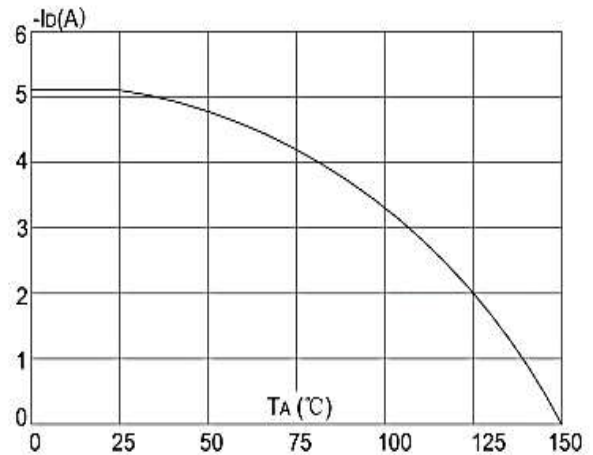
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



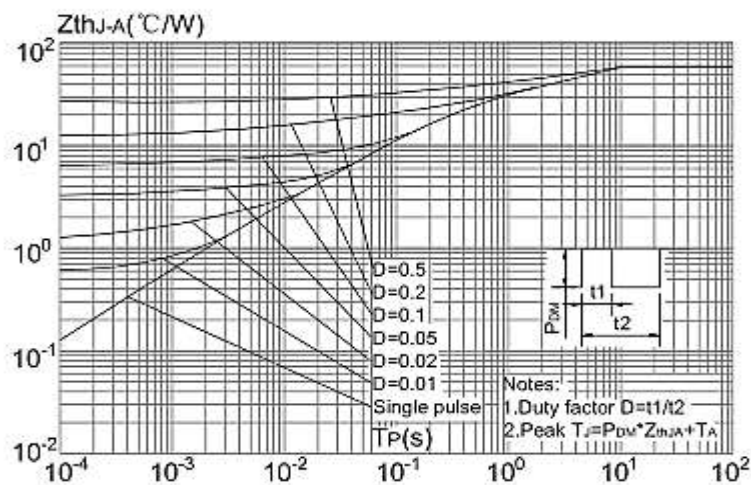
**Figure 8: Normalized on Resistance vs. Junction Temperature**



**Figure 9: Maximum Safe Operating Area vs. Case Temperature**

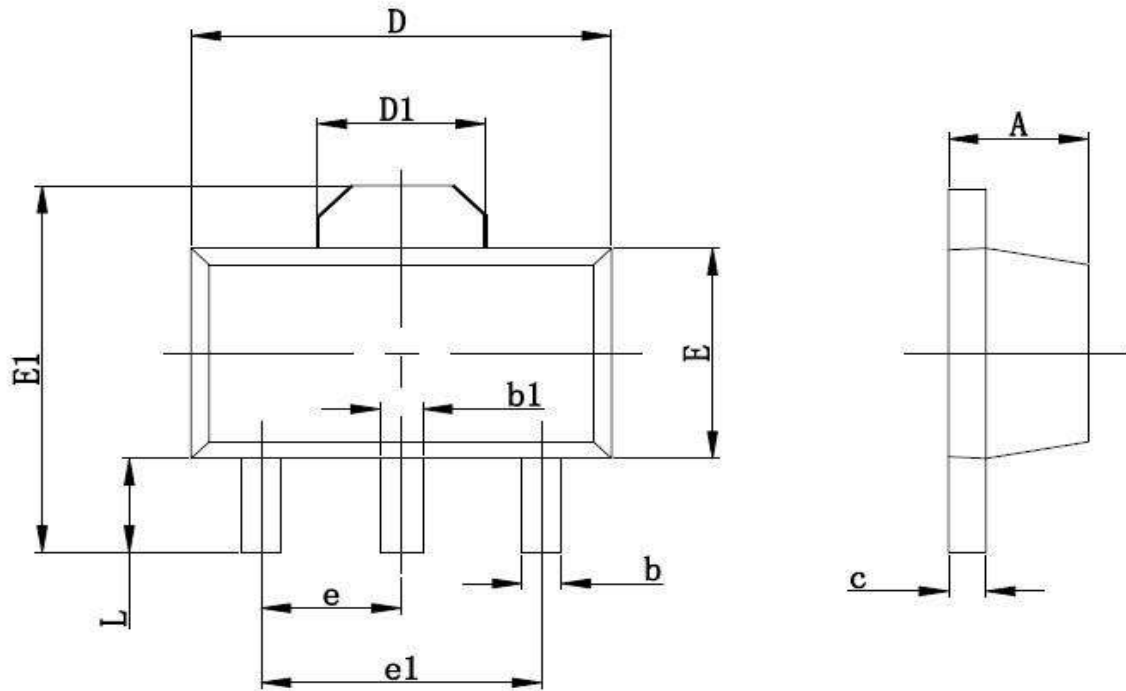


**Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature**



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

SOT-89



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.350	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.350	2.550	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060TYP	
e1	3.000 TYP		0.118TYP	
L	0.900	1.100	0.035	0.047