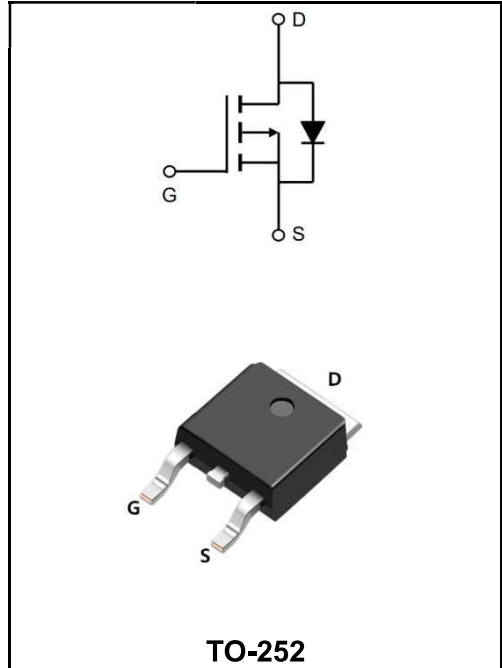


-30V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-90A
V_{DSS}	-30V
R_{DS(on)-typ(@V_{GS}=-10V)}	< 7.0mΩ (Type:5.2 mΩ)



Application

- ◆Lithium battery protection
- ◆Wireless impact
- ◆Mobile phone fast charging

Product Specification Classification

Part Number	Package	Marking	Pack
YFW90P03AD	TO-252	YFW 90P03AD XXXXX	2500PCS/Tape

Maximum Ratings at T_c=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} @ -10V1 @T _C =25°C	I_D	-90	A
Continuous Drain Current, V _{GS} @ -10V1 @T _C =100°C	I_D	-67	A
Pulsed Drain Current 2	I_{DM}	-270	A
Single Pulse Avalanche Energy3	E_{AS}	325	mJ
Avalanche Current	I_{AS}	-40	A
Total Power Dissipation4 @T _C =25°C	P_D	69	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_{θJA}	62.5	°C/W
Thermal Resistance Junction-Case1	R_{θJC}	1.6	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-30	-34	-	V
BV_{DSS} Temperature Coefficient	Reference to 25°C, $I_D=-1mA$	$\Delta BV_{DSS}/\Delta T_J$	-	-0.0232	-	V/°C
Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-20A$	$R_{DS(ON)}$	-	5.2	7.5	mΩ
	$V_{GS}=-4.5V, I_D=-15A$		-	8.0	11	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.2	-1.4	-2.5	V
$V_{GS(th)}$ Temperature Coefficient		$\Delta V_{GS(th)}$	-	4.6	-	mV/°C
Drain-Source Leakage Current	$V_{DS}=-24V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	-1	μA
	$V_{DS}=-24V, V_{GS}=0V, T_J=55^\circ C$		-	-	-5	
Gate -Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Forward Transconductance	$V_{DS}=-5V, I_D=-30A$	g_{fs}	-	30	-	S
Gate resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	R_g	-	9.8	-	Ω
Total Gate Charge(-4.5V)	$V_{DS}=-15V$ $V_{GS}=-4.5V$ $I_D=-20A$	Q_g	-	35	-	nC
Gate-Source Charge		Q_{gs}	-	9.9	-	
Gate-Drain Charge		Q_{gd}	-	10.5	-	
Turn-on delay time	$V_{DD}=-15V$ $V_{GS}=-10V$ $I_D=-20A$ $R_G=3.0\Omega$	$t_{d(on)}$	-	10.8	-	ns
Rise Time		T_r	-	13.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	73	-	
Fall Time		t_f	-	35	-	
Input Capacitance	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	3520	-	pF
Output Capacitance		C_{oss}	-	465	-	
Reverse Transfer Capacitance		C_{rss}	-	370	-	
Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	I_S	-	-	-70	A
Pulsed Source Current		I_{SM}	-	-	-130	A
Diode Forward Voltage	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	V_{SD}	-	-	-1.3	V
Reverse Recovery Time	$I_F=-20A, dI/dt=100A/\mu s,$ $T_J=25^\circ C$	t_{rr}	-	25	-	ns
Reverse Recovery Charge		Q_{rr}	-	10	-	nC

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 .The EAS data shows Max. rating .
- 3、The power dissipation is limited by 175°C junction temperature
- 4、EAS condition: $T_J=25^\circ C, V_{DD}=-24V, V_G=-10V, R_G=7\Omega, L=0.1mH, I_{AS}=-40A$
- 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

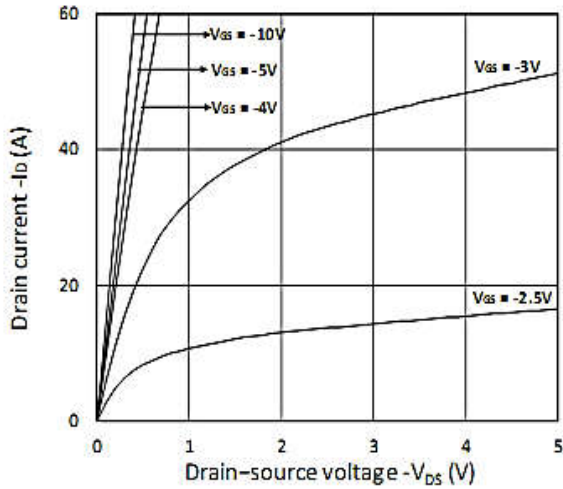


Figure 1. Output Characteristics

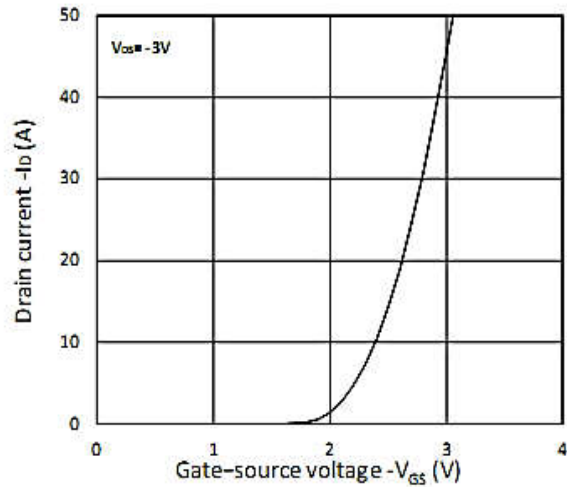


Figure 2. Transfer Characteristics

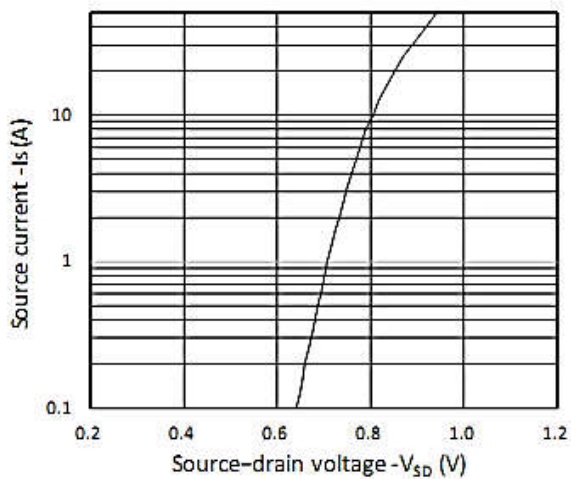


Figure 3. Forward Characteristics of Reverse

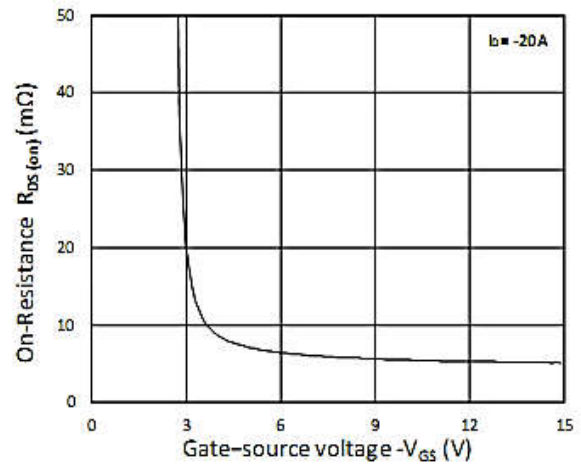


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

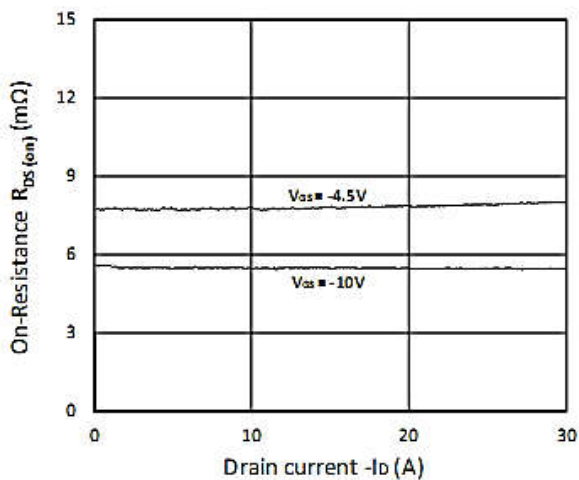


Figure 5. $R_{DS(ON)}$ vs. I_D

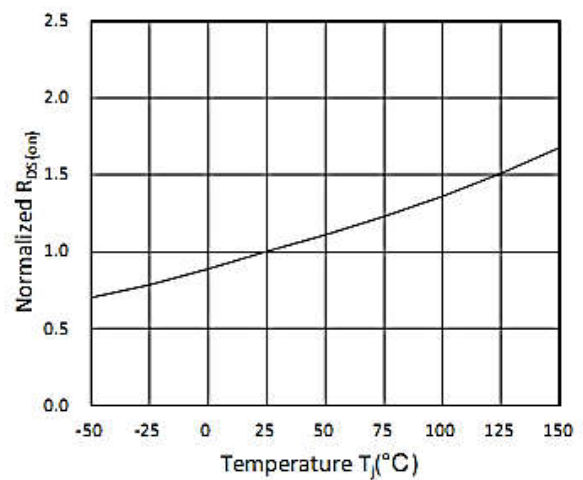


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Ratings and Characteristic Curves

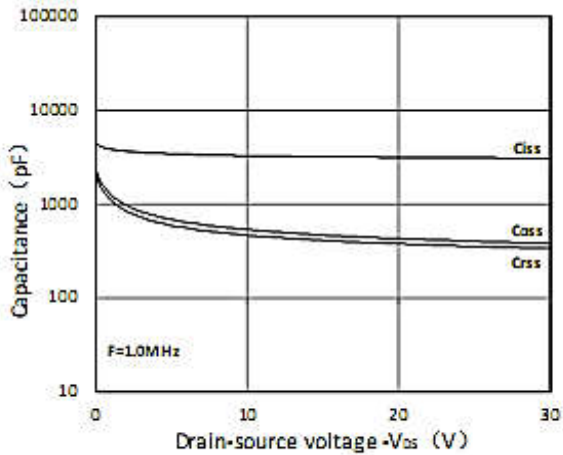


Figure 7. Capacitance Characteristics

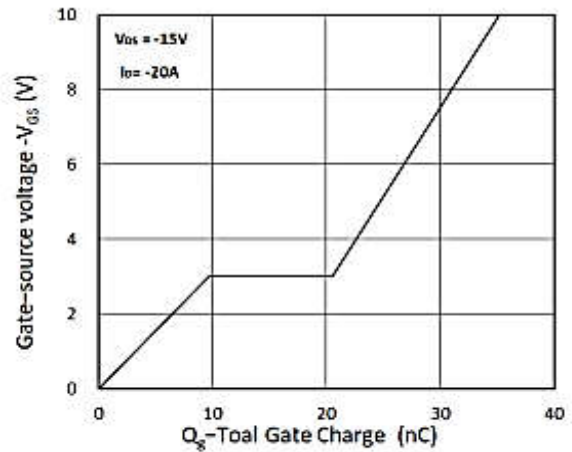


Figure 8. Gate Charge Characteristics

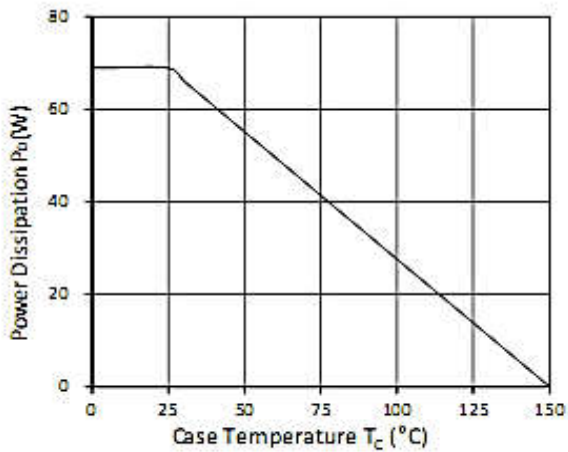


Figure 9. Power Dissipation

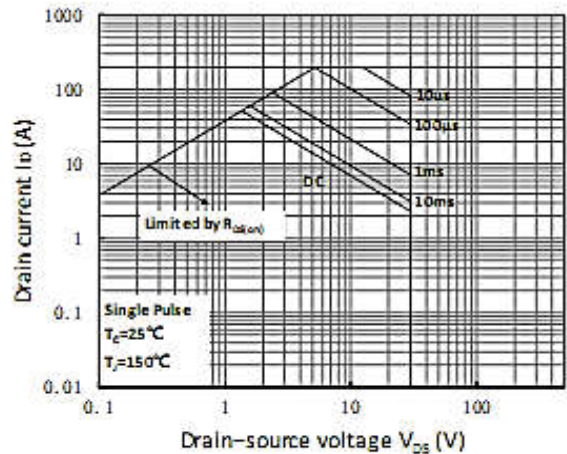


Figure 10. Safe Operating Area

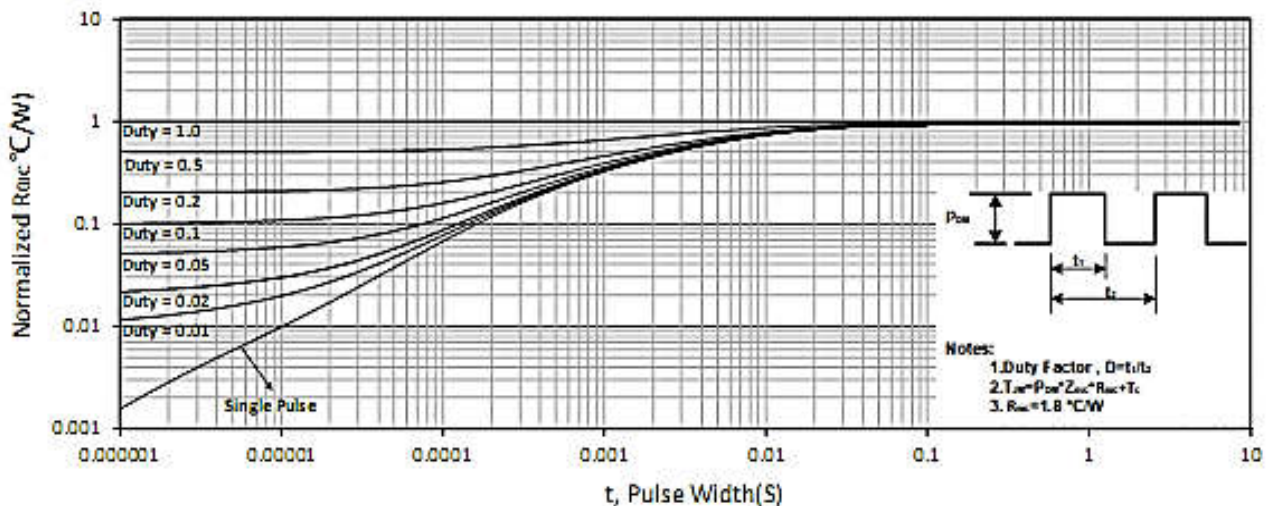


Figure 11. Normalized Maximum Transient Thermal Impedance

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				