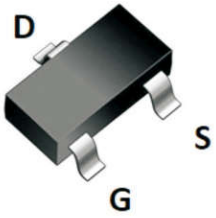
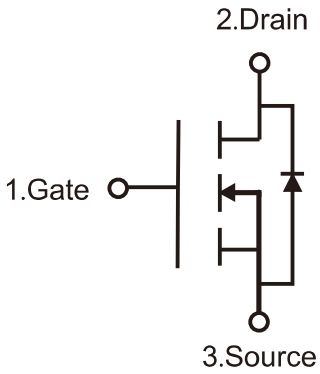
3A, 20V N-CHANNEL MOSFET

SOT-23



Features

- RDS(ON) ≤ 65mΩ @ VGS=4.5V
- RDS(ON) ≤ 90mΩ @ VGS=2.5V
- Advancend Trench Technology
- Excellent RDC(ON)and Low Gate Charge
- Lead free prouduct is acquired



Features

- Load Switch
- PWM Application
- Power management

Marking

Type number	Marking code
YFW2302A	2302A

ABSOLUTE MAXIMUM RATINGS (TA=25°C, unless otherwise specified)

PARAMETER		Symbols	RATINGS	Units
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±12	V
Continuous Drain Current	Tc=25°C	I_D	3	A
	Tc=100°C		2	A
Pulsed Drain Current (Note 2)		I_{DM}	12	A
Power Dissipation		P_D	0.77	W
Operation Junction Temperature and Storage Temperature		T_j, T_{stg}	-55 ~ +150	°C

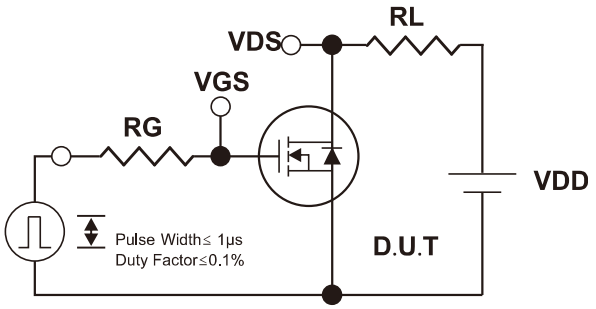
Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS (TA=25°C, unless otherwise specified)

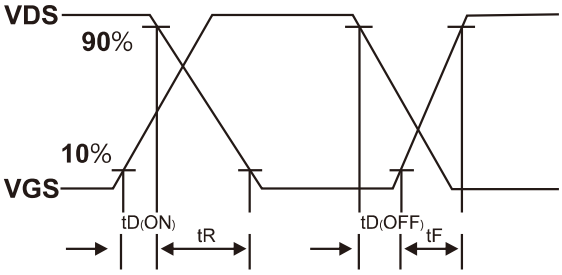
PARAMETER		SYMBOLS	TEST CONDITIONS	Min	Typ	Max	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V,I_D=250uA	20			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=19V,V_{GS}=0V			1	uA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=12V,V_{DS}=0V			100	nA
	Reverse		V_{GS}=-12V,V_{DS}=0V			-100	
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	0.4	0.7	1.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=4.5V,I_D=3A		51	65	mΩ
			V_{GS}=2.5V,ID=2A		73	90	mΩ
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{ISS}	V_{DS}=10V,		184		pF
Output Capacitance		C_{OSS}	V_{GS}=0V,		38		pF
Reverse Transfer Capacitance		C_{RSS}	f=1.0MHz		28		pF
SWITCHING CHARACTERISTICS							
Total Gate Charge (Note 1)		Q_G	V_{DS}=10V,V_{GS}=4.5V, I_D=3A		2.7		nC
Gate-Source Charge		Q_{GS}			0.4		nC
Gate-Drain Charge		Q_{GD}			0.5		nC
Turn-On Delay Time		$t_{D(ON)}$	V_{DS}=10V,V_{GS}=4.5V, I_D=3A,R_{GEN}=3Ω		2.3		ns
Turn-On Rise Time		t_R			3.1		ns
Turn-Off Delay Time		$t_{D(OFF)}$			9.2		ns
Turn-Off Fall Time		t_F			2.5		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS							
Maximum Body-Diode Continuous Current		I_S				3	A
Maximum Body-Diode Pulsed Current		I_{SM}				12	A
Drain-Source Diode Forward Voltage (Note 1)		V_{SD}	I_S=3A,V_{GS}=0V			1.2	V

Notes:
1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

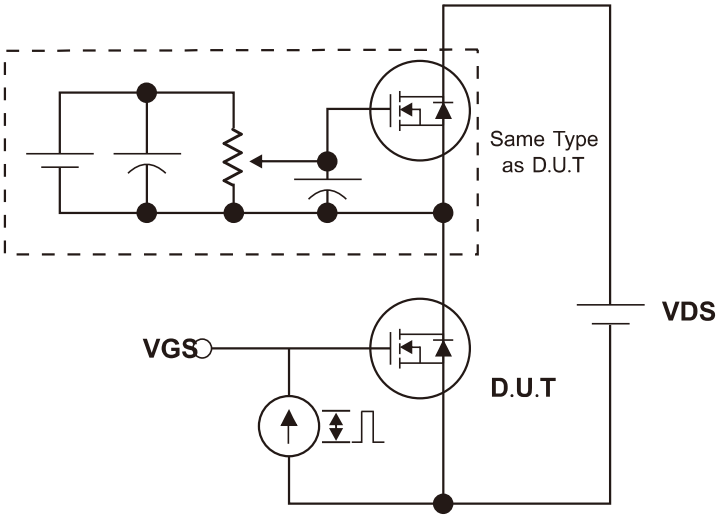
Test Circuits and waveforms



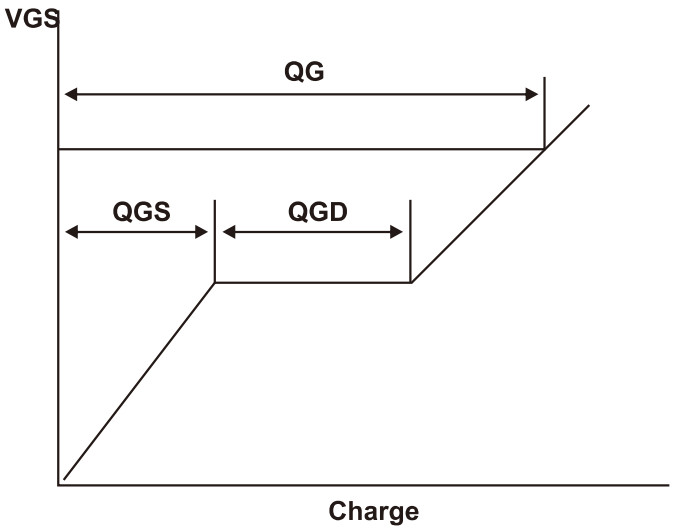
Switching Test Circuit



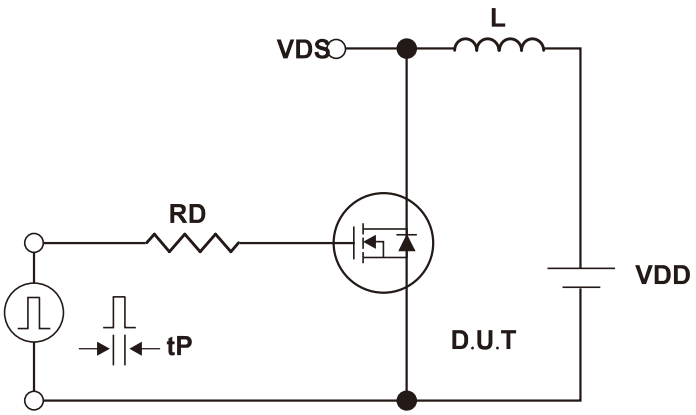
Switching Waveforms



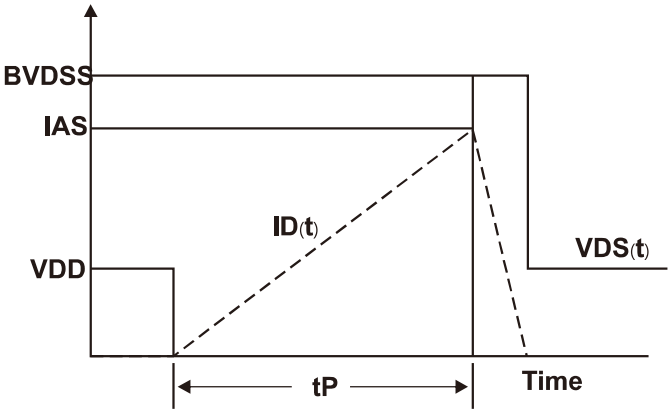
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

Typical Characteristics

Fig.1 Output Characteristics

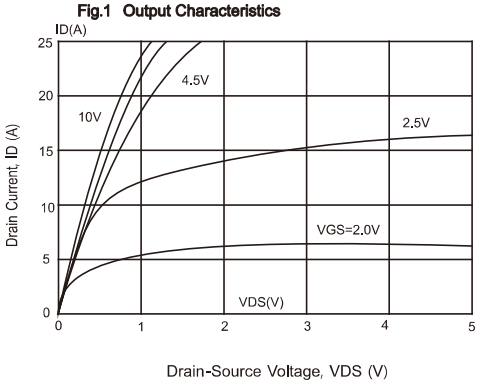


Fig.2 Typical Transfer Characteristics

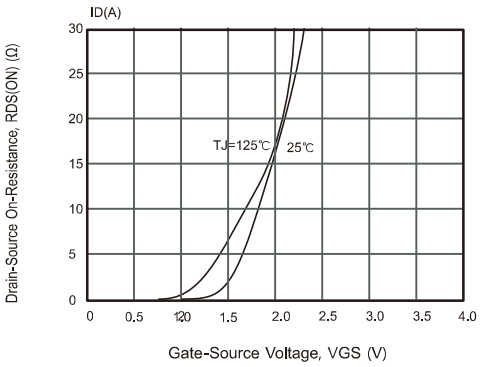


Fig.3 Gate Charge Characteristics

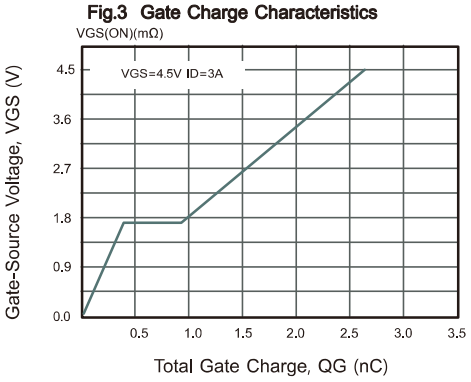


Fig.4 Capacitance Characteristics

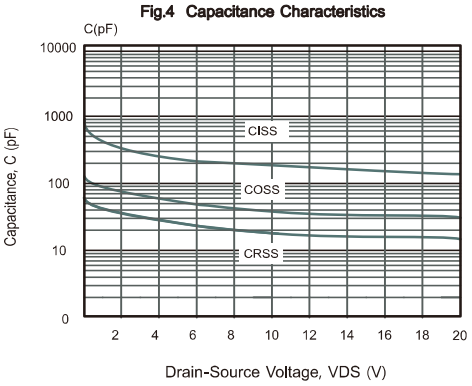


Fig.5 Normalized on Resistance vs.Junction Temperature

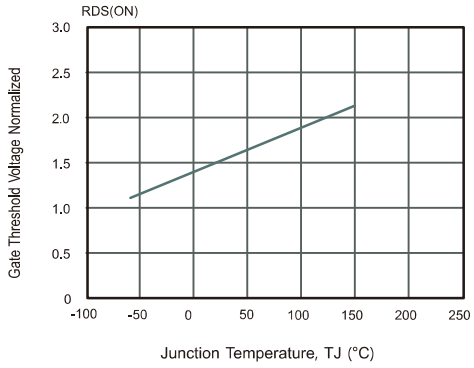


Fig.6 Breakdown Voltage vs. Junction Temperature

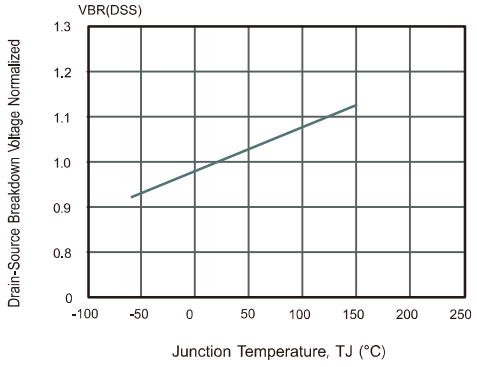


Fig.7 Drain-Source On-Resistance vs. Drain Current

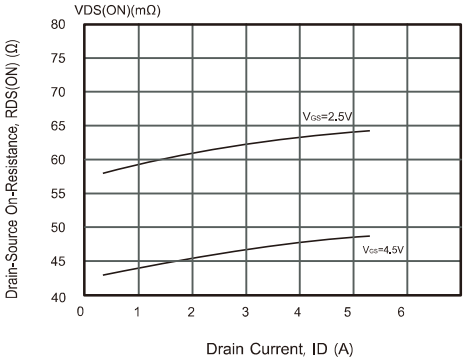
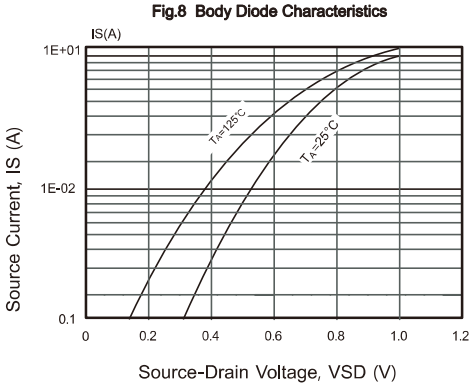


Fig.8 Body Diode Characteristics



Typical Characteristics

Fig.9 Drain Current vs. Ambient Temperature

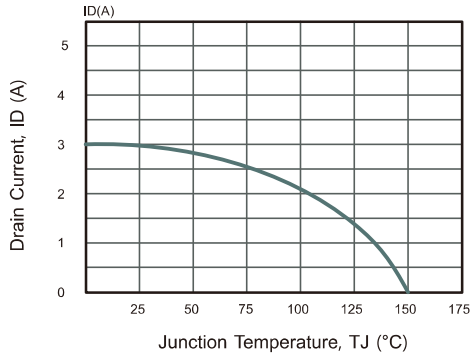


Fig.10 Drain-Source On-Resistance vs. Drain Current

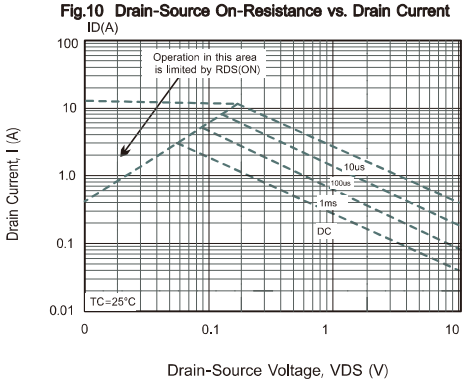
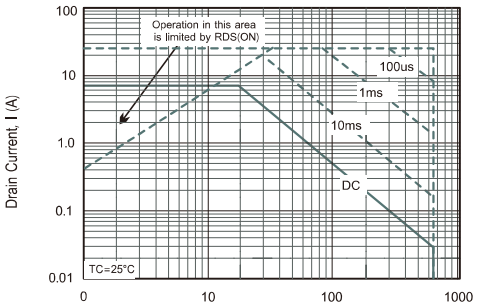
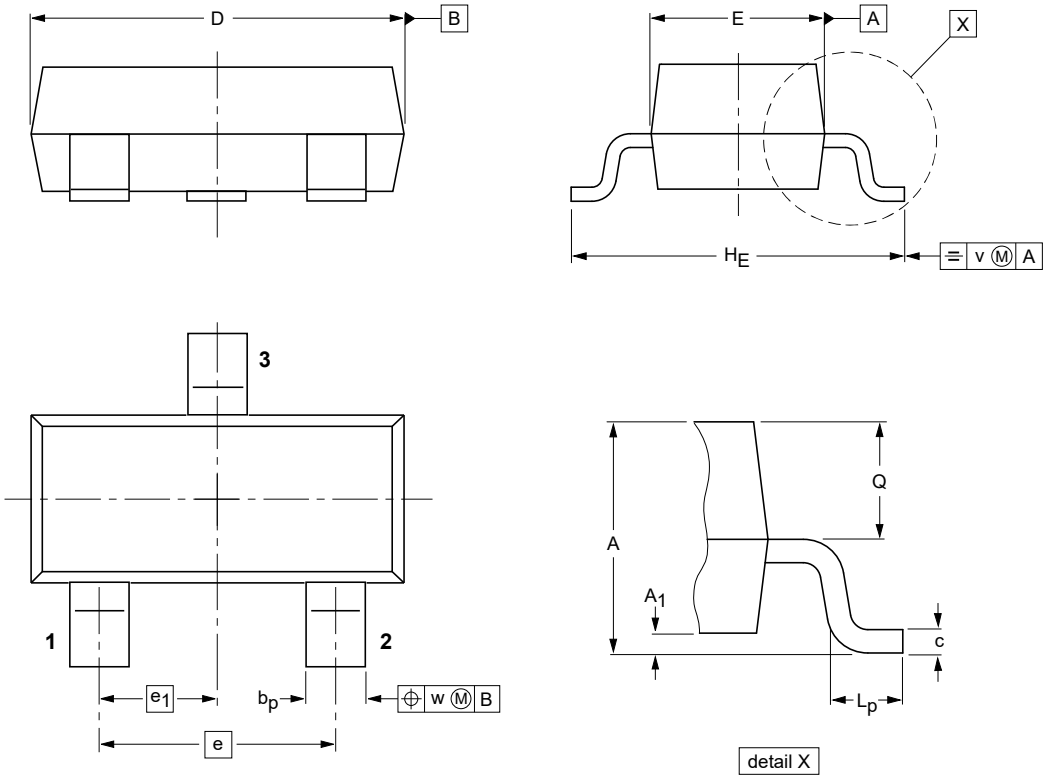


Fig.11 Safe Operating Area



Package Outline SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel,7”reel	3000	EIA-481-1