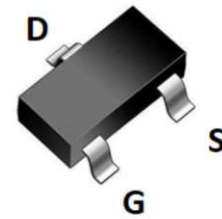


3A, 20V N-CHANNEL MOSFET

SOT-23

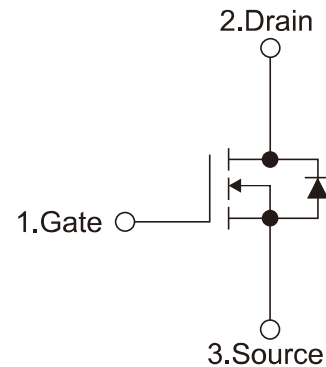
Features

- $R_{DS(ON)} \leq 55m\Omega$ @ $V_{GS}=4.5V, I_D=3.0A$
- $R_{DS(ON)} \leq 85m\Omega$ @ $V_{GS}=2.5V, I_D=2.0A$
- Fast switching capability
- Avalanche energy tested
- Improved dv/dt capability, high ruggedness



Features

- Load Switch
- PWM Application
- Power management



Marking

Type number	Marking code
YFW2302B	2302B

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	I_D	$T_c=25^\circ C$	3
		$T_c=70^\circ C$	2.4
Pulsed Drain Current (Note 2)	I_{DM}	14	A
Power Dissipation	P_D	0.7	W
Operation Junction Temperature and Storage Temperature	T_j, T_{stg}	-55 ~ +150	$^\circ C$

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.

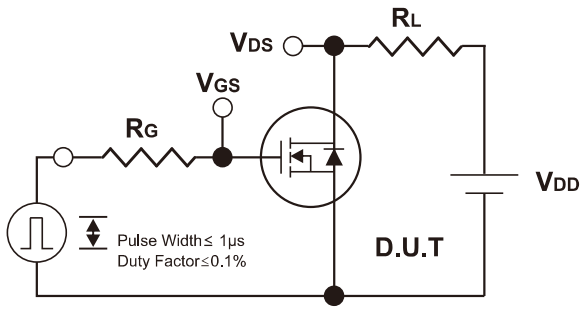
ELECTRICAL CHARACTERISTICS (TA=25°C, unless otherwise specified)

PARAMETER		SYMBOLS	TEST CONDITIONS	Min	Typ	Max	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20			V
Drain-Source Leakage Current		I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	μA
Gate- Source Leakage Current	Forward	I_{GSS}	$V_{GS}=10V, V_{DS}=0V$			100	nA
	Reverse		$V_{GS}=-10V, V_{DS}=0V$			-100	
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.55	0.78	1.1	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=3A$		38.5	50	$m\Omega$
			$V_{GS}=2.5V, I_D=2A$		53.5	70	$m\Omega$
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{ISS}	$V_{DS}=10V,$		220		pF
Output Capacitance		C_{OSS}	$V_{GS}=0V,$		34		pF
Reverse Transfer Capacitance		C_{RSS}	$f=1.0MHz$		26		pF
SWITCHING CHARACTERISTICS							
Total Gate Charge (Note 1)		Q_G	$V_{DS}=10V, V_{GS}=4.5V,$ $I_D=3A$		3.61		nC
Gate-Source Charge		Q_{GS}			0.88		nC
Gate-Drain Charge		Q_{GD}			0.77		nC
Turn-On Delay Time		$t_{D(ON)}$	$V_{DS}=10V, V_{GS}=4.5V,$ $R_L=1.5\Omega, R_G=3\Omega$		6.8		ns
Turn-On Rise Time		t_R			57		ns
Turn-Off Delay Time		$t_{D(OFF)}$			14		ns
Turn-Off Fall Time		t_F			53		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

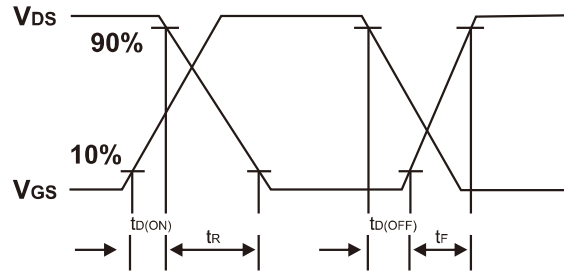
Notes:

1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.
2. Essentially independent of operating temperature.

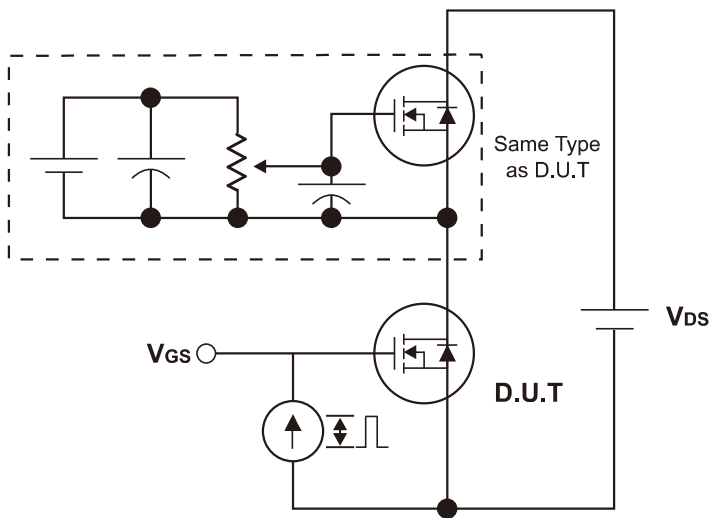
Test Circuits and waveforms



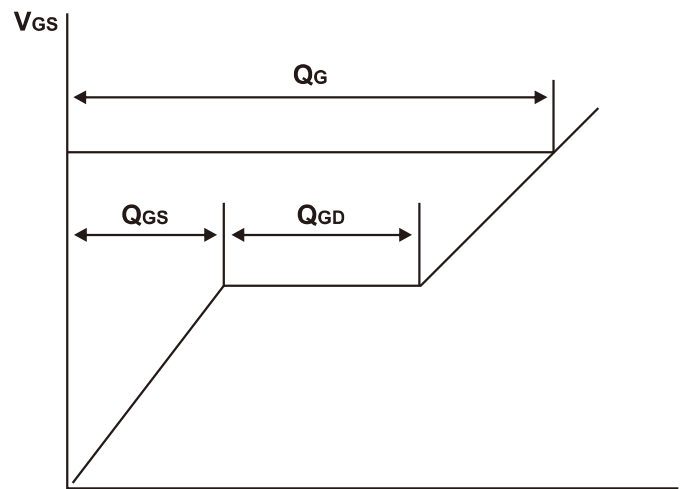
Switching Test Circuit



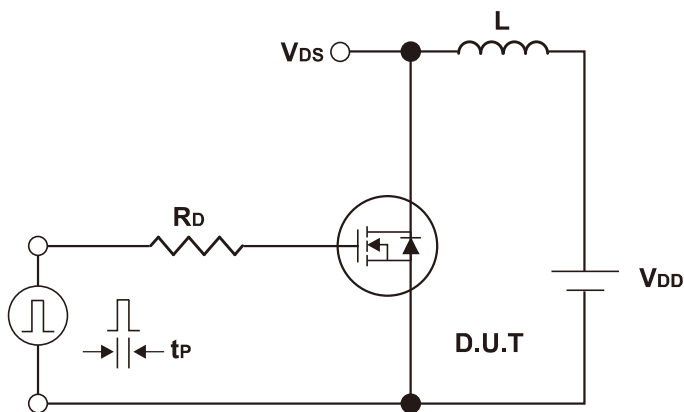
Switching Waveforms



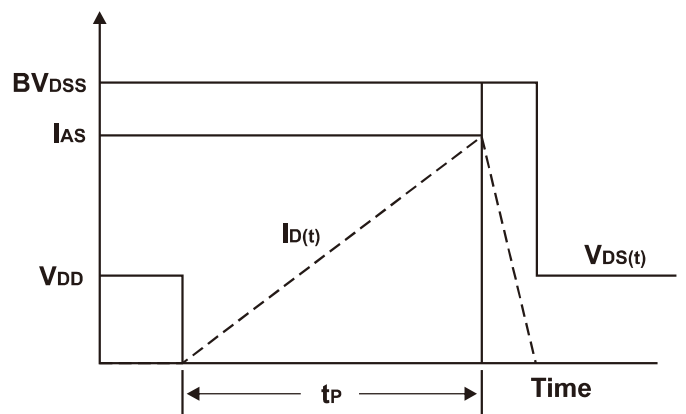
Gate Charge Test Circuit



**Charge
Gate Charge Waveform**

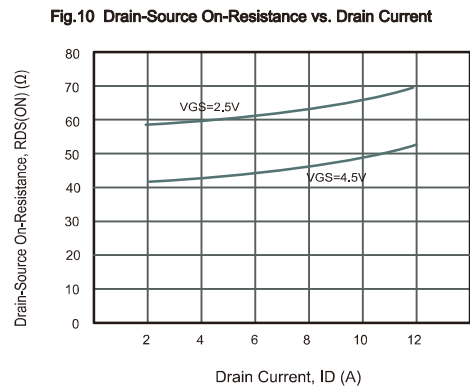
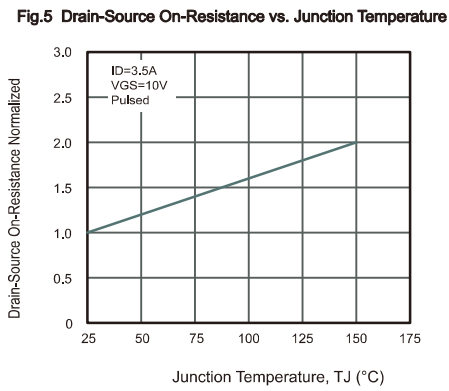
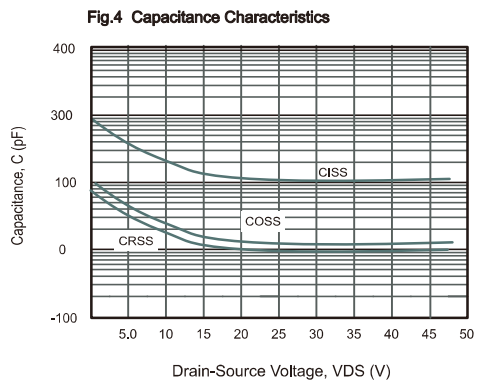
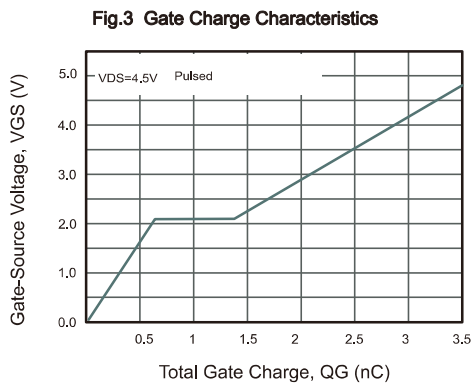
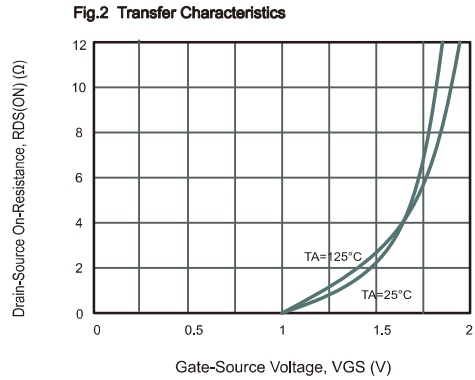
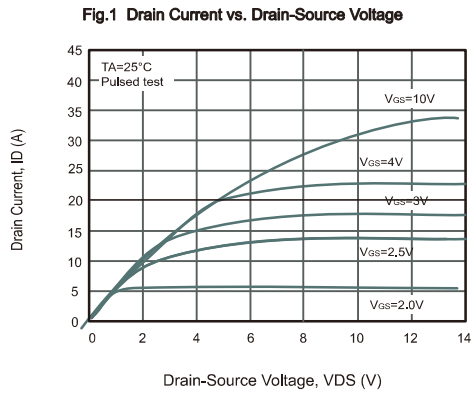


Unclamped Inductive Switching Test Circuit



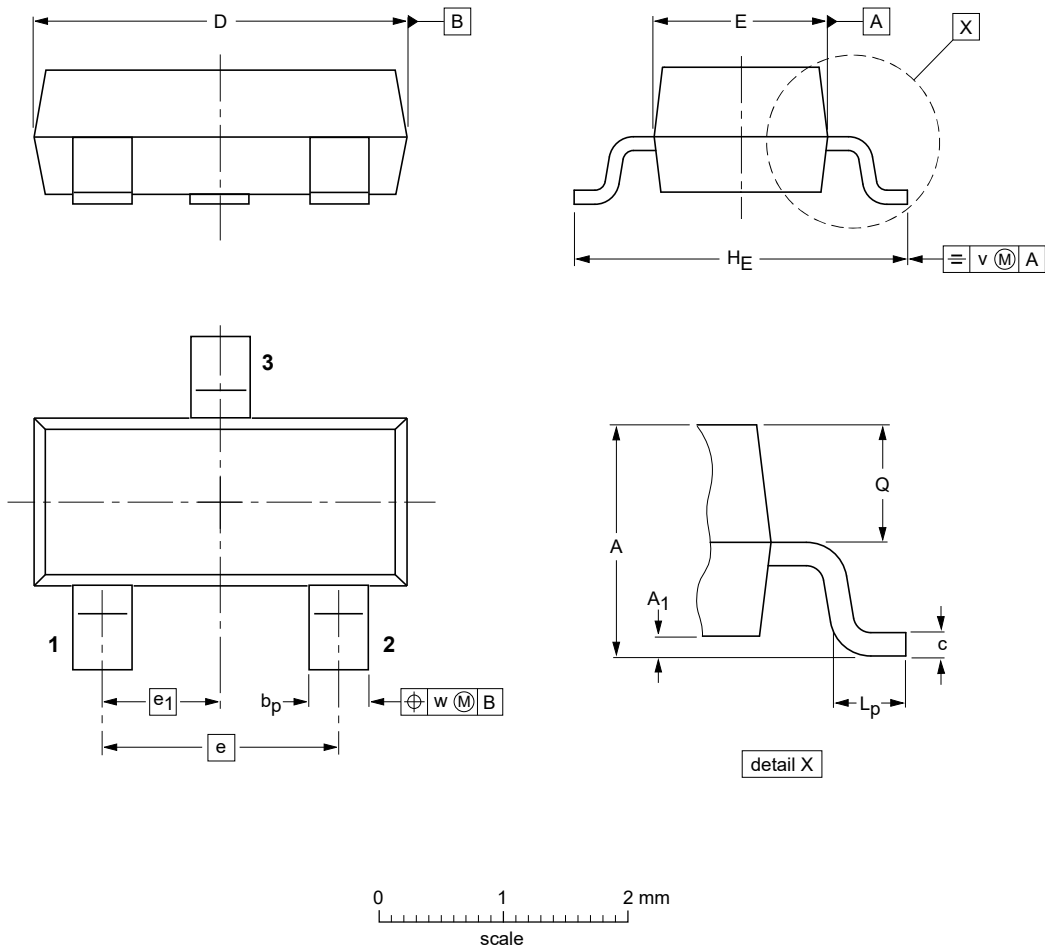
Unclamped Inductive Switching Waveforms

Typical Characteristics



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