

30V P沟道增强型功率场效应管	30V P-CHANNEL ENHANCEMENT MODE POWER MOSFET - 4.2A/30V
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Discription

The ZX-3401 uses advanced trench technology to provide excellent RDS(ON), low gate charge and high density cell design for ultra low on-resistance. This device is suitable for use as a load switch or in PWM applications.

Features

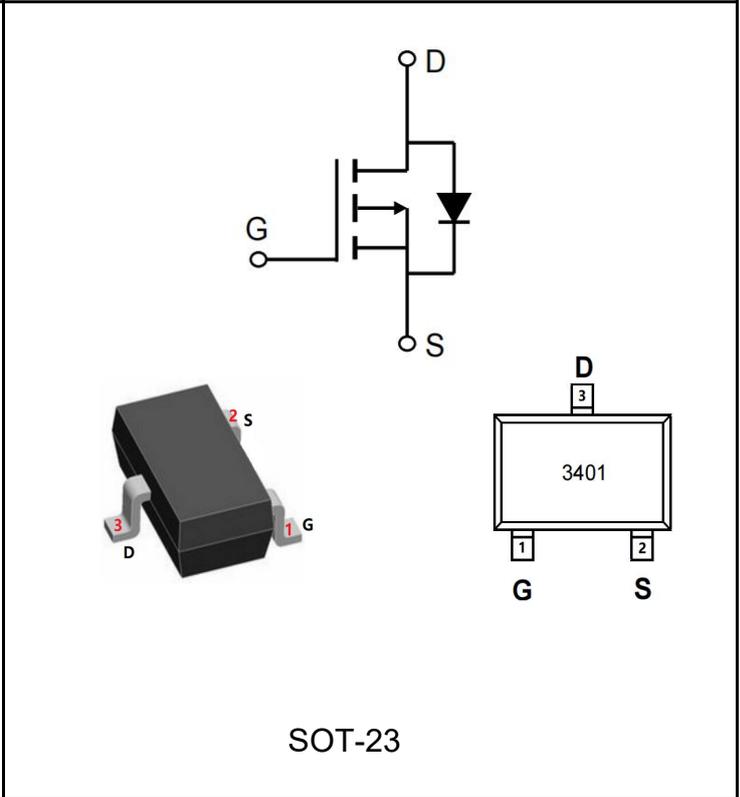
- $V_{DS} = -30V$, $I_D = -4.2A$
- $R_{DS(on)} (TYP.) = 49m\Omega @ V_{GS} = -10V$
- $R_{DS(on)} (TYP.) = 57m\Omega @ V_{GS} = -4.5V$

Applications

- PWM applications
- Load switch
- Power management

Note

- Products made by JUXIN semiconductor



ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
ZX-3401	SOT-23	3401	Pb free	Tape and Reel

ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise noted)

Characteristics	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	$T_C=25^\circ C$	-4.2
		$T_C=70^\circ C$	-3.7
Drain Current Pulsed(Note 1)	I_{DM}	-16.8	A
Power Dissipation	P_D	$T_A=25^\circ C$	1.4
		$T_A=70^\circ C$	1
Operation Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	MAX	Unit
Thermal Resistance, Junction-to-Ambient(Note 2)	$R_{\theta JA}$	145	°C/W

NOTE:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. Surface mounted on 1" x 1" FR4 board.



ELECTRICAL CHARACTERISTICS

Off Characteristics

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain -Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D = -250\mu A$	-30	-33	--	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = -30V, V_{GS}=0V$	--	--	-1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = -12V, V_{DS}=0V$	--	--	100	nA
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = +12V, V_{DS}=0V$	--	--	-100	nA

On Characteristics

Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D = -250\mu A$	-0.5	-0.83	-1.3	V
Static Drain- Source On State Resistance (Note3)	$R_{DS(on)}$	$V_{GS} = -10V, I_D = 4.2A$	--	49	65	$m\Omega$
		$V_{GS} = -4.5V, I_D = -4A$	--	57	74	
		$V_{GS} = -2.5V, I_D = -2A$	--	79	100	
Forward Transconductance	g_{FS}	$V_{DS} = -5V, I_D = -5A$	7	11	--	S

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS}=0V, f=1MHz$ (Note4)	--	954	--	pF
Output Capacitance	C_{oss}		--	115	--	
Reverse Transfer Capacitance	C_{rss}		--	77	--	

Switching Characteristics

Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -15V, I_D = -4A, R_L = 3.6\ ohm,$ $R_{GEN} = 6\ ohm$ (Note4)	--	73	--	ns
Turn-on Rise Time	t_r		--	3	--	
Turn-off Delay Time	$t_{d(off)}$		--	30	--	
Turn-off Fall Time	t_f		--	12	--	
Total Gate Charge	Q_g	$V_{DS} = -15V, V_{GS} = -4.5V,$ $I_D = -4A$ (Note4)	--	8.5	--	nC
Gate-Source Charge	Q_{gs}		--	1.8	--	
Gate-Drain Charge	Q_{gd}		--	2.7	--	

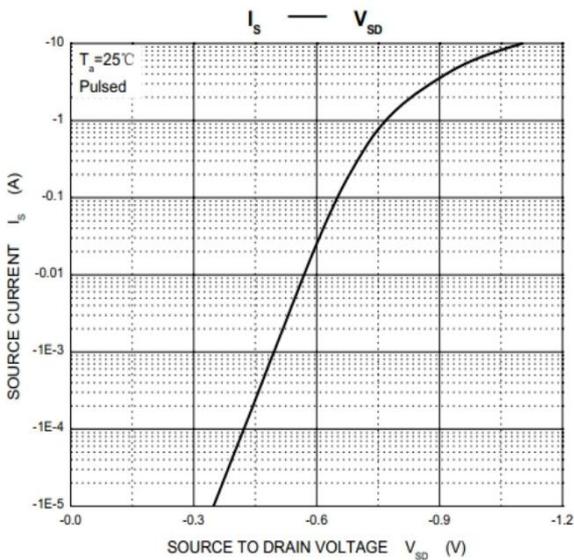
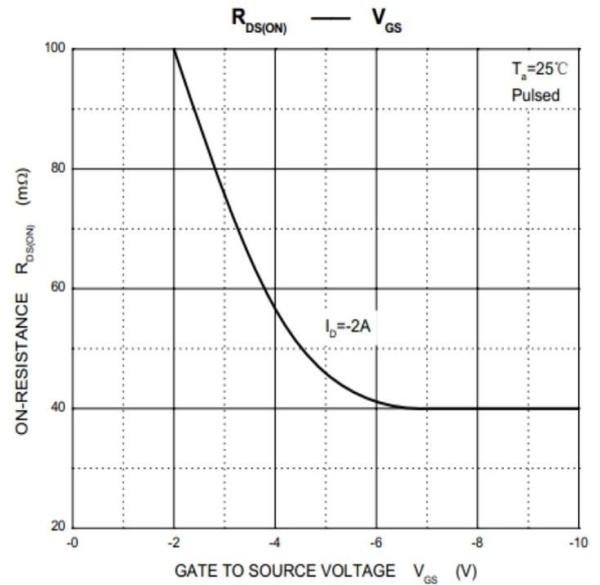
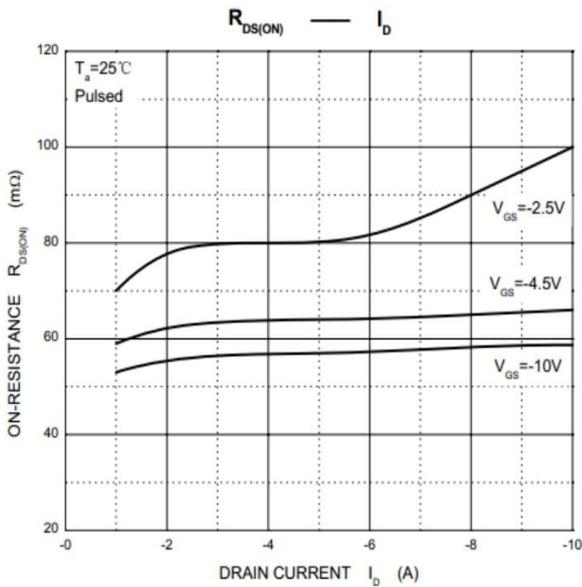
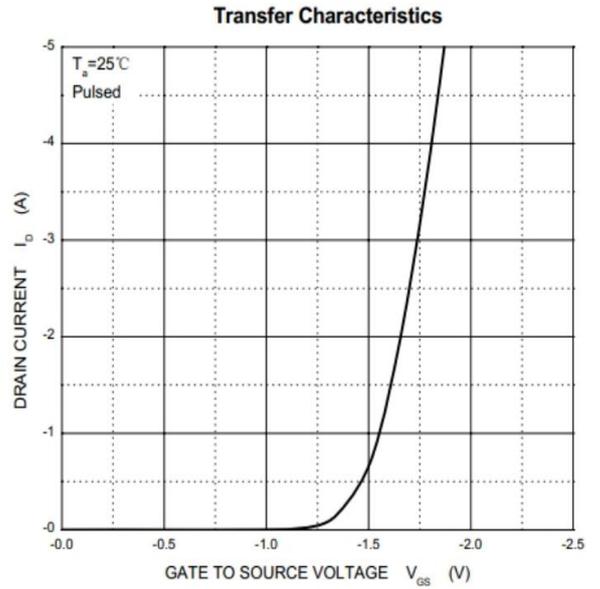
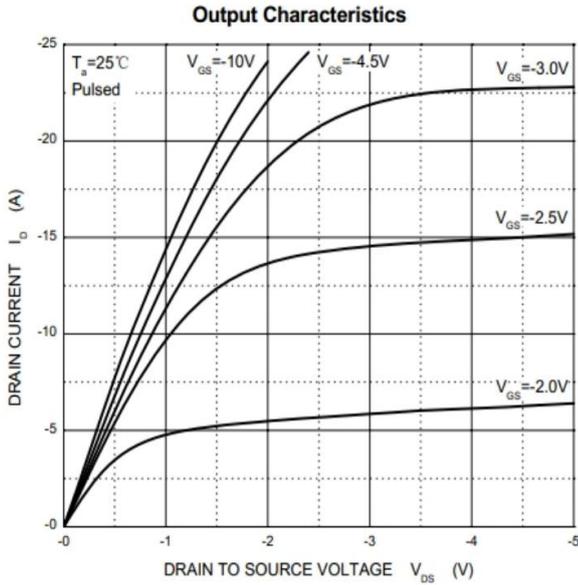
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	Integral Reverse P-N Junction Diode in the MOSFET(Note2)	--	--	-4.2	A
Diode Forward Voltage	V_{SD}	$I_S = -4.2A, V_{GS}=0V$ (Note3)	--	-0.81	-1.2	V

NOTE:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. Surface mounted on 1" x 1" FR4 board.
3. Pulse test:pulse width $\leq 300\mu s$, duty cycle $\leq 0.5\%$.
4. Guaranteed by design, not subject to production testing.
5. Surface mounted on 1" x 1" FR4 board.

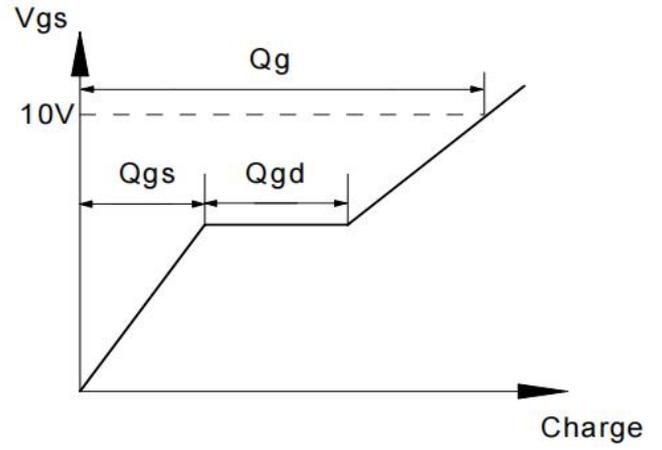
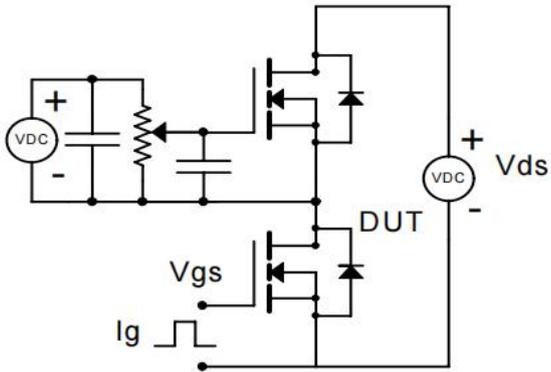
Typical Performance Characteristics



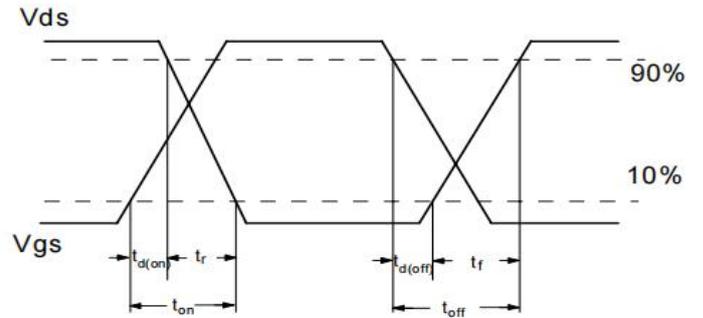
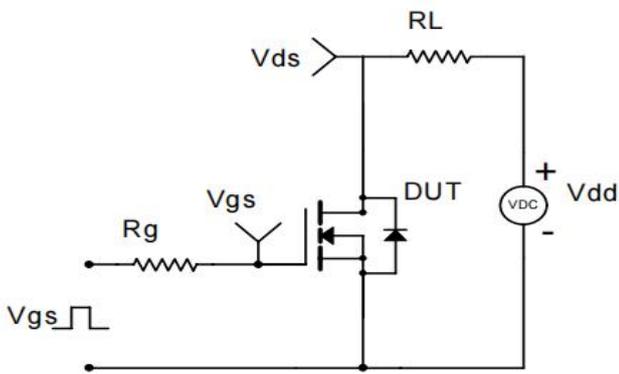
The curve above is for reference only.

Test Circuit

Gate Charge Test Circuit & Waveform



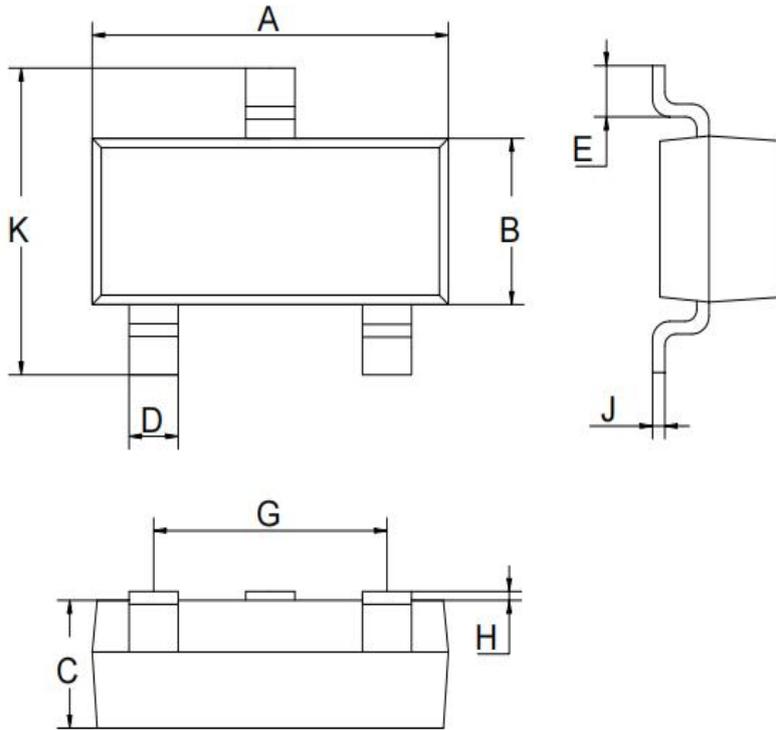
Resistive Switching Test Circuit & Waveform



Package Dimensions of SOT-23

Package Dimensions of SOT-23

Unit:mm



SYMBOL	MILIMETER	
	MIN	MAX
A	2.80	3.00
B	1.20	1.40
C	0.90	1.05
D	0.30	0.50
E	0.20	0.50
G	1.80	2.00
H	0.00	0.10
J	0.05	0.15
K	2.25	2.55

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