

UN301P23T

P-Channel Enhancement Mode MOSFET

ROHS



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Product Summary

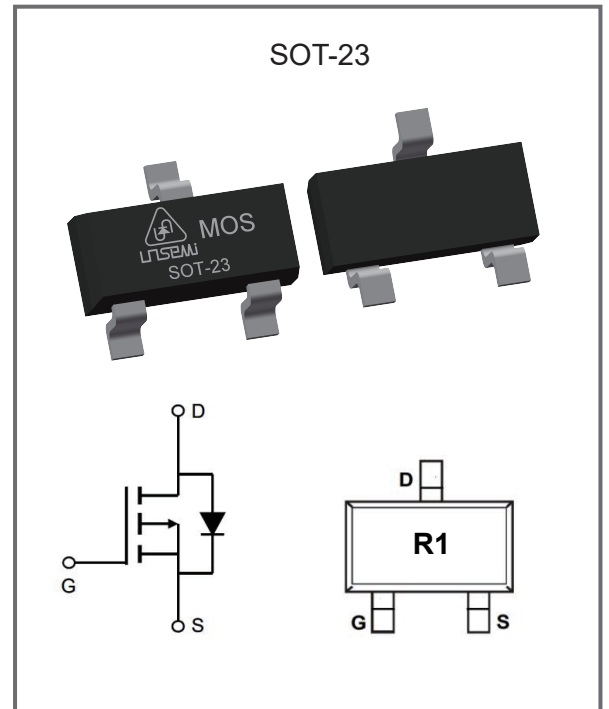
V _{DS}	-30V
I _D	-4.2A
R _{DS(ON)} (@V _{GS} =-10V I _D =-2A)	≤60mΩ
R _{DS(ON)} (@V _{GS} =-4.5V I _D =-2A)	≤70mΩ

Features

- ◆ Advanced trench cell design
- ◆ Low Thermal Resistance
- ◆ Low Gate Charge
- ◆ Halogen-Free & Lead-Free

Applications

- ◆ Load Switch for Portable Devices
- ◆ Voltage controlled small signal switch



Package Marking And Ordering information

Part Number	Package Type	Packaging	Reel(pcs)
UN301P23T	SOT-23	Tape & Reel	3000

Absolute Maximum Ratings TA = 25°C unless otherwise specified

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V _{DS}	-30	V
Gate- Source Voltage	V _{GS}	±12	V
Continuous drain current	I _D	-4.2	A
Peak Drain Current, Pulsed ¹⁾	I _{DM}	-25	A
	V _{GS} =10V		
Power Dissipation	P _{tot}	1.25	W
	T _c = 25°C		
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55~150	°C

Thermal Characteristics

Parameter	Symbol	Max	Units
Thermal Resistance from Junction to Ambient ²⁾	R _{θJA}	100	°C/W

Note :

1) Pulse width ≤100us, duty cycle ≤1%, limited by T_{jmax}.

2) Device mounted on FR-4 substrate PC board, 2ozcopper, with 1-inch square copper plate in still air

Electrical Characteristics at TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BVDSS	ID = -250μA	-30			V
Drain-Source Leakage Current	IDSS	VDS = -24V			-1.0	μA
Gate Leakage Current	IGSS	VGS = ±12V			±100	nA
Gate-Source Threshold Voltage	VGS(TH)	VGS = VDS , ID = -250μA	-0.7		-1.3	V
Drain-Source On-State Resistance	RDS(ON)	VGS = -10V , ID = -2A		41	60	mΩ
		VGS = -4.5V , ID = -2A		48	70	mΩ
DYNAMIC PARAMETERS						
Gate Resistance	RG	VDS=0V, F=1MHz		1.8		Ω
Forward Transconductance	gts	VDS = -5V, ID = -5A	7			S
Input Capacitance	Ciss	VGS = 0V VDS = -15V F = 1MHz		1050		pF
Output Capacitance	Coss			127		pF
Reverse Transfer Capacitance	Crss			85		pF
Gate charge total	Qg	VDS = -15V, ID = -5.5A, VGS = -10V		12		nC
Gate to Source Charge	Qgs			3		nC
Gate to Drain Charge	Qgd			3		nC
Turn-On Delay Time	td(ON)	VDS = -1.5V, VGS = -10V, RL = 3.6Ω, RGEN = 6Ω		6.5		nC
Turn-On Rise Time	tr			3.5		ns
Turn-Off Delay Time	td(OFF)			140		ns
Turn-Off Fall Time	tf			13		ns
Body-Diode PARAMETERS						
Drain-Source Diode Forward Voltage	VDS	IS = -2A, VGS = 0V			-1	V

Electrical Characteristics Curves

Fig. 1 Output Characteristic

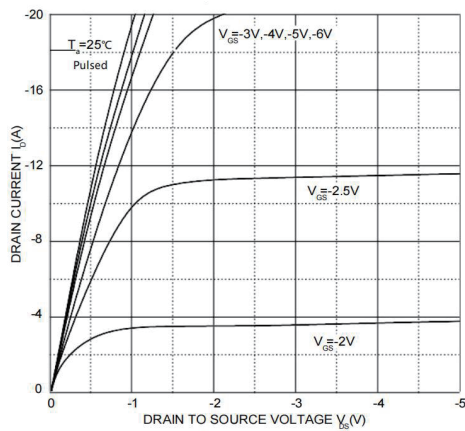


Fig. 2 Transfer Characteristic

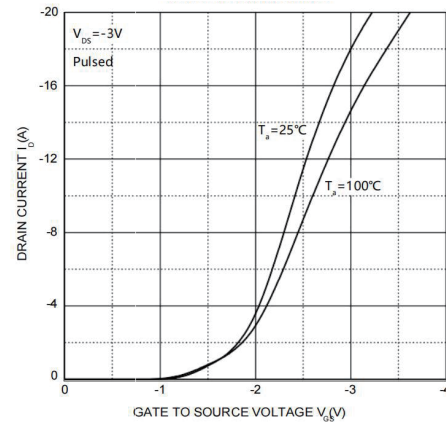


Fig. 3 $R_{DS(ON)} - I_D$

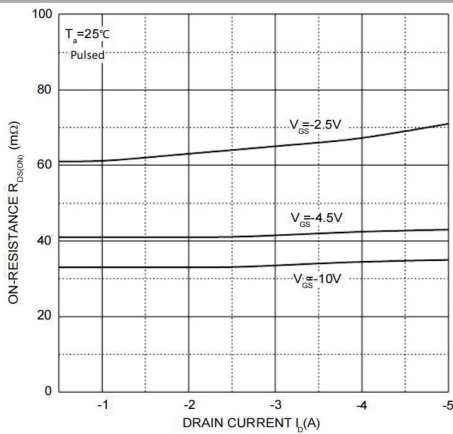


Fig. 4 $R_{DS(ON)} - V_{GS}$

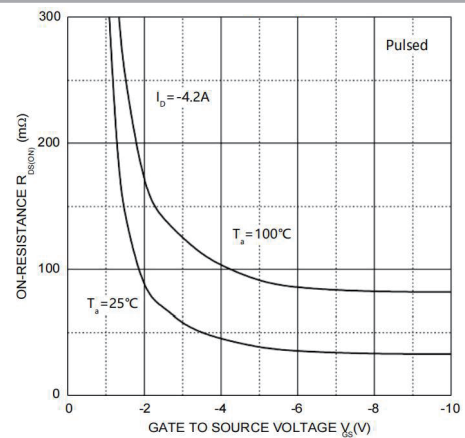


Fig. 5 $I_S - V_{SD}$

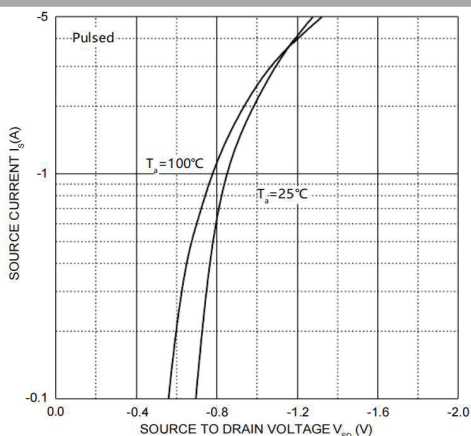
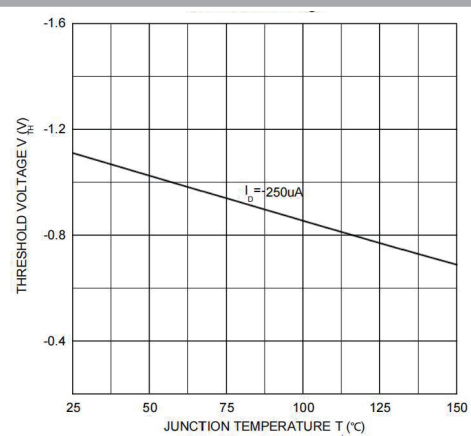


Fig. 6- Threshold Voltage





Test Circuit

Fig.1-1 Switching times test circuit

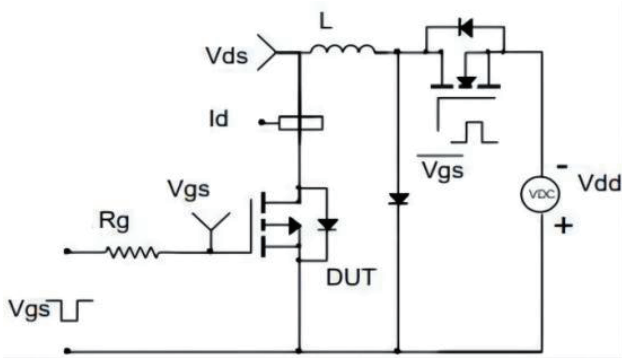


Fig.1-2 Switching Waveform

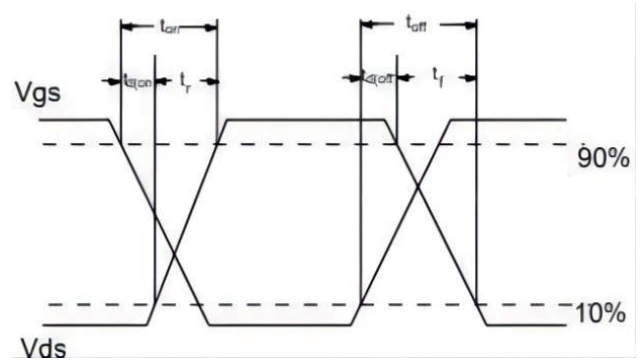


Fig.2-1 Gate charge test circuit

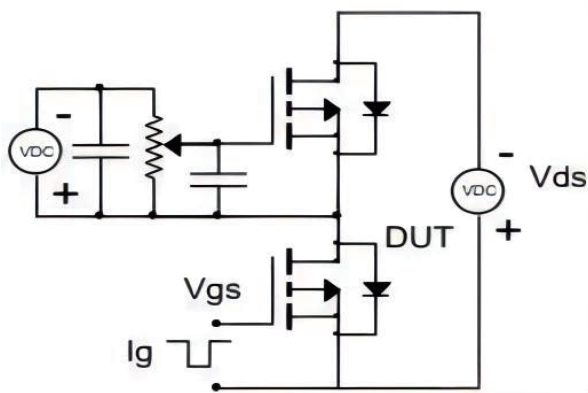


Fig.2-2 Gate charge waveform

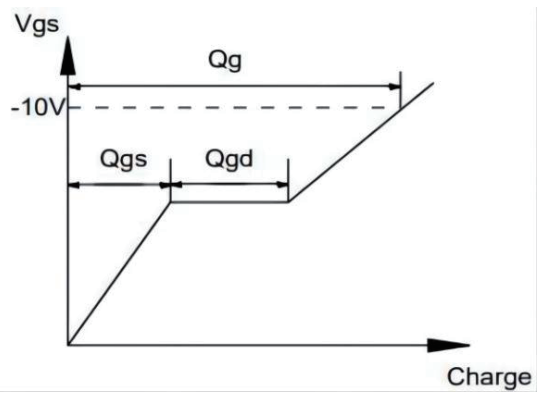


Fig.3-1 Avalanche test circuit

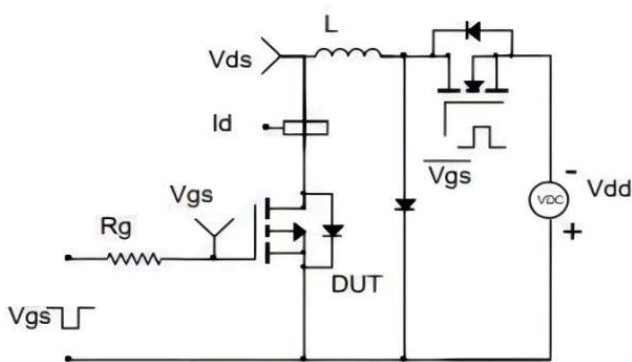
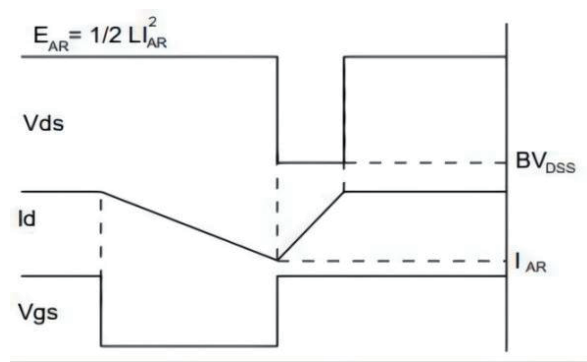
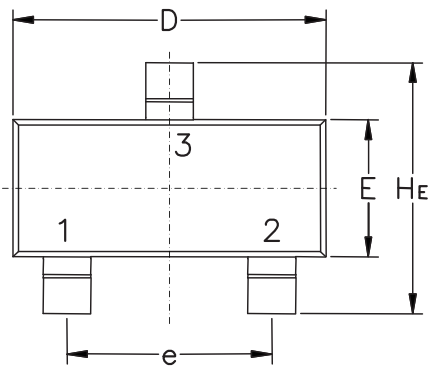


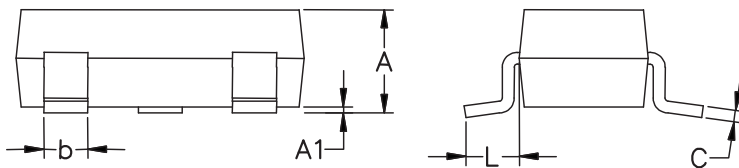
Fig.3-2 Avalanche waveform



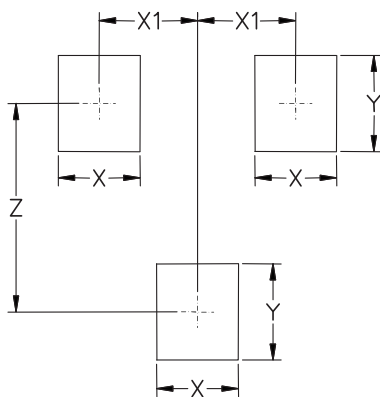
SOT-23 Package Outline & Dimensions (Units: mm / in)



Symbol	Millimeters			Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
C	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104



Soldering Footprint



Symbol	Millimeters	Inches
X	0.80	0.031
X1	0.96	0.037
Y	0.90	0.035
Z	2.00	0.079

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