UN200P32TE

ROHS

P-Channel Enhancement Mode MOSFET

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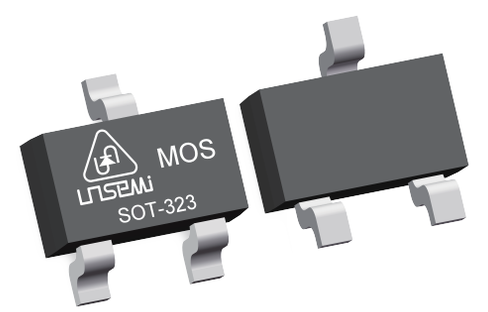
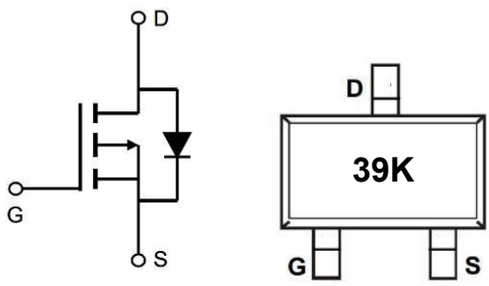
Product Summary

V_{DS}	-20V
I_D	-0.66A
$R_{DS(ON)}$(@V_{GS}=-4.5V I_D=-1.0A)	≤520mΩ
$R_{DS(ON)}$(@V_{GS}=-2.5V I_D=-0.8A)	≤780mΩ

SOT-323





Features

- ◆ Advanced Trench Process Technology
- ◆ Low Threshold Voltage
- ◆ Fast Switching Speed
- ◆ Halogen-Free & Lead-Free
- ◆ ESD Protected up to 2KV (HBM)

Applications

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

Package Marking And Ordering information

Part Number	Package Type	Packaging	Reel(pcs)
UN200P32TE	SOT-323	Tape & Reel	3000

Absolute Maximum Ratings T_A = 25℃ unless otherwise specified

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate- Source Voltage	V_{GS}	±12	V
Continuous drain current	I_D	-0.66	A
Peak Drain Current, Pulsed [1]	I_{DM}	-2.64	A
Power Dissipation [2]	P_{tot}	0.36	W
Operating Junction	T_J	-55~150	℃
Storage Temperature Range	Tstg	-55~150	℃

Thermal Characteristics

Parameter	Symbol	Max	Units
Thermal Resistance from Junction to Ambient [2]	$R_{\theta JA}$	340	℃/W

Note:

1) Pulse width ≤100us, duty cycle ≤1%, limited by Tjmax.

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

Electrical Characteristics at T_A = 25℃ unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = -250μA	-20			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} = -20V			-1.0	μA
Gate Leakage Current	I_{GSS}	V_{GS} = ±10V			±10	μA
Gate-Source Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS} , I_D = -250μA	-0.35		-1.1	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = -4.5V , I_D = -1.0A		450	520	mΩ
		V_{GS} = -2.5V , I_D = -0.8A		650	780	mΩ
Body-Diode PARAMETERS						
Drain-Source Diode Forward Voltage	V_{SD}	I_S = -0.5A, V_{GS} = 0V			-1.2	V
Body Diode Reverse Recovery Time	trr	I_F = -1.25A, di/dt = 100A /μs			10.2	ns
Body Diode Reverse Recovery Charge	Qrr				3.5	nC
DYNAMIC PARAMETERS						
Forward Transconductance	gts	V_{DS} = -10V, I_D = -54A	0.8			S
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = -16V, F = 1MHz		113		pF
Output Capacitance	Coss			15		pF
Reverse Transfer Capacitance	Crss			9		pF
Gate charge total	Qg	V_{DS} = -10V, V_{GS} = -4.5V, I_D = -0.65A		1.24		nC
Gate to Source Charge	Qgs			0.37		nC
Gate to Drain Charge	Qgd			0.27		nC
Turn-On Delay Time	$td_{(ON)}$	V_{GS} = -4.5V, V_{DS} = -10V, I_D = -0.2A, R_G= 10Ω,		9.0		ns
Turn-On Rise Time	tr			5.7		ns
Turn-Off Delay Time	$td_{(OFF)}$			32.6		ns
Turn-Off Fall Time	tf			20.3		ns

Electrical Characteristics Curves

Fig. 1 Output Characteristic

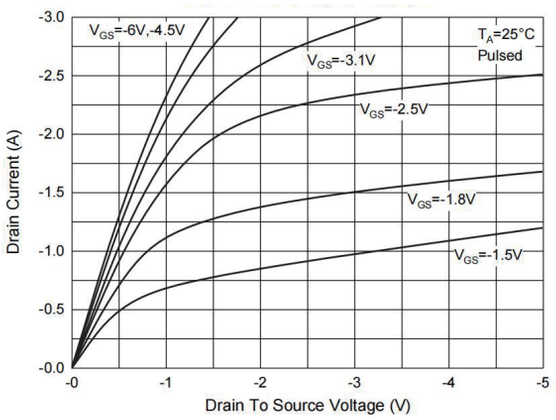


Fig. 2 Transfer Characteristic

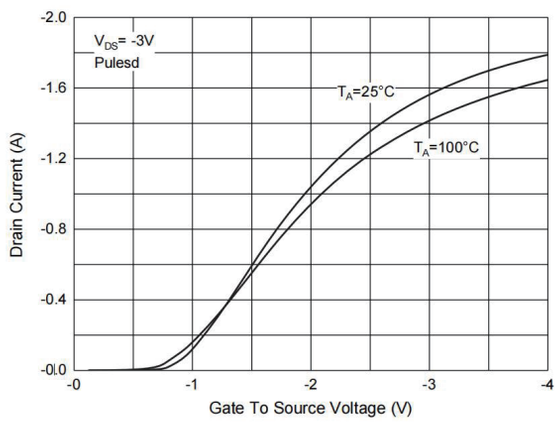


Fig. 3 $R_{DS(ON)}$ — I_D

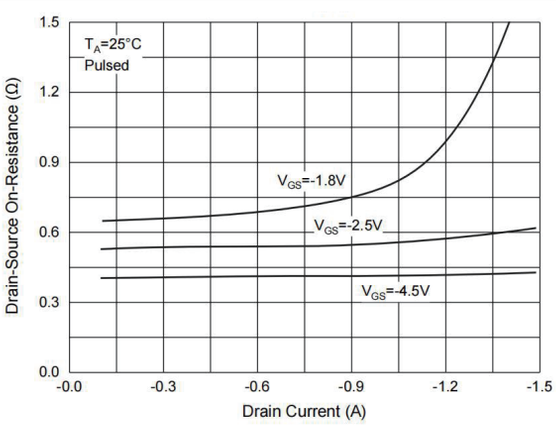


Fig. 4 $R_{DS(ON)}$ — V_{GS}

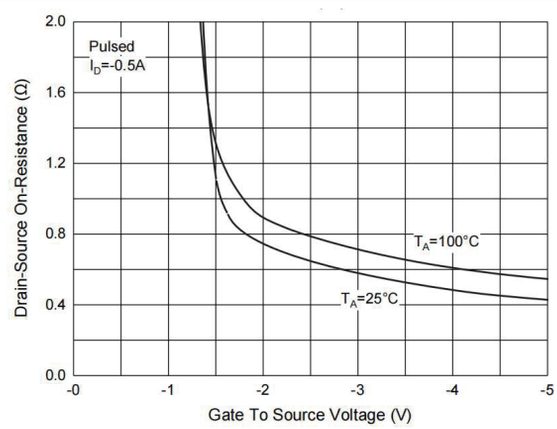


Fig. 5 Is —V_{SD}

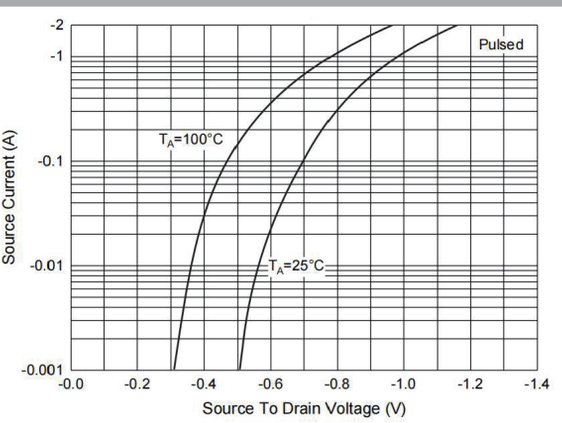
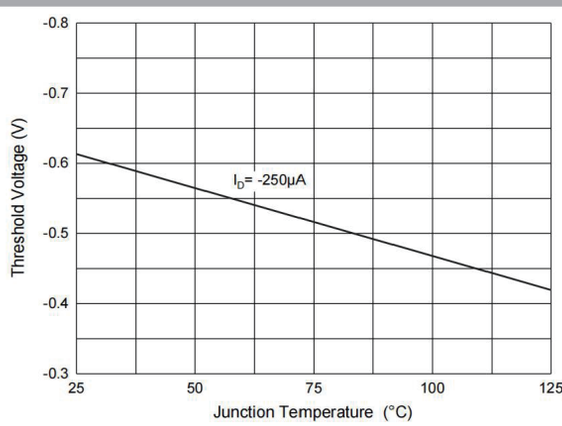


Fig. 6- Threshold Voltage



Test Circuit

Fig.1-1 Switching times test circuit

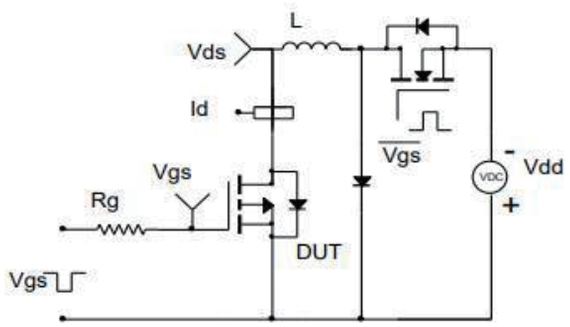


Fig.1-2 Switching Waveform

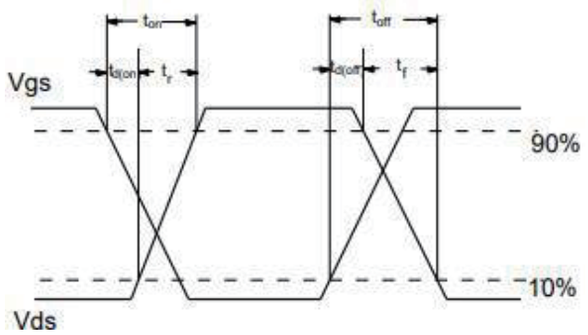


Fig.2-1 Gate charge test circuit

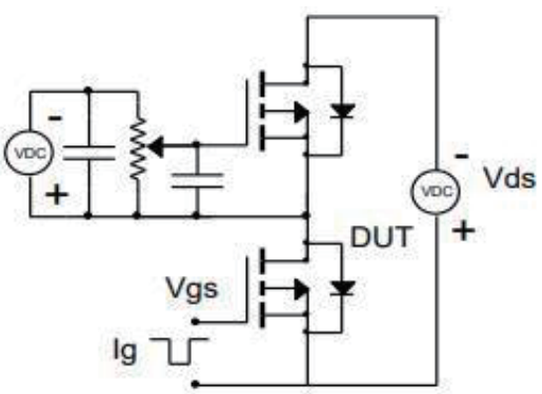


Fig.2-2 Gate charge waveform

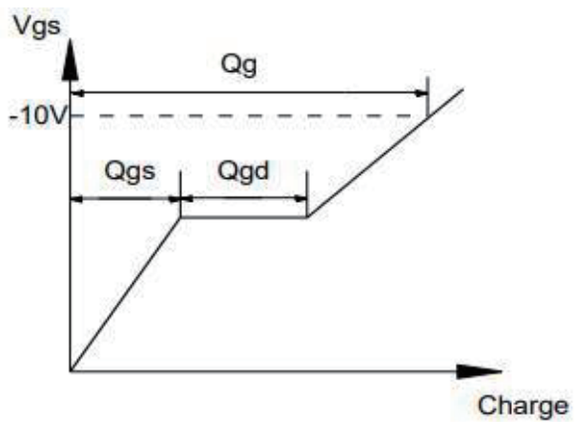


Fig.3-1 Avalanche test circuit

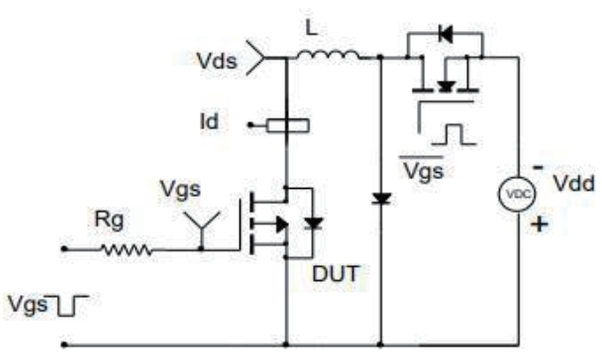
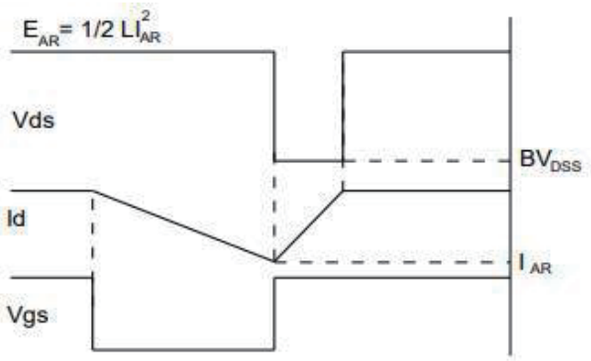
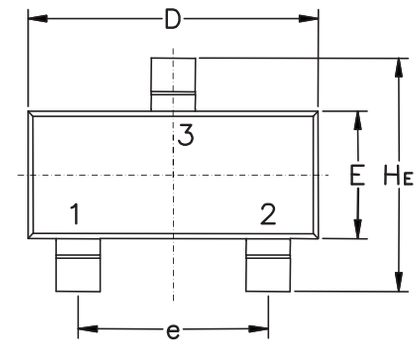
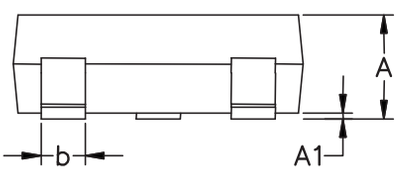


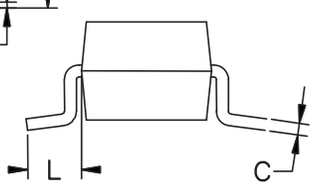
Fig.3-2 Avalanche waveform



SOT-323 Package Outine & Dimensions (Units: mm / in)

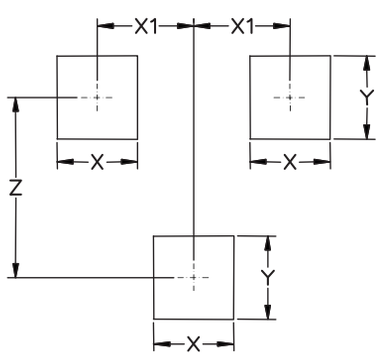






Symbol	Millimeters			Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.80	0.90	1.0	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.70REF			0.028REF		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	0.047	0.051	0.055
e1	0.65BSC			0.026BSC		
L	0.20	0.38	0.56	0.008	0.015	0.022
HE	2.00	2.10	2.40	0.079	0.083	0.095

Soldering Footprint



Symbol	Millimeters	Inches
X	0.70	0.028
X1	0.65	0.025
Y	0.90	0.035
Z	1.90	0.075

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