

UN200P32T

P-Channel Enhancement Mode MOSFET

ROHS



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Product Summary

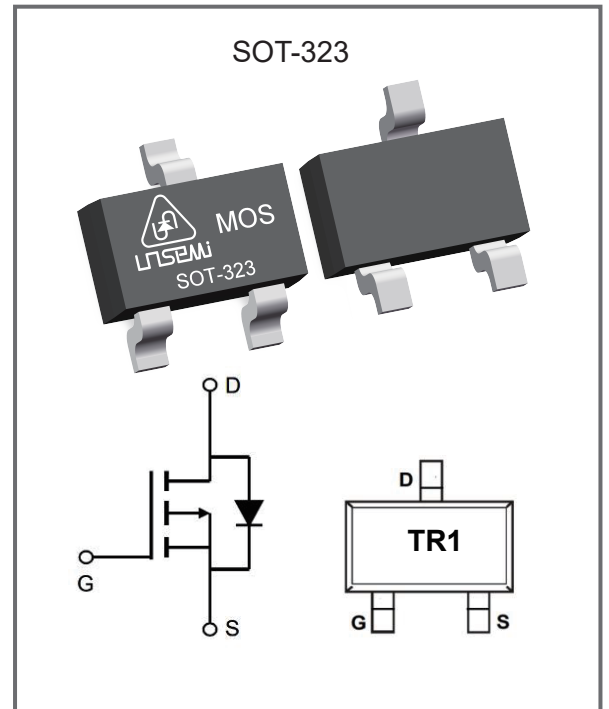
V _{DS}	-20V
I _D	-1.2A
R _{DS(ON)} (@V _{GS} =-4.5V I _D =-2.5A)	≤100mΩ
R _{DS(ON)} (@V _{GS} =-2.5V I _D =-2A)	≤140mΩ

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)
UN200P32T	SOT-323	Tape & Reel	3000

Absolute Maximum Ratings TA = 25°C unless otherwise specified

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V _{DS}	-20	V
Gate- Source Voltage	V _{GS}	±12	V
Continuous drain current T _c = 25°C	I _D	-1.2	A
Peak Drain Current, Pulsed ¹⁾	I _{DM}	-8	A
Power Dissipation T _c = 25°C	P _{tot}	0.2	W
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}	625	°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	-20			V
Drain-Source Leakage Current	IDSS	VDS = -20V			-1.0	μA
Gate Leakage Current	IGSS	VGS = ±12V			±100	nA
Gate-Source Threshold Voltage	VGS(TH)	VGS = VDS , ID = -250μA	-0.4	-0.7	-1.0	V
Drain-Source On-State Resistance	RDS(ON)	VGS = -4.5V , ID = -2.5A		80	100	mΩ
		VGS = -2.5V , ID = -2A		105	140	mΩ
Body-Diode PARAMETERS						
Drain-Source Diode Forward Voltage	VSD	IS = -0.75A, VGS = 0V			1.2	V
Reverse Recovery Time	trr	IF = -1A, di/dt = 100A /μs		5.3		ns
Reverse Recovery Charge	Qrr			1.7		nC
DYNAMIC PARAMETERS						
Gate Resistance	RG	VDS = 0V, VGS = 0V, F = 1MHz		7		Ω
Forward Transconductance	gts	VDS = -10V, ID = -200mA		80		S
Input Capacitance	Ciss	VGS = 0V VDS = -30V F = 1MHz		250		pF
Output Capacitance	Coss			65		pF
Reverse Transfer Capacitance	Crss			30		pF
Gate charge total	Qg	VDS = -48V, VGS = -10V ID = -0.5A		4.9		nC
Gate to Source Charge	Qgs			1.4		nC
Gate to Drain Charge	Qgd			2.5		nC
Turn-On Delay Time	td(ON)	VDD = -30V, IDS = -0.5 A RG = 3.3Ω, VGEN = -10V		6		ns
Turn-On Rise Time	tr			15		ns
Turn-Off Delay Time	td(OFF)			29		ns
Turn-Off Fall Time	tf			9		ns

Electrical Characteristics Curves

Fig. 1 Typical Output Characteristic

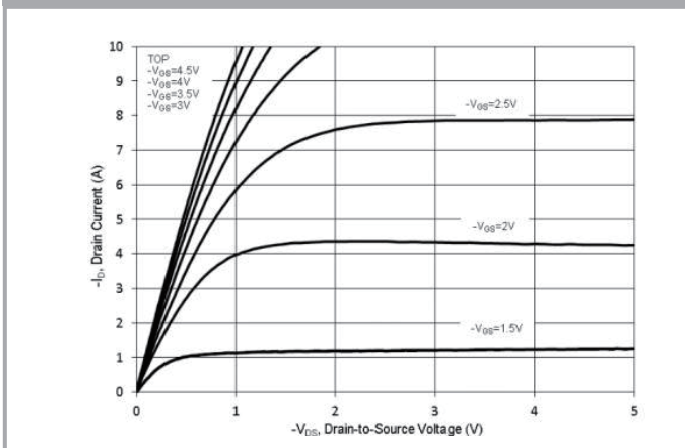


Fig. 2 Typical Transfer Characteristic

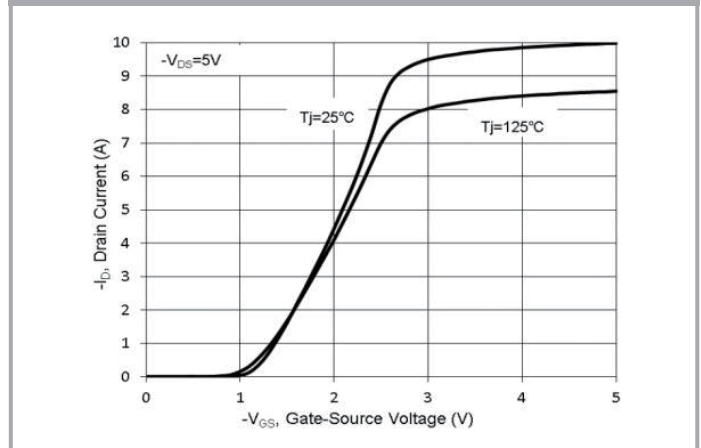


Figure 3: On-Resistance vs. Gate Voltage

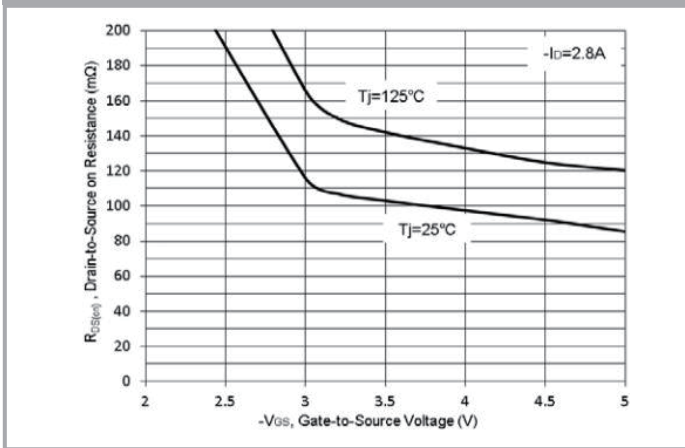


Figure 4: On-Resistance vs. Tj

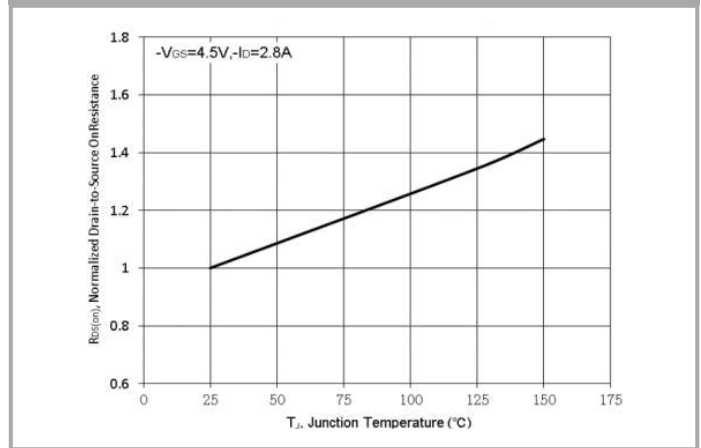


Fig. 5 Drain Current vs. on-Resistance

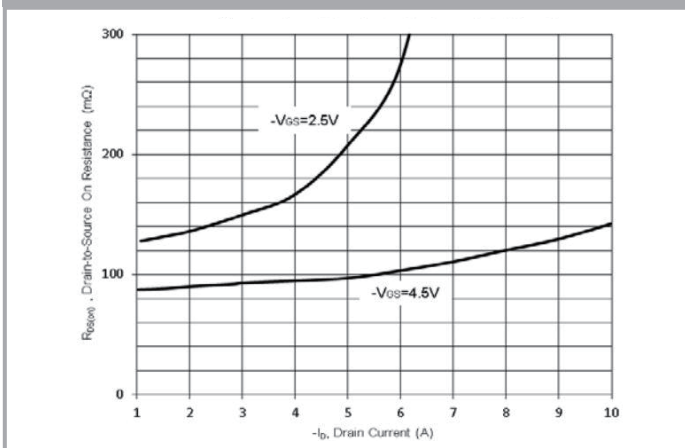
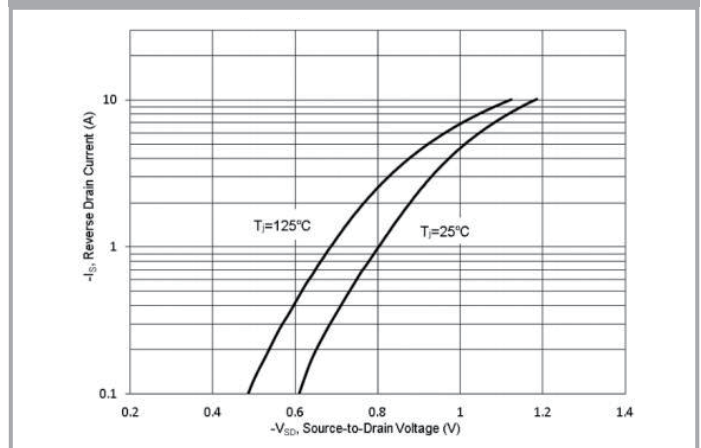


Fig. 6 Typical Forward Characteristic



Electrical Characteristics Curves

Fig. 7 $V_{(BR)DSS}$ vs. Junction Temperature

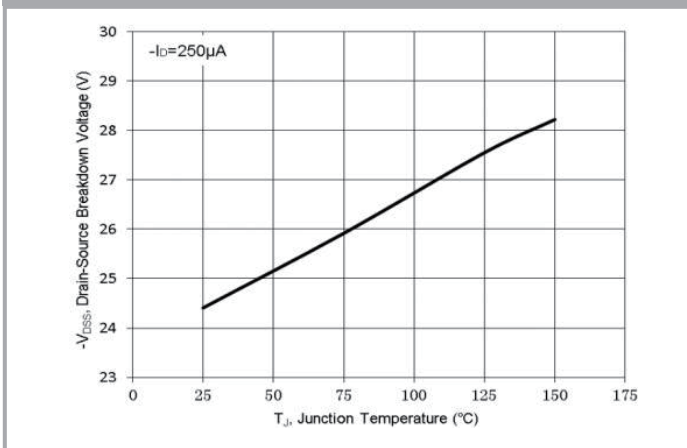


Fig. 8 Gate Threshold Variation vs. T_J

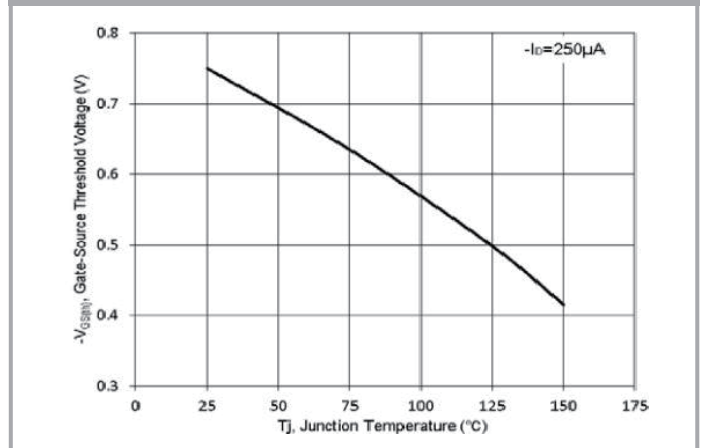


Fig. 9 Typical Junction Capacitance

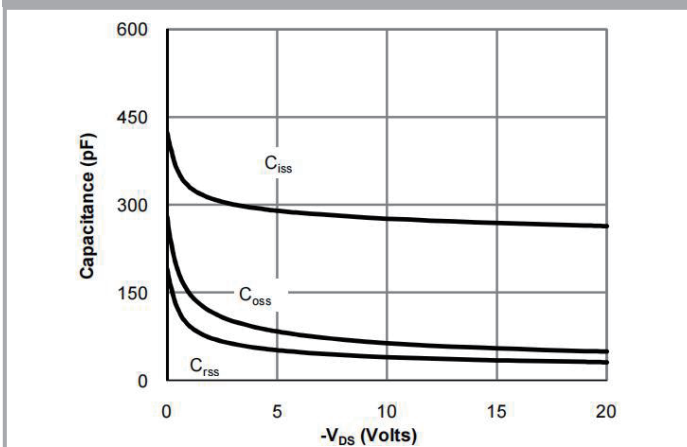


Fig. 10 Gate Charge

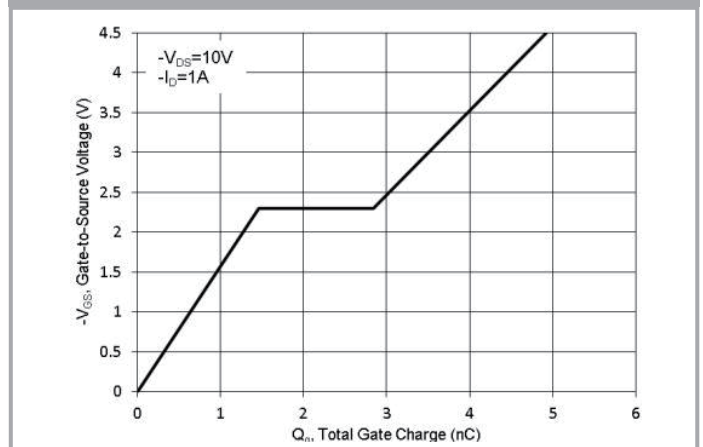


Fig. 11 Drain-Source Leakage Current

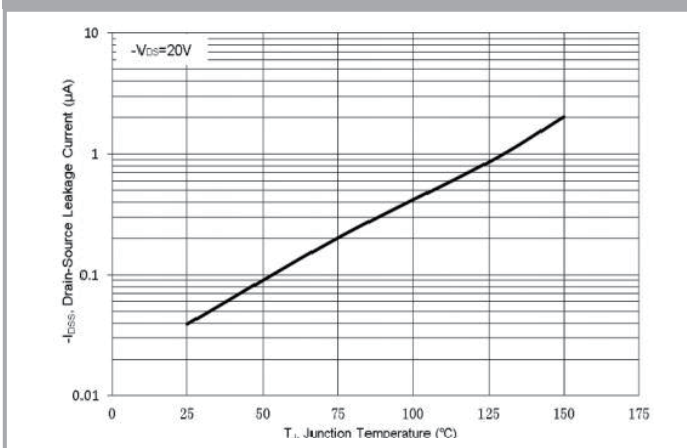
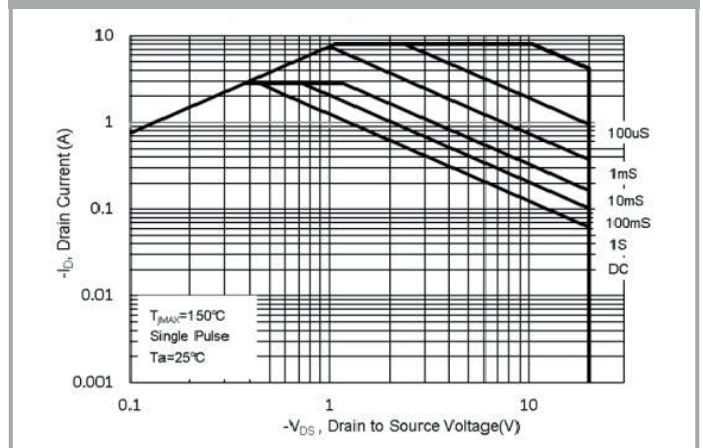


Fig. 12 Safe Operation Area



Test Circuit

Fig.1-1 Switching times test circuit

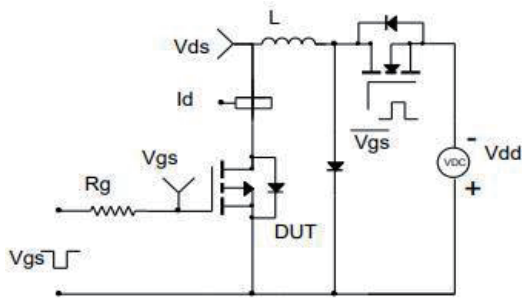


Fig.1-2 Switching Waveform

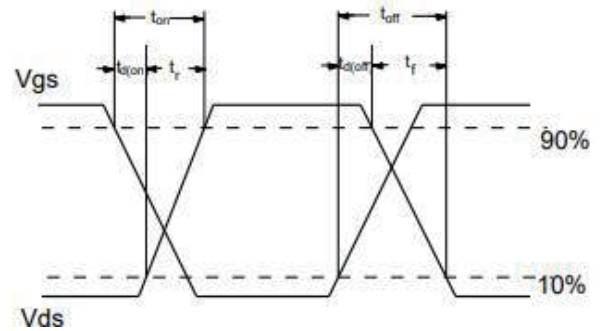


Fig.2-1 Gate charge test circuit

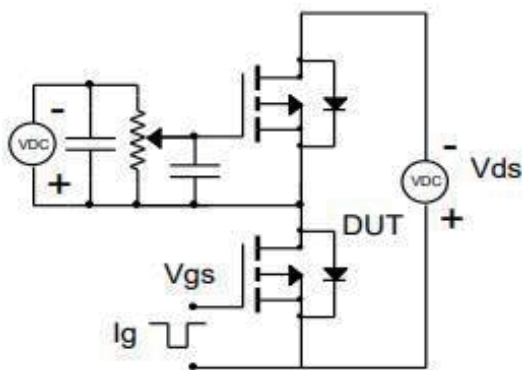


Fig.2-2 Gate charge waveform

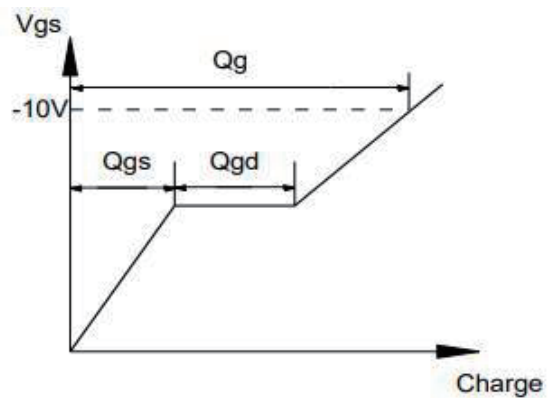


Fig.3-1 Avalanche test circuit

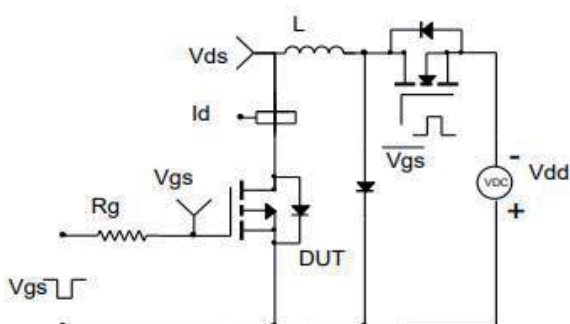
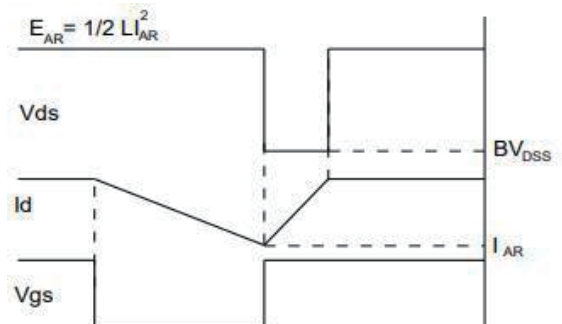
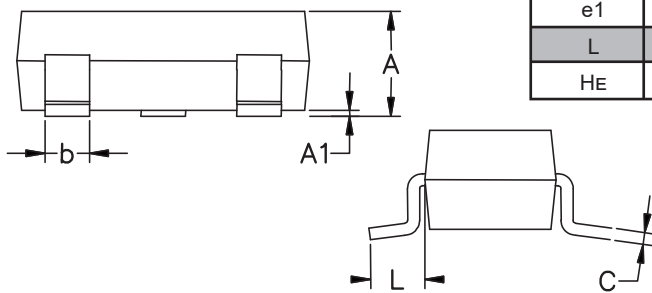
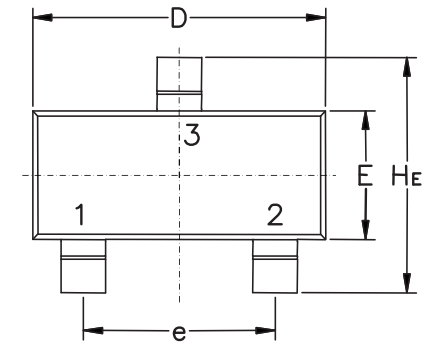


Fig.3-2 Avalanche waveform

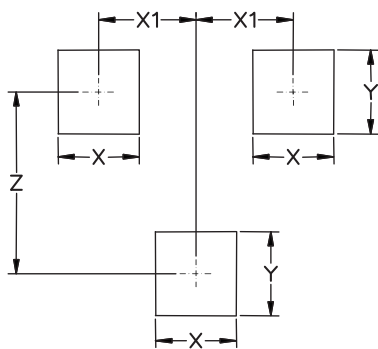


SOT-323 Package Outline & Dimensions (Units: mm / in)



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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