

UN200N52TE

N-Channel Enhancement Mode MOSFET

ROHS

Product Summary

V _{DS}	20V
I _D	0.5A
R _{DS(ON)} (@V _{GS} =4.5V I _D =0.65A)	≤380mΩ
R _{DS(ON)} (@V _{GS} =2.5V I _D =0.55A)	≤450mΩ
R _{DS(ON)} (@V _{GS} =1.8V I _D =0.45A)	≤800mΩ

Features

- ◆ Advanced Trench Process Technology
- ◆ Low Threshold Voltage
- ◆ Fast Switching Speed
- ◆ Halogen-Free & Lead-Free
- ◆ N-Channel Switch with Low R_{DS(ON)}

Applications

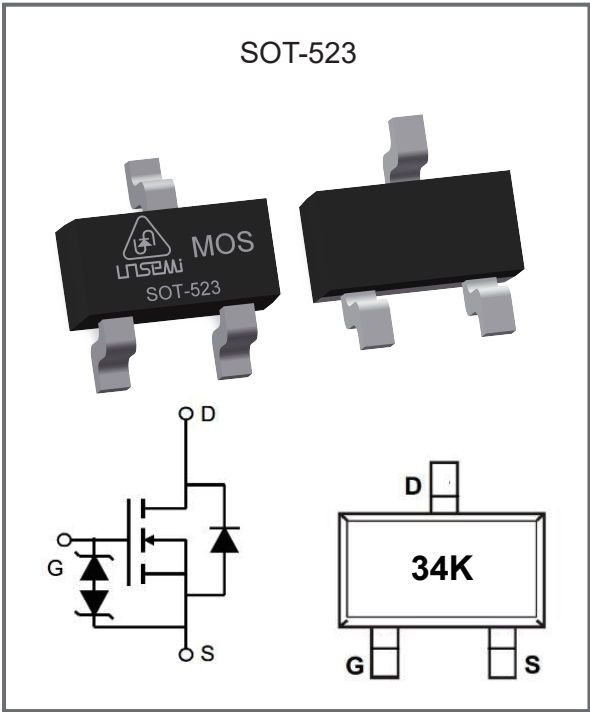
- ◆ Load Switch for Portable Devices
- ◆ Voltage controlled small signal switch

Package Marking And Ordering information

Part Number	Package Type	Packaging	Reel(pcs)
UN200N52TE	SOT-523	Tape & Reel	3000



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Absolute Maximum Ratings $T_A = 25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	20	V
Gate- Source Voltage	V_{GS}	± 12	V
Continuous drain current	I_D	0.5	A
Peak Drain Current, Pulsed ¹⁾	I_{DM}	3.0	A
Power Dissipation ²⁾	P_{tot}	0.2	W
Operating Junction	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55~150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Max	Units
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	633	$^{\circ}\text{C/W}$

Note :

1) Pulse width $\leq 100\mu\text{s}$, duty cycle $\leq 1\%$, 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 = ±10V			±10	μA
Gate-Source Threshold Voltage	VGS(TH)	VGS = VDS , ID = 250μA	0.35		1.1	V
Drain-Source On-State Resistance	RDS(ON)	VGS = 4.5V , ID = 0.65A		190	380	mΩ
		VGS = 2.5V , ID = 0.55A		260	450	mΩ
		VGS = 1.8V , ID = 0.45A		390	800	mΩ
Body-Diode PARAMETERS						
Drain-Source Diode Forward Voltage	VDS	IF = 150mA, VGS = 0V			1.2	V
Body Diode Reverse Recovery Time	trr	IF = 3.6A, di/dt = 100A /μs		7.5		ns
Body Diode Reverse Recovery Charge	Qrr			2.5		nC
DYNAMIC PARAMETERS						
Forward Transconductance	gts	VDS = 10V, ID = 800mA	1.0			S
Input Capacitance	Ciss	VGS = 0V VDS = 16V F = 1MHz		79		pF
Output Capacitance	Coss			13		pF
Reverse Transfer Capacitance	Crss			9		pF
Gate charge total	Qg	VDS = 10V, VGS = 4.5V ID = 0.9A		1		nC
Gate to Source Charge	Qgs			0.28		nC
Gate to Drain Charge	Qgd			0.22		nC
Turn-On Delay Time	td(ON)	VGS = 4.5V, VDS = 10V, ID = 0.5A, RG = 10Ω		6.7		ns
Turn-On Rise Time	tr			4.8		ns
Turn-Off Delay Time	td(OFF)			17.3		ns
Turn-Off Fall Time	tf			7.4		ns

Electrical Characteristics Curves

Fig. 1 Output Characteristic

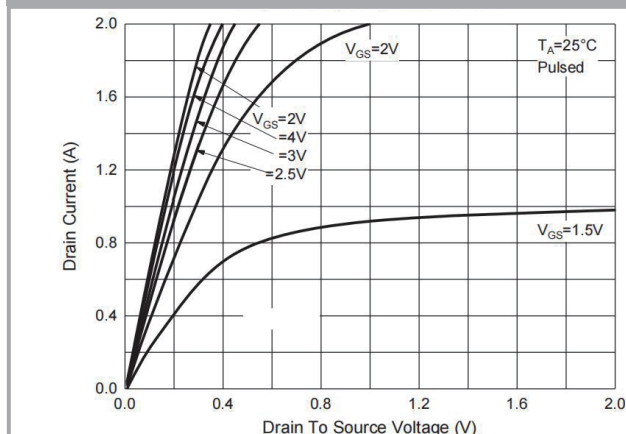


Fig. 2 Transfer Characteristic

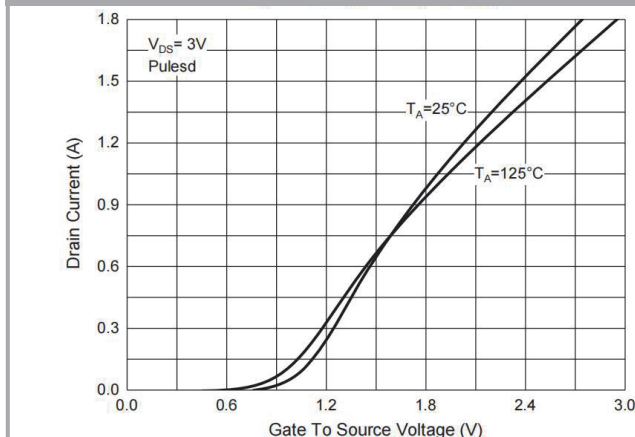


Fig. 3 $R_{DS(ON)} - I_D$

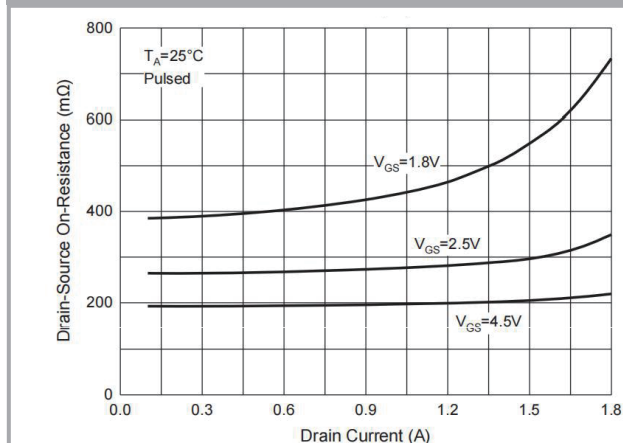


Fig. 4 $R_{DS(ON)} - V_{GS}$

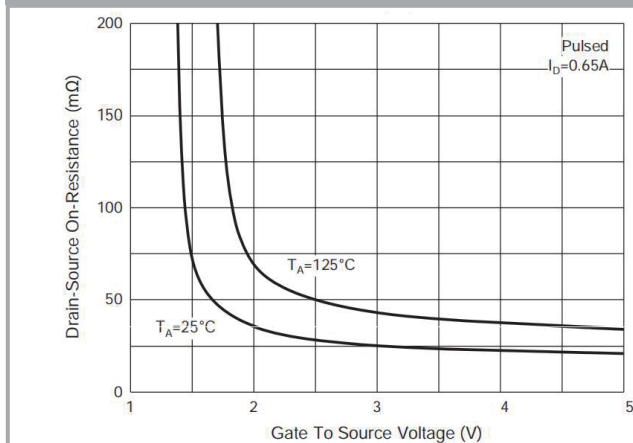


Fig. 5 $I_S - V_{SD}$

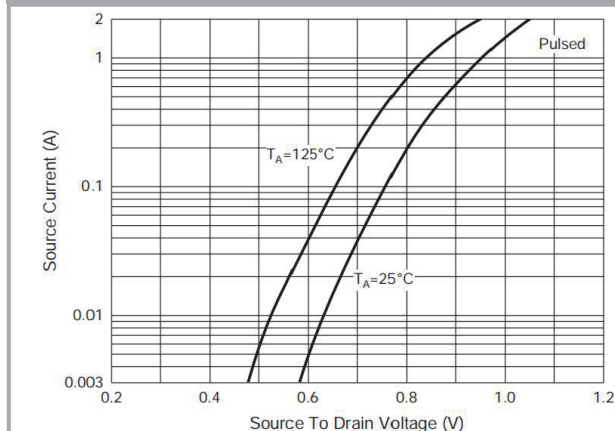
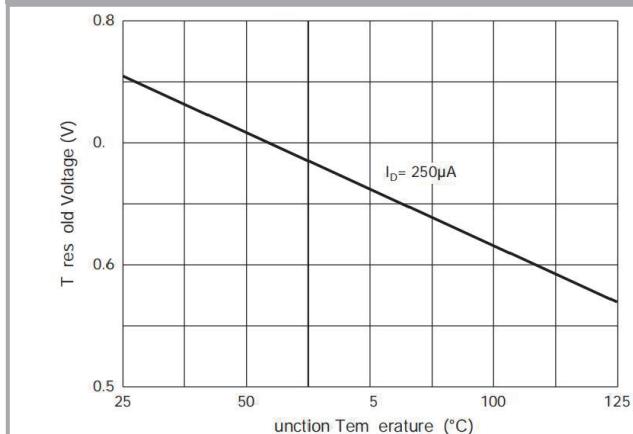


Fig. 6- Threshold Voltage



Test Circuit

Fig.1-1 Switching times test circuit

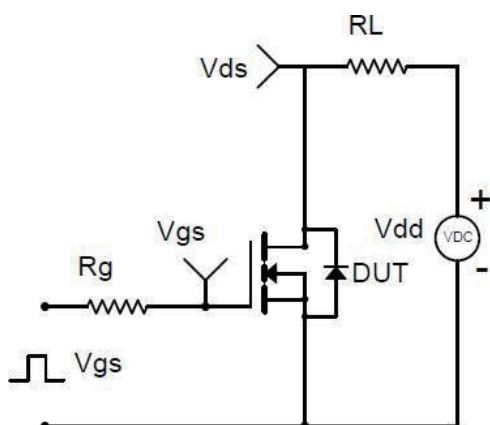


Fig.1-2 Switching Waveform

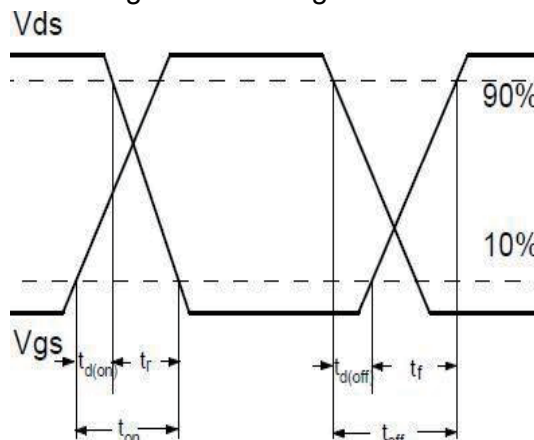


Fig.2-1 Gate charge test circuit

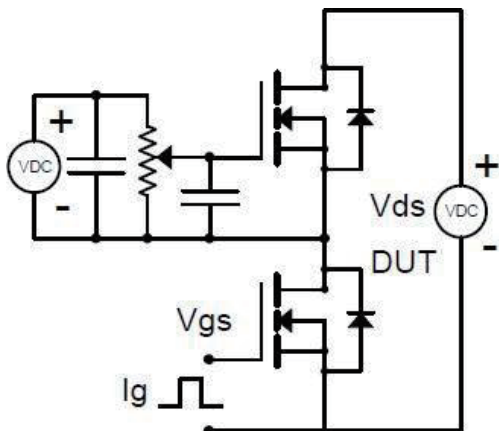


Fig.2-2 Gate charge waveform

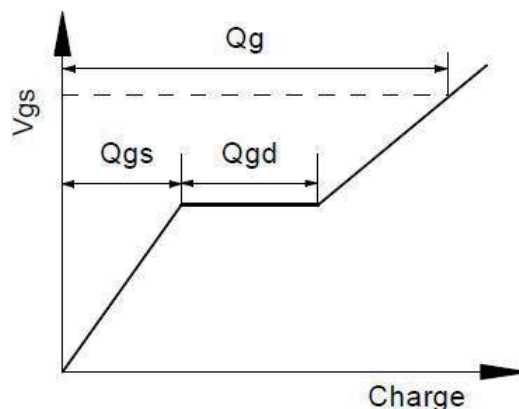


Fig.3-1 Avalanche test circuit

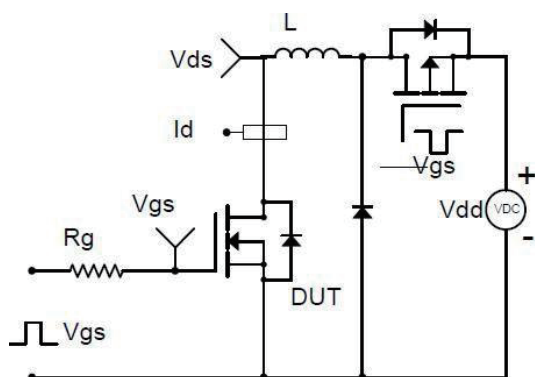
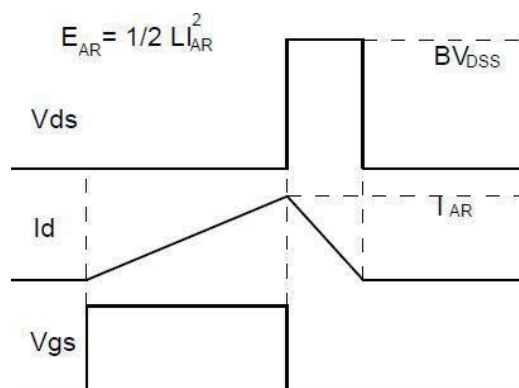
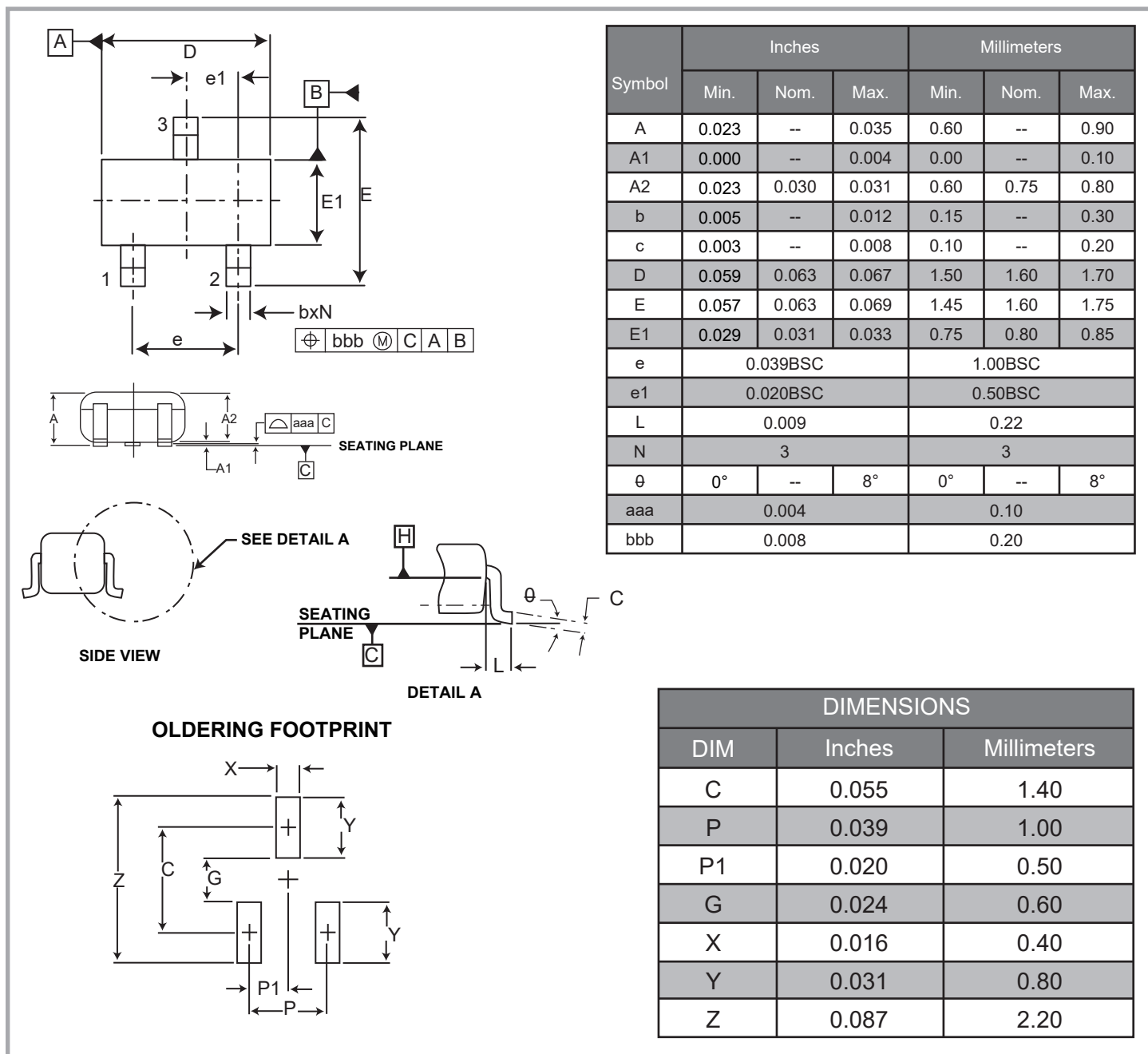


Fig.3-2 Avalanche waveform



SOT-523 Package Outline & Dimensions (Units: mm / in)



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