

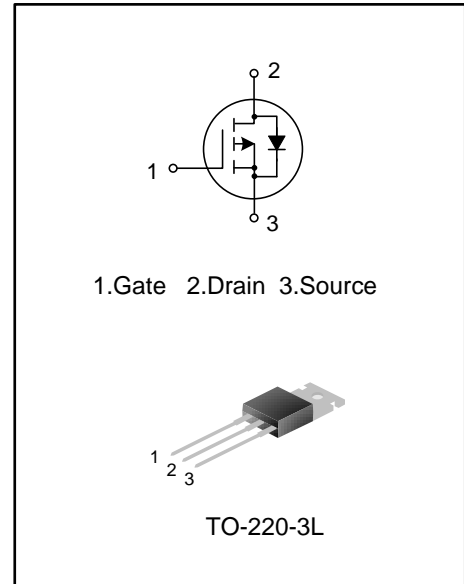
-12A, -55V P-CHANNEL MOSFET

GENERAL DESCRIPTION

SVD9Z24NT is a P-channel enhancement mode power MOS field effect transistor which is produced using Silan planar VDMOS process. The improved process and cell structure have been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. This device is widely used in push-pull amplifier, high-side switching circuit, CMOS power amplifier.

FEATURES

- ◆ -12A, -55V, $R_{DS(on)(typ.)} < 175m\Omega @ V_{GS} = -10V$
- ◆ P channel
- ◆ Low gate charge
- ◆ Low Crss
- ◆ Fast switching
- ◆ Improved dv/dt capability



ORDERING INFORMATION

Part No.	Package	Marking	Harzardous Substance Control	Packing Type
SVD9Z24NT	TO-220-3L	SVD9Z24N	Pb free	Tube

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

Characteristics	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	-55	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current	I _D	T _C =25°C	-12
		T _C =100°C	-8.5
Drain Current Pulsed	I _{DM}	-48	A
Power Dissipation(T _C =25°C) -Derate above 25°C	P _D	45	W
		0.36	W/°C
Single Pulsed Avalanche Energy (Note 1)	E _{AS}	106	mJ
Operation Junction Temperature Range	T _J	-55~+175	°C
Storage Temperature Range	T _{stg}	-55~+175	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Ratings	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.78	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^{\circ}C/W$

ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}C$ UNLESS OTHERWISE NOTED)

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain -Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-55	--	--	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-55V, V_{GS}=0V$	--	--	-25	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-2.0	--	-4.0	V
Static Drain-Source On State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-7.2A$	--	--	175	m Ω
Input Capacitance	C_{iss}	$V_{DS}=-25V, V_{GS}=0V, f=1.0MHz$	--	447	--	pF
Output Capacitance	C_{oss}		--	135	--	
Reverse Transfer Capacitance	C_{rss}		--	30	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-28V, V_{GS}=-10V, R_G=24\Omega, I_D=-7.2A$ (Note 2,3)	--	8.47	--	ns
Turn-on Rise Time	t_r		--	41.2	--	
Turn-off Delay Time	$t_{d(off)}$		--	30	--	
Turn-off Fall Time	t_f		--	20.2	--	
Total Gate Charge	Q_g	$V_{DS}=-44V, V_{GS}=-10V, I_D=-7.2A$ (Note 2,3)	--	13	--	nC
Gate-Source Charge	Q_{gs}		--	3.25	--	
Gate-Drain Charge	Q_{gd}		--	5.3	--	

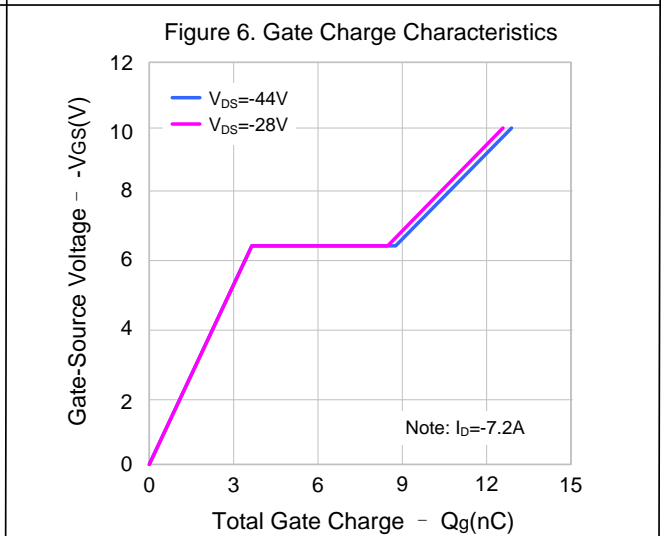
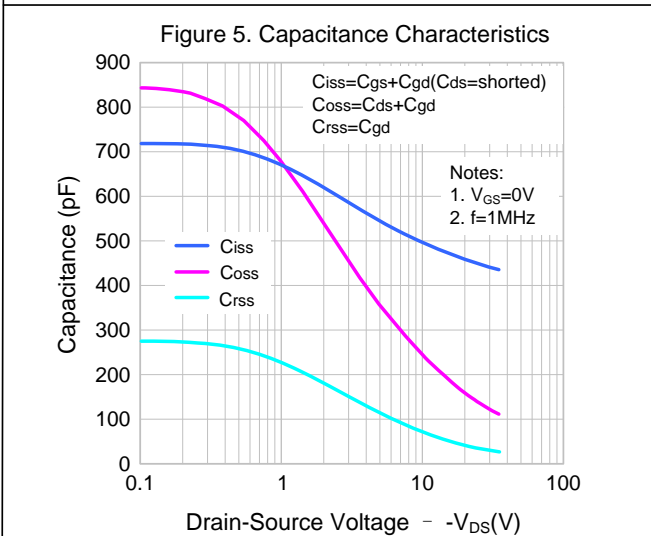
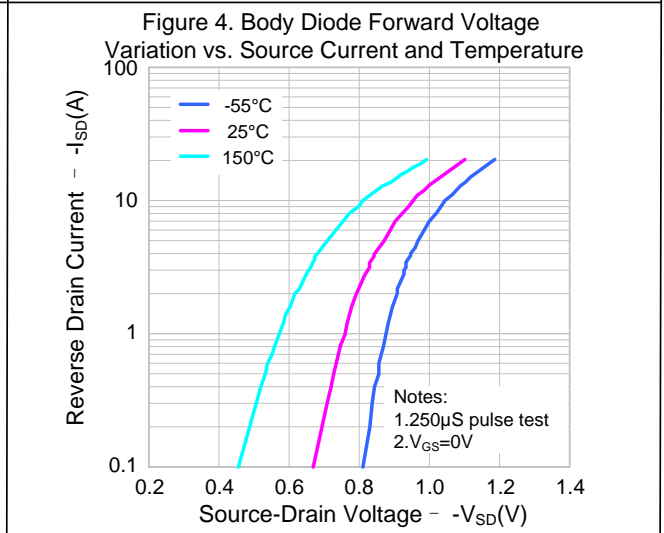
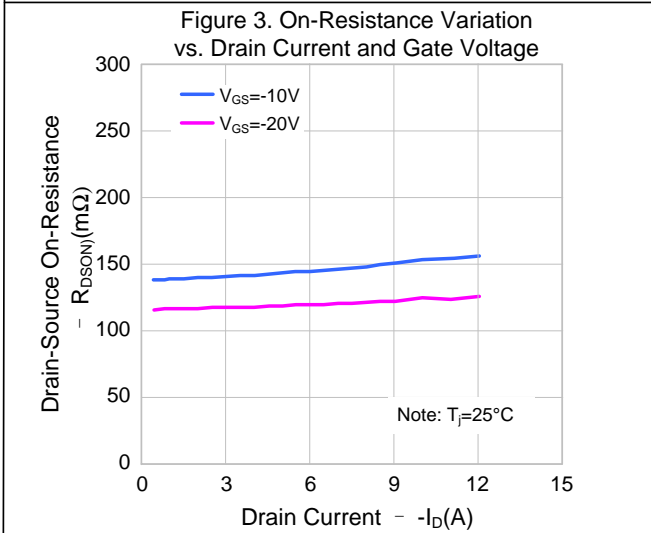
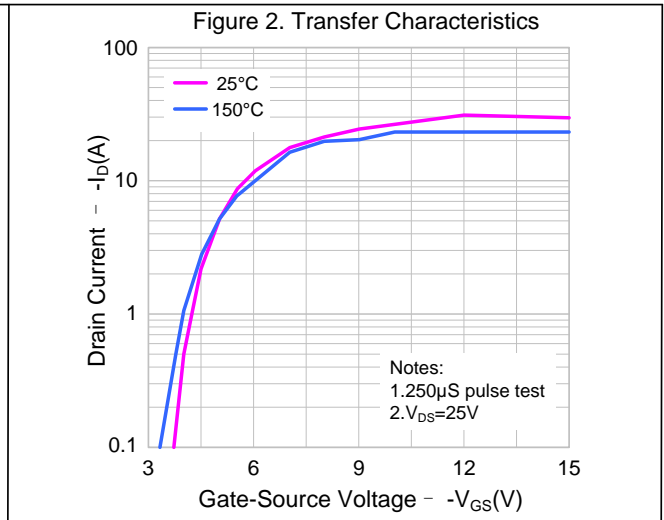
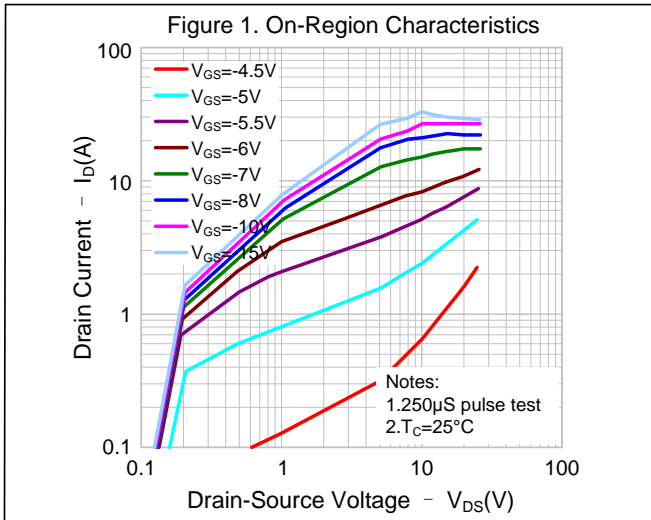
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	Integral Reverse P-N Junction Diode in the MOSFET	--	--	-12	A
Pulsed Source Current	I_{SM}		--	--	-48	
Diode Forward Voltage	V_{SD}	$I_S=-7.2A, V_{GS}=0V$	--	--	-1.6	V
Reverse Recovery Time	T_{rr}	$I_S=-7.2A, V_{GS}=0V, dl/dt=100A/\mu s$ (Note 2)	--	50.5	--	ns
Reverse Recovery Charge	Q_{rr}		--	0.11	--	μC

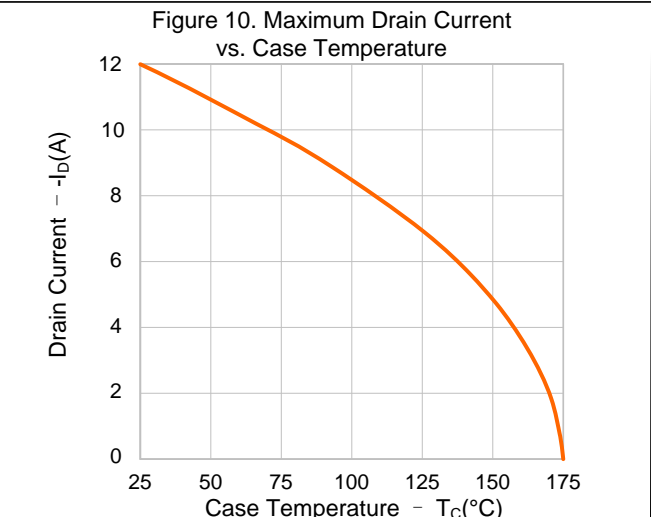
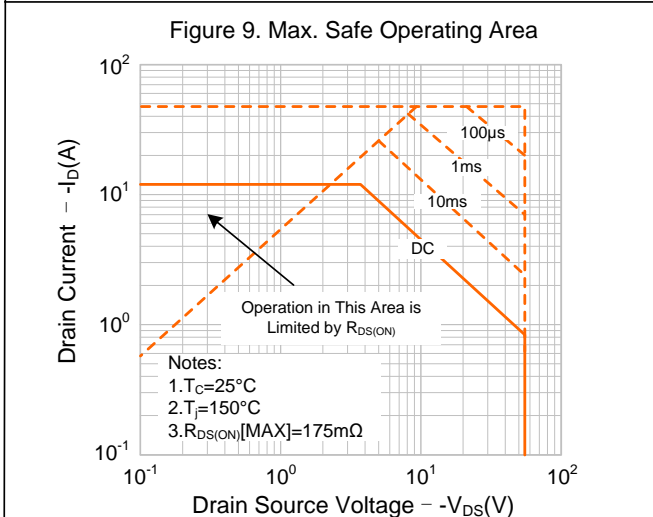
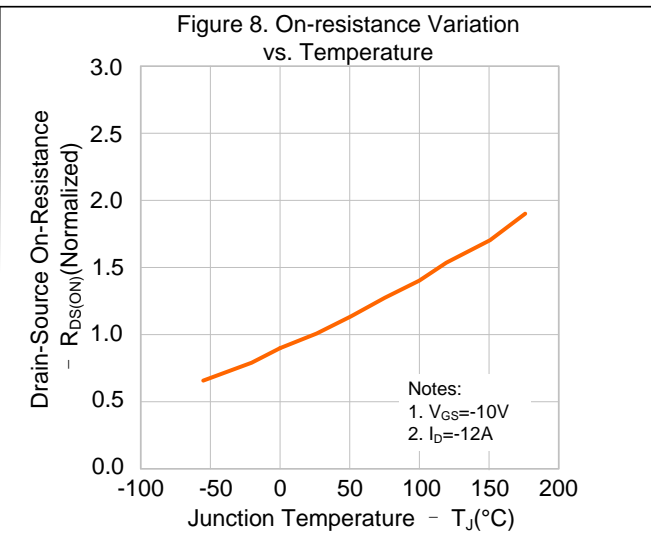
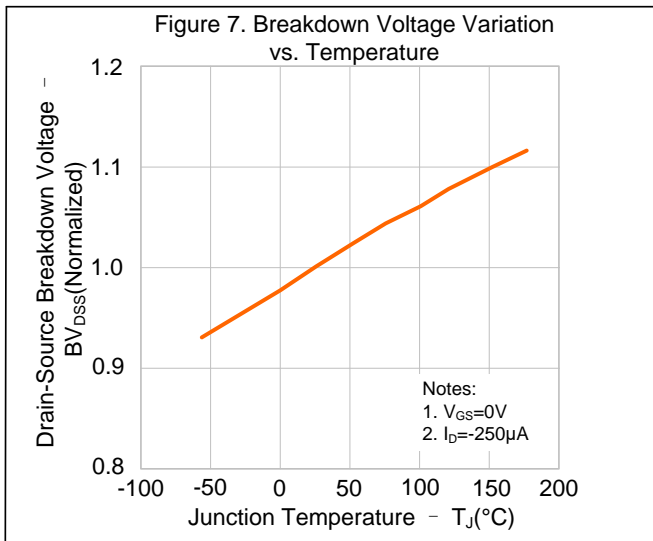
Notes:

- $L=3.7mH, I_{AS}=-8A, R_G=25\Omega$, starting $T_J=25^{\circ}C$;
- Pulse Test: Pulse width $\leq 300\mu s$, Duty cycles $\leq 2\%$;
- Essentially independent of operating temperature.

TYPICAL CHARACTERISTICS

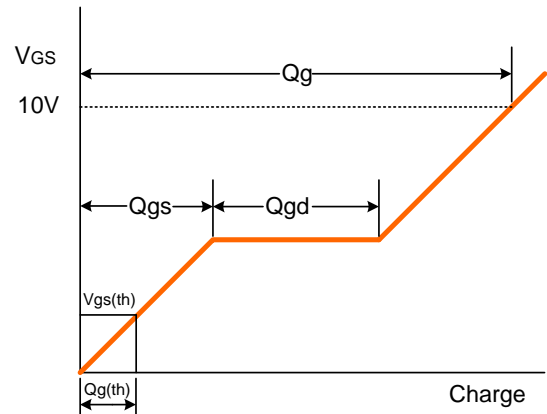
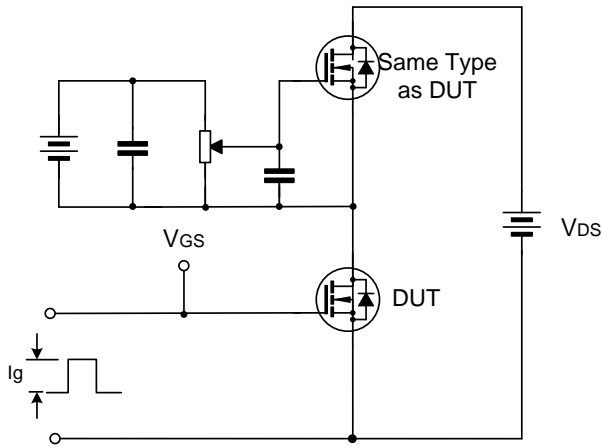


TYPICAL CHARACTERISTICS (CONTINUED)

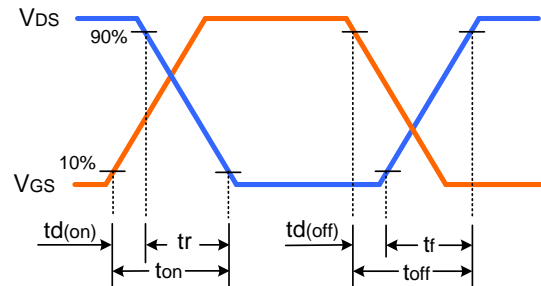
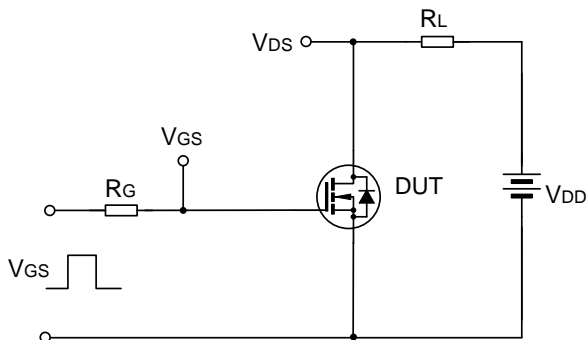


TYPICAL TEST CIRCUIT

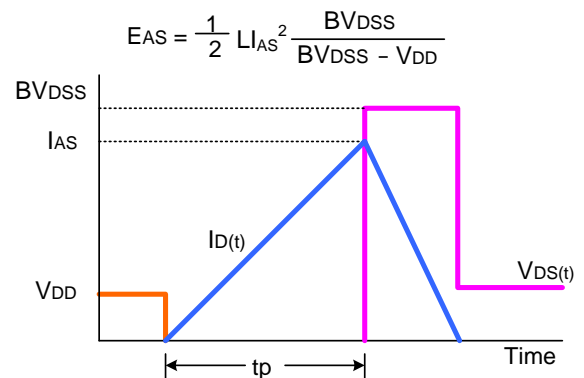
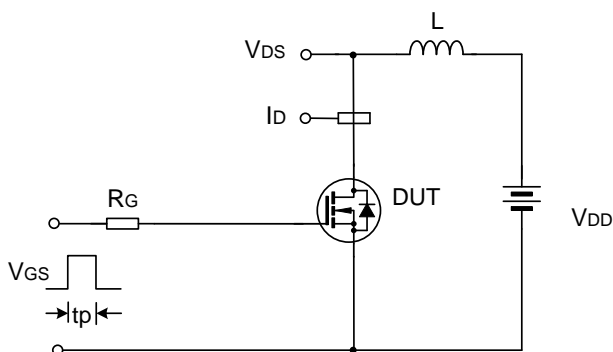
Gate Charge Test Circuit & Waveform



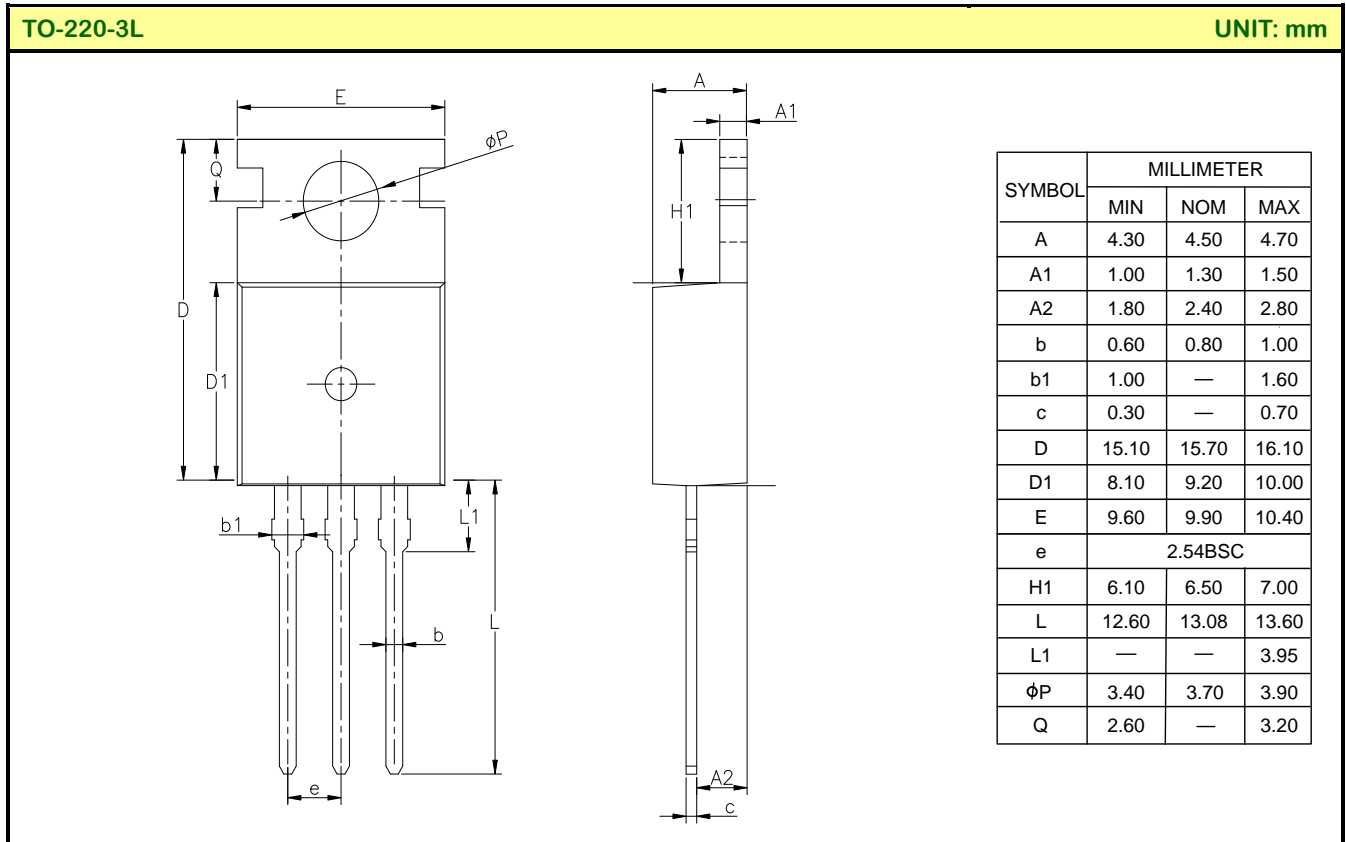
Resistive Switching Test Circuit & Waveform



Unclamped Inductive Switching Test Circuit & Waveform



PACKAGE OUTLINE



Important notice :

- The instructions are subject to change without notice! Customers should obtain the latest relevant information before placing orders and should verify that such information is complete and current.
- Our products are consumer electronic products, and / or civil electronic products.
- When using our products, please do not exceed the maximum rating of the products, otherwise the reliability of the whole machine will be affected. There is a certain possibility of failure or malfunction of any semiconductor product under specific conditions. The buyer is responsible for complying with safety standards and taking safety measures when using our products for system design, sample and whole machine manufacturing, so as to avoid potential failure risk that may cause personal injury or property loss.
- It is strongly recommended to identify the trademark when buying our products. Please contact us if there is any question.
- When exporting, using and reselling our products, buyer must comply with the international export control laws and regulations of China, the United States, the United Kingdom, the European Union and other countries & regions.
- Product promotion is endless, our company will wholeheartedly provide customers with better products!
- Website: <http://www.silan.com.cn>

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Rev.: 1.4

Revision History:

1. Modify marketing
 2. Modify the template of datasheet
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Rev.: 1.3

Revision History:

1. Modify V_{GS} to -10V
 2. Modify the Electrical diagram
 3. Modify Fig 1
 4. Modify TYPICAL TEST CIRCUIT (take the Chinese version as the standard)
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Rev.: 1.2

Revision History:

1. Modify the
 2. Modify the source-drain diode ratings and characteristics
 3. Modify the electrical characteristics
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Rev.: 1.1

Revision History:

1. Modify the package information of TO-220-3L
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Rev.: 1.0

Revision History:

1. First release
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