

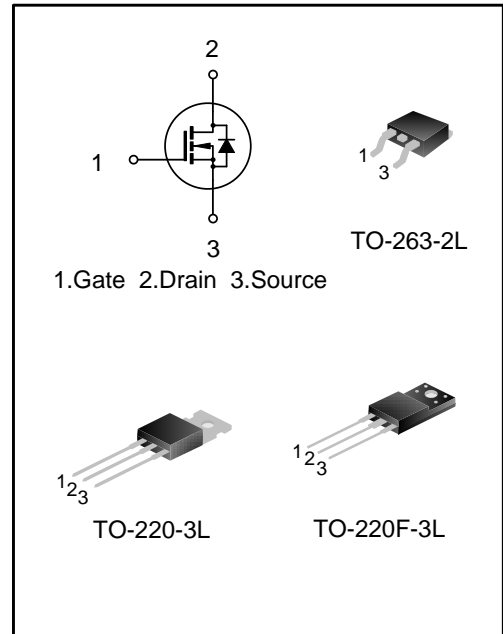
110A, 55V N-CHANNEL MOSFET

DESCRIPTION

SVD3205T/F/S is an N-channel enhancement mode power MOS field effect transistor which is produced using Silan proprietary flat low-voltage structure VDMOS technology. 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. It can be widely used in electronic ballast, low-power SWPS.

FEATURES

- ◆ 110A, 55V, $R_{DS(on)(typ.)}=7.5m\Omega@V_{GS}=10V$
- ◆ Low gate charge
- ◆ Low C_{rss}
- ◆ Fast switching
- ◆ Improved dv/dt capability



ORDERING INFORMATION

Part No.	Package	Marking	Hazardous Substance Control	Packing Type
SVD3205T	TO-220-3L	SVD3205T	Pb free	Tube
SVD3205F	TO-220F-3L	SVD3205F	Pb free	Tube
SVD3205S	TO-263-2L	SVD3205S	Halogen free	Tube
SVD3205STR	TO-263-2L	SVD3205S	Halogen free	Tape&Reel

ABSOLUTE MAXIMUM RATINGS (UNLESS OTHERWISE NOTED, $T_A=25^{\circ}C$)

Characteristics	Symbol	Ratings			Unit
		SVD3205T	SVD3205F	SVD3205S	
Drain-Source Voltage	V_{DS}	55			V
Gate-Source Voltage	V_{GS}	± 20			V
Drain Current	$T_C=25^{\circ}C$	110			A
	$T_C=100^{\circ}C$	70			
Drain Pulsed Current	I_{DM}	390			A
Power Dissipation ($T_C=25^{\circ}C$) -Derate above $25^{\circ}C$	P_D	200	58	190	W
		1.6	0.46	1.52	
Single Pulsed Avalanche Energy (Note 1)	E_{AS}	909			MJ
Operation Junction Temperature Range	T_J	-55~+150			$^{\circ}C$
Storage Temperature Range	T_{stg}	-55~+150			$^{\circ}C$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Ratings			Unit
		SVD3205T	SVD3205F	SVD3205S	
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.63	2.16	0.66	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	62.5	62.5	°C/W

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

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}	$V_{DS}=55V, V_{GS}=0V$	--	--	1.0	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	--	3.5	V
Static Drain- Source On State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=62A$	--	7.5	8.0	m Ω
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz$	--	2365	--	pF
Output Capacitance	C_{oss}		--	740	--	
Reverse Transfer Capacitance	C_{rss}		--	169	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=28V, V_{GS}=10V, I_D=62A$ (Notes 2,3)	--	28	--	ns
Turn-on Rise Time	t_r		--	110	--	
Turn-off Delay Time	$t_{d(off)}$		--	159	--	
Turn-off Fall Time	t_f		--	138	--	
Total Gate Charge	Q_g	$V_{DS}=44V, V_{GS}=10V, I_D=62A$ (Notes 2,3)	--	67	--	nC
Gate-Source Charge	Q_{gs}		--	13	--	
Gate-Drain Charge	Q_{gd}		--	35	--	

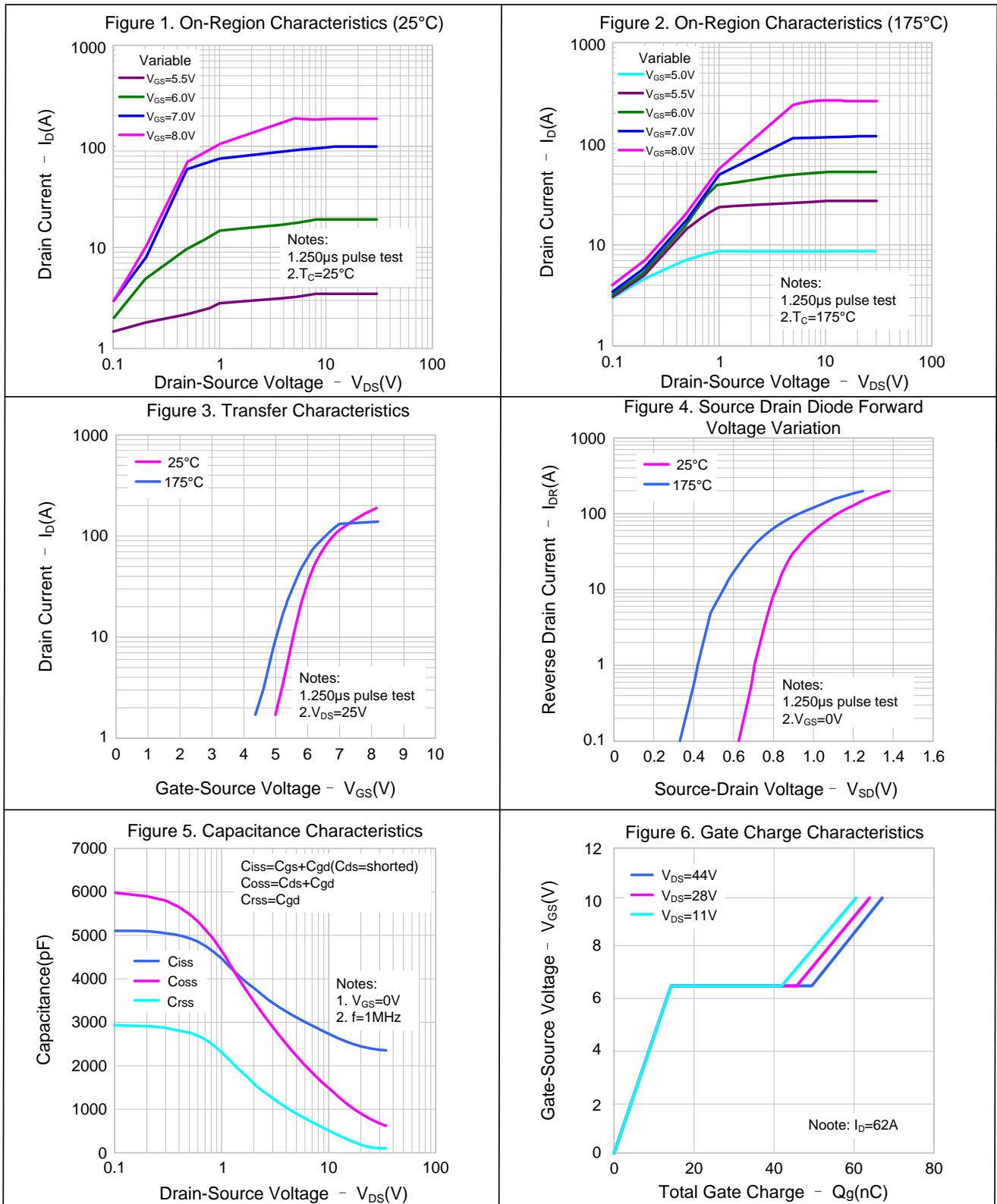
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	Integral Reverse p-n Junction Diode in the MOSFET	--	--	110	A
Pulsed Source Current	I_{SM}		--	--	390	
Diode Forward Voltage	V_{SD}	$I_S=110A, V_{GS}=0V$	--	--	1.3	V
Reverse Recovery Time	T_{rr}	$I_S=110A, V_{GS}=0V$ $di/dt=100A/\mu s$ (Note 2)	--	67	--	ns
Reverse Recovery Charge	Q_{rr}		--	0.17	--	μC

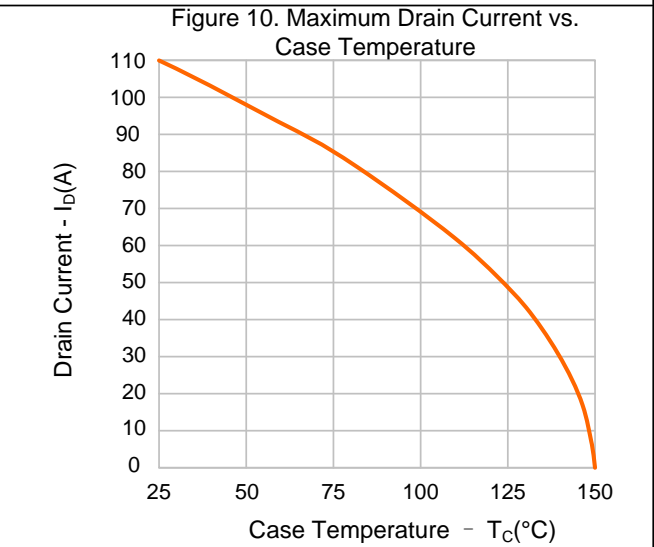
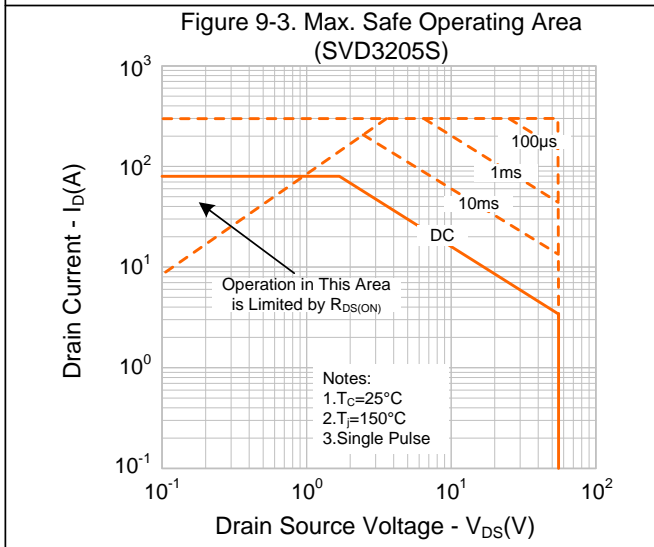
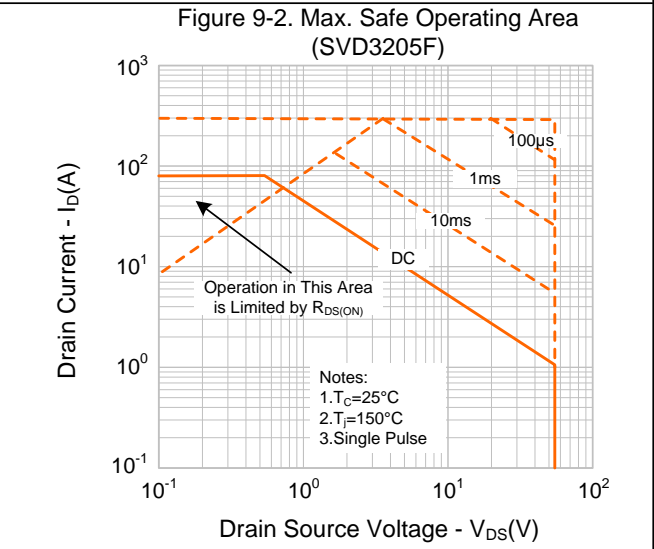
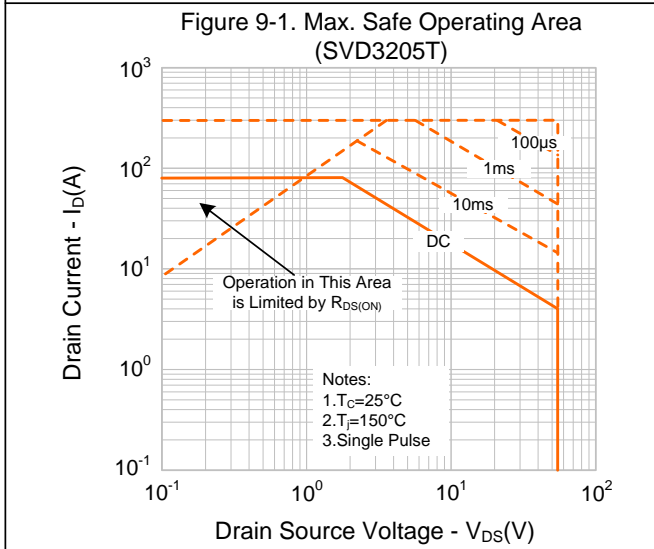
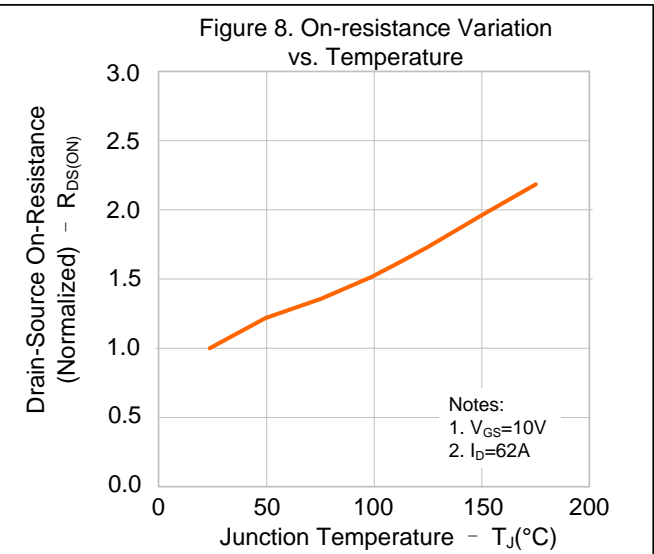
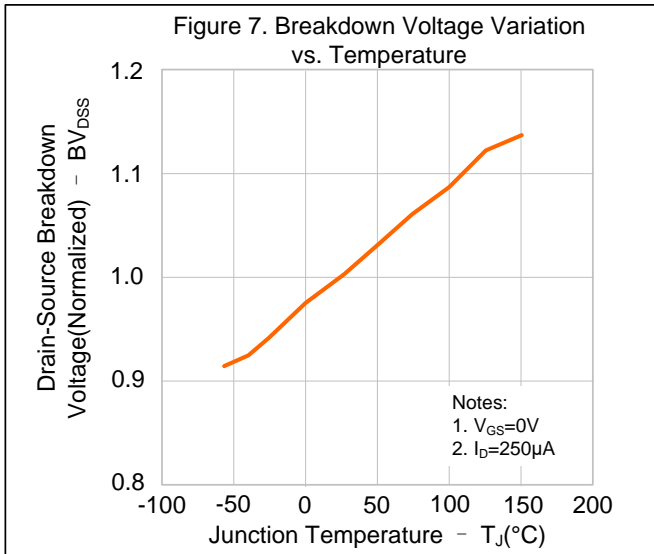
Notes:

- $L=0.30mH, I_{AS}=63A, V_{DD}=28V, R_G=25\Omega$, starting $T_J=25^\circ\text{C}$;
- Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$;
- Essentially independent of operating temperature.

TYPICAL CHARACTERISTICS

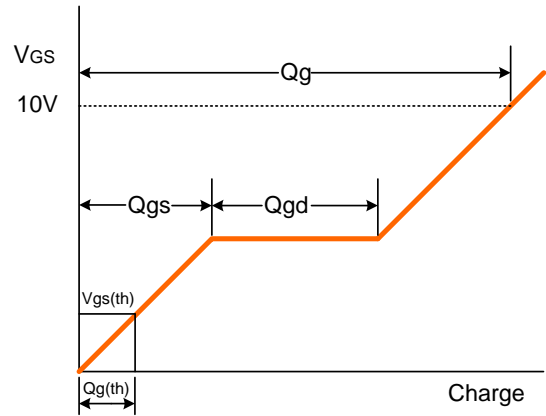
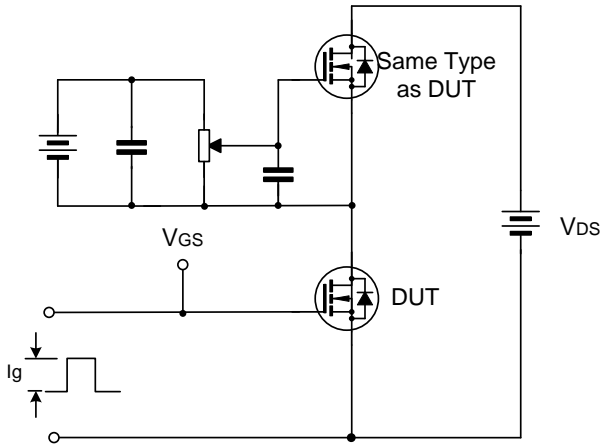


TYPICAL CHARACTERISTICS (CONTINUED)

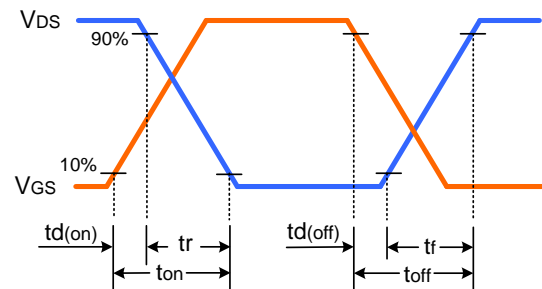
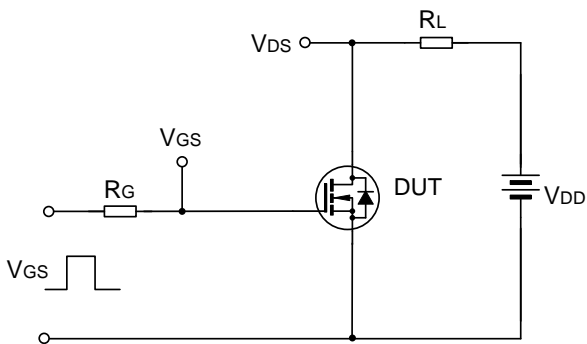


TYPICAL TEST CIRCUIT

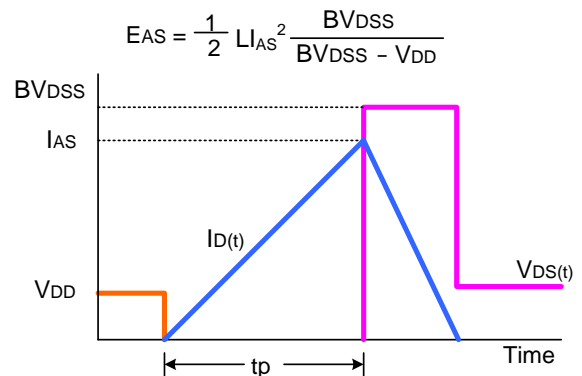
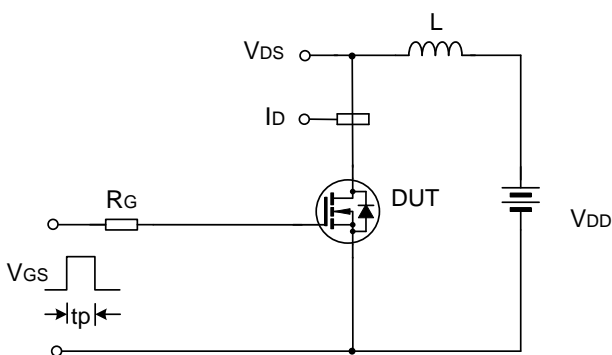
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform

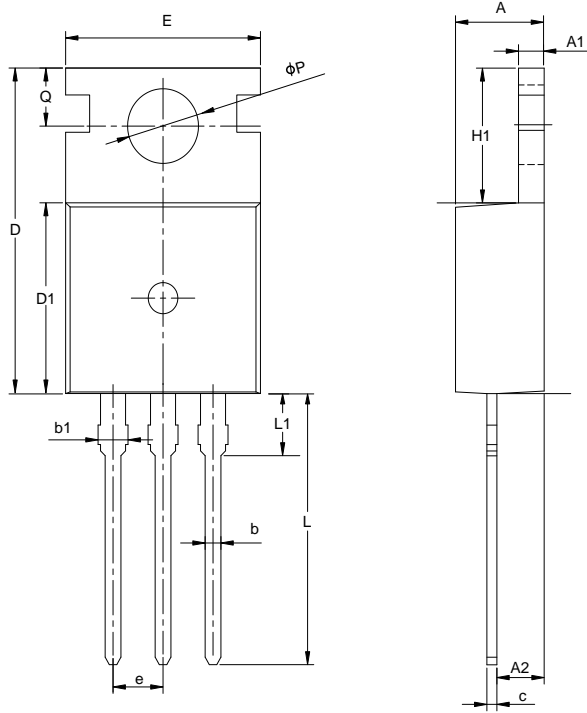


Unclamped Inductive Switching Test Circuit & Waveform



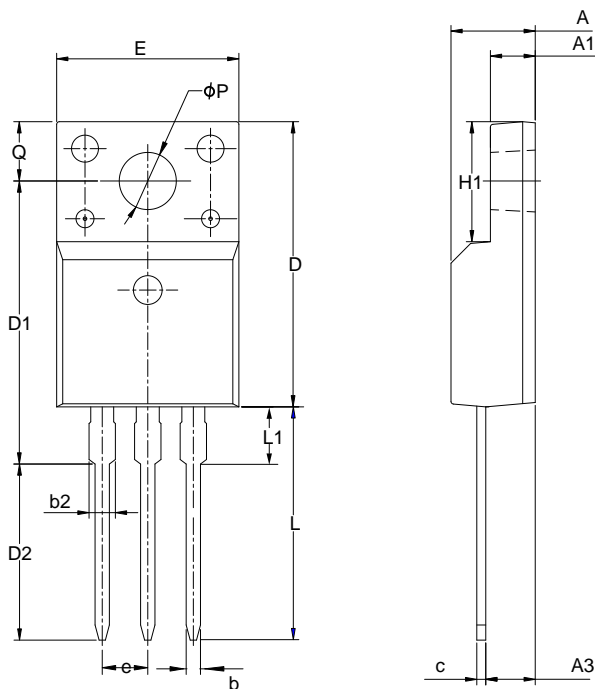
PACKAGE OUTLINE

TO-220-3L **UNIT: mm**



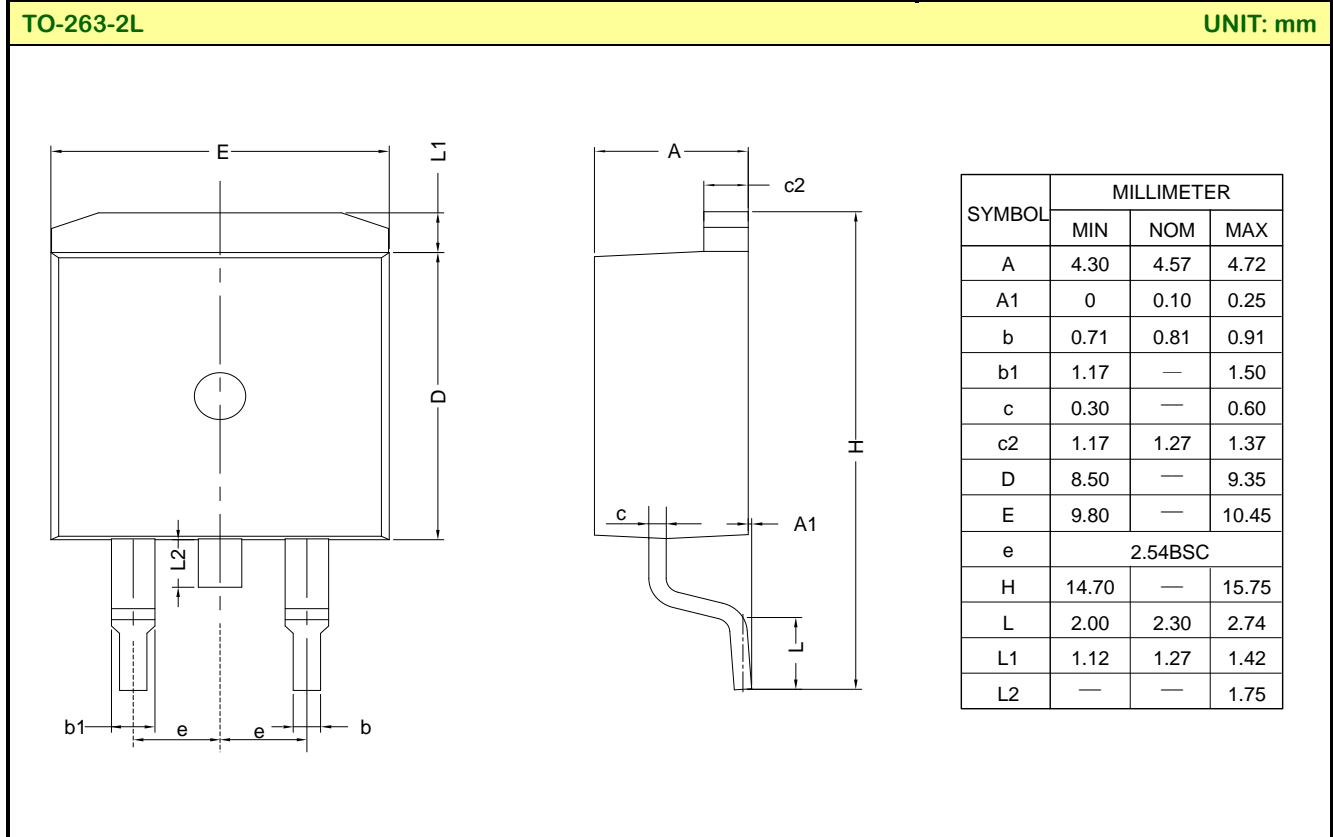
SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	4.30	4.50	4.70
A1	1.00	1.30	1.50
A2	1.80	2.40	2.80
b	0.60	0.80	1.00
b1	1.00	—	1.60
c	0.30	—	0.70
D	15.10	15.70	16.10
D1	8.10	9.20	10.00
E	9.60	9.90	10.40
e	2.54BSC		
H1	6.10	6.50	7.00
L	12.60	13.08	13.60
L1	—	—	3.95
ϕP	3.40	3.70	3.90
Q	2.60	—	3.20

TO-220F-3L **UNIT: mm**



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	4.42	4.70	5.02
A1	2.30	2.54	2.80
A3	2.50	2.76	3.10
b	0.70	0.80	0.90
b2	—	—	1.47
c	0.35	0.50	0.65
D	15.25	15.87	16.25
D1	15.30	15.75	16.30
D2	9.30	9.80	10.30
E	9.73	10.16	10.36
e	2.54BSC		
H1	6.40	6.68	7.00
L	12.48	12.98	13.48
L1	—	—	3.50
ϕP	3.00	3.18	3.40
Q	3.05	3.30	3.55

PACKAGE OUTLINE (CONTINUED)



Important notice :

1. The instructions are subject to change without notice !
2. Customers should obtain the latest relevant information before placing orders and should verify that such information is complete and current. Please read the instructions carefully before using our products, including the circuit operation precautions.
3. Our products are consumer electronic products or the other civil electronic products.
4. 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.
5. It is strongly recommended to identify the trademark when buying our products. Please contact us if there is any question.
6. Product promotion is endless, our company will wholeheartedly provide customers with better products!
7. Website: <http://www.silan.com.cn>

Part No.: SVD3205T(F)(S) Document Type: Datasheet
Copyright: HANGZHOU SILAN MICROELECTRONICS CO.,LTD Website: <http://www.silan.com.cn>

Rev.: 2.1

Revision History:

1. Update turn-on/off time
-

Rev.: 2.0

Revision History:

1. Update electrical diagram and typical circuit diagram
 2. Update curve template and important notice
-

Rev.: 1.9

Revision History:

1. Modify the I_D condition.of Fig 8
 2. Update the package outline of TO-220-3L, TO-220F-3L and TO-263-2L
-

Rev.: 1.8

Revision History:

1. Modify the test condition
-

Rev.: 1.7

Revision History:

1. Modify the package outline of TO-263-2L
-

Rev.: 1.6

Revision History:

1. Modify the package information of TO-220F-3L and TO-220-3L
-

Rev.: 1.5

Revision History:

1. Modify the thermal characteristics
-

Rev.: 1.4

Revision History:

1. Modify the electrical characteristics
-

Rev.: 1.3

Revision History:

1. Add the typical test circuit
-

Rev.: 1.2

Revision History:

1. Add the package of TO-220F-3L and TO-263-2L
-

Rev.: 1.1

Revision History:

1. Change the schematic diagram of MOS
-

Rev.: 1.0

Revision History:

1. Initial release
-
-