

94A, 100V N-CHANNEL MOSFET

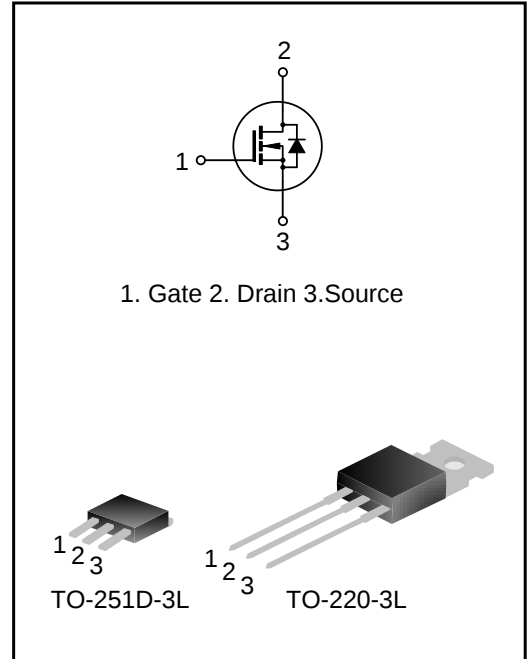
DESCRIPTION

SVG108R5NAM(T) is an N-channel enhancement mode power MOS field effect transistor which is produced using Silan's LVMOS technology. The improved process and cell structure have been especially tailored to minimize on-state resistance, provide superior switching performance.

This device is widely used in UPS, Power Management for Inverter Systems.

FEATURES

- ◆ 94A, 100V, $R_{DS(on)(typ.)}=7.2m\Omega@V_{GS}=10V$
- ◆ Low gate charge
- ◆ Low C_{rss}
- ◆ Fast switching
- ◆ Improved dv/dt capability



ORDERING INFORMATION

Part No.	Package	Marking	Hazardous Substance Control	Packing Type
SVG108R5NAM	TO-251D-3L	108R5NAM	Halogen free	Tube
SVG108R5NAT	TO-220-3L	108R5NAT	Pb free	Tube

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

Characteristics		Symbol	Ratings		Unit
			SVG108R5NAM	SVG108R5NAT	
Drain-Source Voltage		V _{DS}	100		V
Gate-Source Voltage		V _{GS}	±20		V
Drain Current	T _C =25°C	I _D	94		A
	T _C =100°C		59		
Drain Current Pulsed		I _{DM}	376		A
Power Dissipation (T _C =25°C) -Derate above 25°C		P _D	87	136	W
			0.69	1.09	W/°C
Single Pulsed Avalanche Energy (Note 1)		E _{AS}	240		mJ
Operation Junction Temperature Range		T _J	-55~+150		°C
Storage Temperature Range		T _{stg}	-55~+150		°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Ratings		Unit
		SVG108R5NAM/D	SVG108R5NAT	
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.44	0.92	°C/W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	62.0	62.5	°C/W

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

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain -Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	--	--	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	--	--	1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.4	--	2.4	V
Static Drain- Source On State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=39A$	--	7.2	8.5	m Ω
		$V_{GS}=4.5V, I_D=39A$	--	9.5	12	m Ω
Gate Resistance	R_G	$f=1MHz$	--	1.8	--	Ω
Input Capacitance	C_{iss}	$f=1MHz, V_{GS}=0V,$ $V_{DS}=50V$	--	3631	--	pF
Output Capacitance	C_{oss}		--	408	--	
Reverse Transfer Capacitance	C_{rss}		--	8.6	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=50V, V_{GS}=10V,$ $R_G=4.7\Omega, I_D=39A$ (Notes 2,3)	--	13	--	ns
Turn-on Rise Time	t_r		--	29	--	
Turn-off Delay Time	$t_{d(off)}$		--	57	--	
Turn-off Fall Time	t_f		--	14	--	
Total Gate Charge	Q_g	$V_{DD}=80V, V_{GS}=10V, I_D=39A$ (Notes 2,3)	--	55	--	nC
Gate-Source Charge	Q_{gs}		--	15	--	
Gate-Drain Charge	Q_{gd}		--	8.2	--	
Gate Plateau Voltage	$V_{plateau}$		--	3.8	--	V
Transconductance	g_{fs}	$V_{DS}=5V, I_D=20A$	--	42	--	S

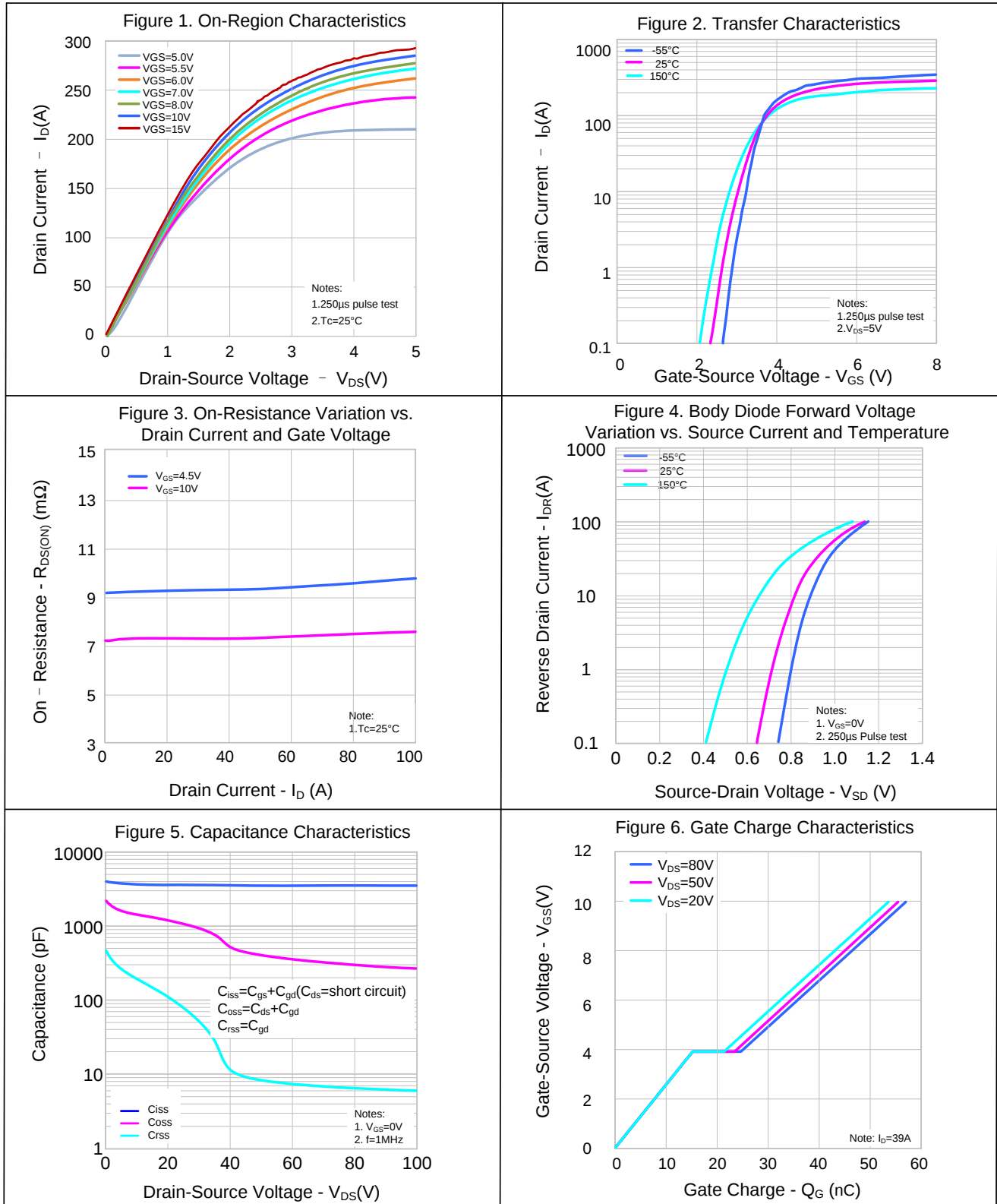
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	Integral Reverse P-N Junction Diode in the MOSFET	--	--	94	A
Pulsed Source Current	I_{SM}		--	--	376	
Diode Forward Voltage	V_{SD}	$I_S=78A, V_{GS}=0V$	--	--	1.4	V
Reverse Recovery Time	T_{rr}	$I_S=12A, V_{GS}=0V,$ $dI/dt=100A/\mu s$ (Note 2)	--	64	--	ns
Reverse Recovery Charge	Q_{rr}		--	0.09	--	μC

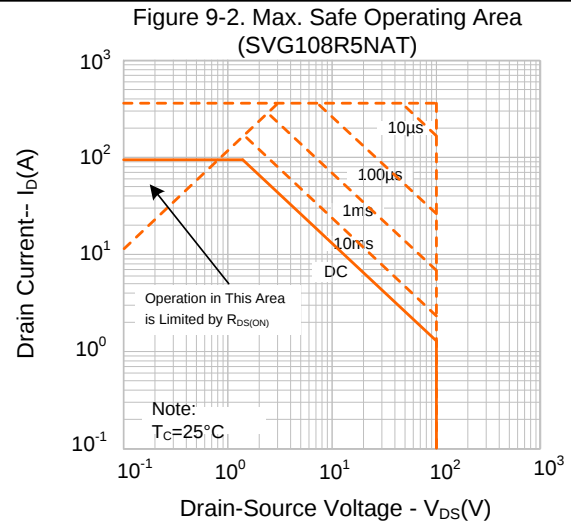
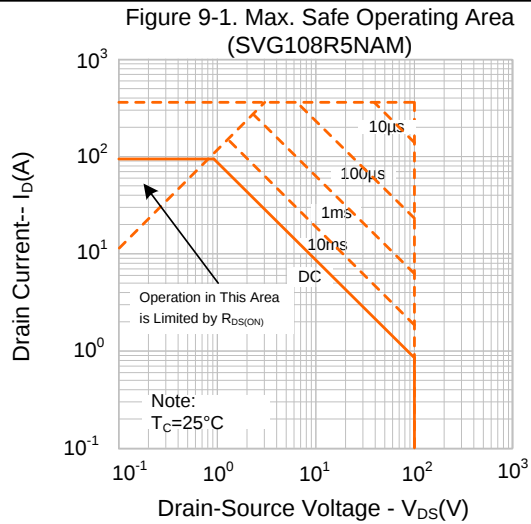
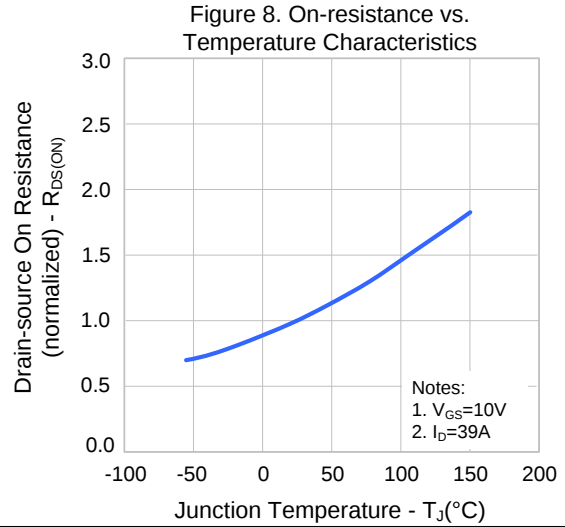
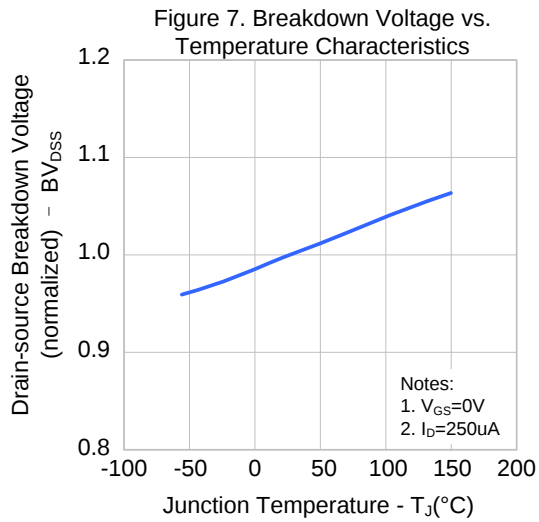
Notes:

- 1.L=0.5mH, $I_{AS}=31A$, $V_{DD}=80V$, $R_G=25\Omega$, starting $T_j=25^{\circ}\text{C}$;
- 2.Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$;
- 3.Essentially independent of operating temperature.

TYPICAL CHARACTERISTICS

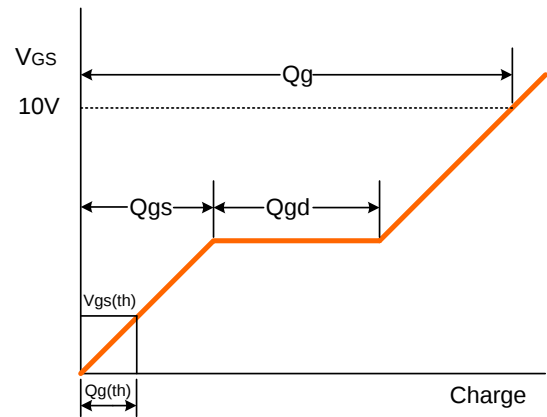
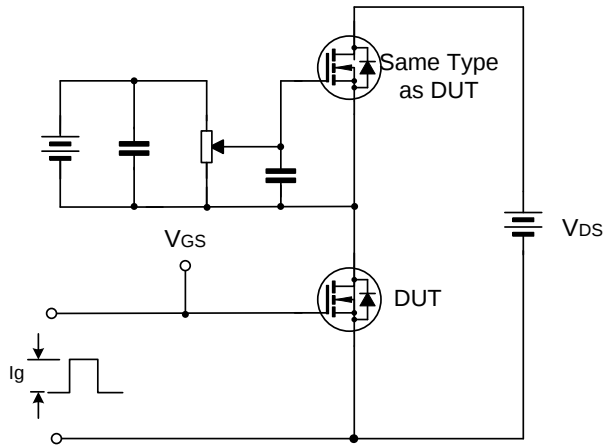


TYPICAL CHARACTERISTICS (CONTINUED)

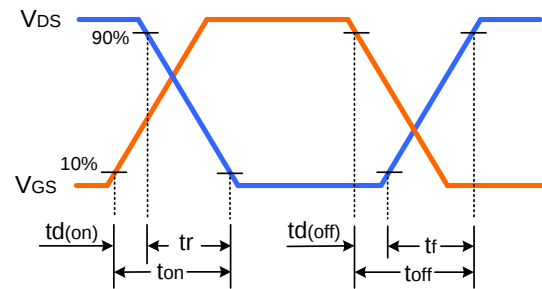
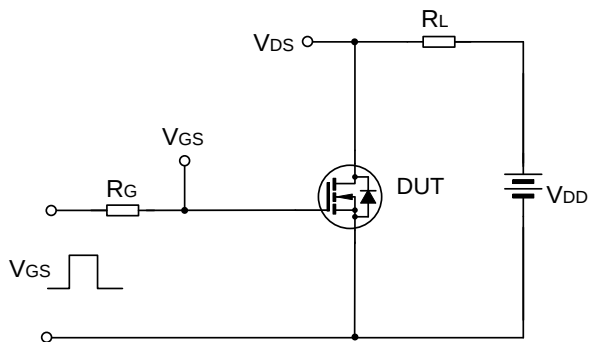


TYPICAL TEST CIRCUIT

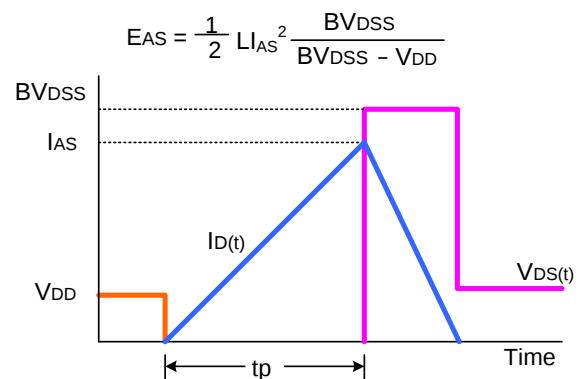
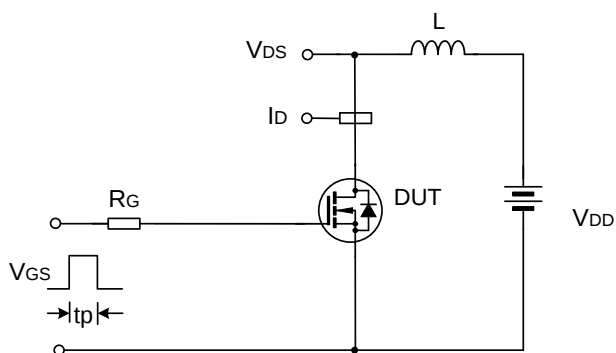
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



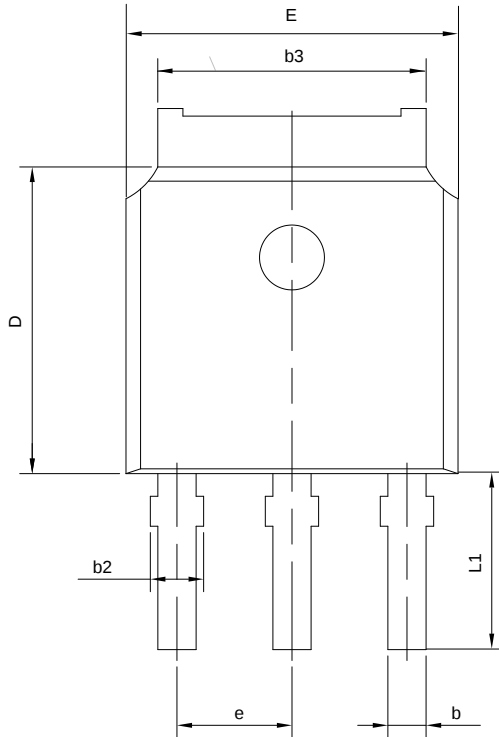
Unclamped Inductive Switching Test Circuit & Waveform



PACKAGE OUTLINE

TO-251D-3L

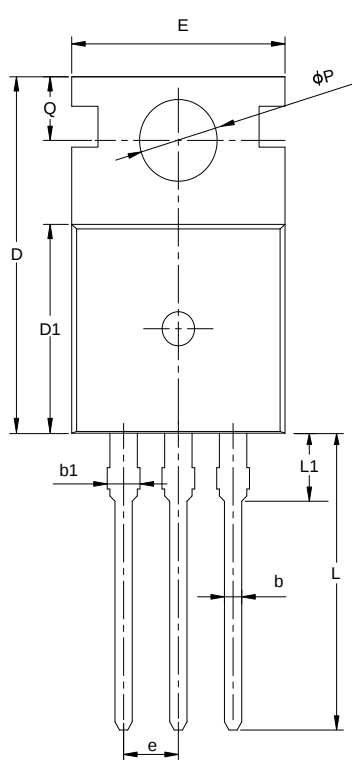
UNIT: mm



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	2.20	2.30	2.40
b	0.66	—	0.86
b2	0.72	—	0.90
b3	5.10	5.33	5.46
c2	0.46	—	0.60
D	6.00	6.10	6.20
E	6.50	6.60	6.70
e	2.186	2.286	2.386
H	10.40	10.70	11.00
L1	3.50 REF		
L2	0.508 BSC		

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

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.
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- 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>

Part No.: **SVG108R5NAM(T)**Document Type: **Datasheet**Copyright: **HANGZHOU SILAN MICROELECTRONICS CO.,LTD**Website: **<http://www.silan.com.cn>**Rev.: **1.1**

Revision History:

1. Delete TO-252-2L
2. Update the template of datasheet

Rev.: **1.0**

Revision History:

1. First release