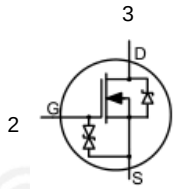
N-channel Depletion mode SOT23 MOSFET

SOT23

1. Source 2. Gate 3. Drain

BV_{DSS} : 600V
I_D : 0.02A
$R_{DS(ON)}$: 540Ω



Features

- Low $R_{DS(ON)}$ (Typ 540Ω)@V_{GS}=0V,ID=3mA
- High Switching Speed
- Application:LED,Charger

General Description

The SW601Q is an N-channel power MOSFET using SAMWIN's Advanced technology to provide the customers with high switching speed.

Order Codes

Item	Sales Type	Marking	Package	Packaging
1	SW R 601Q	Date Code	SOT23	REEL

Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{DSS}	Drain to source voltage (Note 2)	600	V
V_{DGX}	Drain to gate voltage (Note 2)	600	V
I_D	Continuous drain current (@T_j=25°C)	0.02	A
I_{DM}	Drain current pulsed	0.08	A
V_{GSS}	Gate to source voltage	±6	V
P_D	Total power dissipation (@T_j=25°C)	0.5	W
T_J	Junction temperature	+ 150	°C
T_{STG},	Storage temperature	-55 ~ + 150	°C

Thermal characteristics

Symbol	Parameter	Value	Unit
R_{thja}	Thermal resistance, Junction to ambient	250	°C/W

Notes: 1. Absolute maximum ratings are those valuesbeyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. TJ=+25˚C~+150˚C

Electrical characteristic (T_j = 25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
Off characteristics						
BV_{DSS}	Drain to source breakdown voltage	V_{GS}=-5V, I_D=250uA	600			V
$I_{D(OFF)}$	Drain to source leakage current	V_{DS}=600V, V_{GS}=-5V			0.1	uA
		V_{DS}=600V, V_{GS}=-5V,T_j= 125°C			10	uA
I_{GSS}	Gate to source leakage current, forward	V_{GS}=20V, V_{DS}=0V			20	uA
	Gate to source leakage current, reverse	V_{GS}=-20V, V_{DS}=0V			-20	uA
On characteristics						
$V_{GS(OFF)}$	Gate to Source Cut Off Voltage	V_{DS}=3V, I_D=8uA	-3.0		-1.8	V
I_{DSS}	Drain to source leakage current	V_{DS}=25V, V_{GS}=0V	5		25	mA
$R_{DS(ON)}$	Drain to source on state resistance	V_{GS}=0V, I_D= 3mA		540	700	Ω
G_{fs}	Forward transconductance	V_{DS}=10V, I_D=5mA		15.4		mS
Dynamic characteristics						
C_{iss}	Input capacitance	V_{GS}=-5V, V_{DS}=25V, f=1MHz		12.3		pF
C_{oss}	Output capacitance			2.6		
C_{rss}	Reverse transfer capacitance			1.8		
$t_{d(on)}$	Turn on delay time	V_{GS}=-5~5V, V_{DD}=300V, I_D=7m A, R_G=20Ω		4		ns
t_r	Rising time			9		
$t_{d(off)}$	Turn off delay time			14		
t_f	Fall time			84		
Q_g	Total gate charge	V_{GS}=-5~5V, V_{DD}=300V, I_D=7mA		1.55		nC
Q_{gs}	Gate-source charge			0.12		
Q_{gd}	Gate-drain charge			0.56		

Source to drain diode ratings characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_{SD}	Diode forward voltage drop.	I_{SD}=3mA, V_{GS}=-10V			1.2	V

Notes: 1. Repetitive rating, pulse width limited by maximum junction temperature.
2. Pulse width≤380μs; duty cycle≤2%.

Fig. 1. On-state characteristics

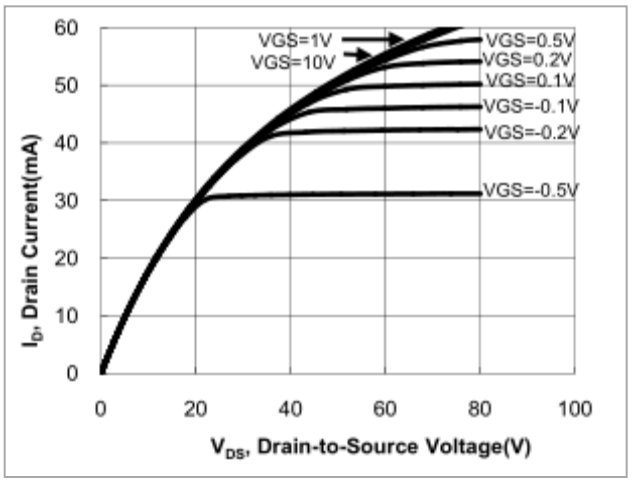


Fig. 2. transfer characteristics

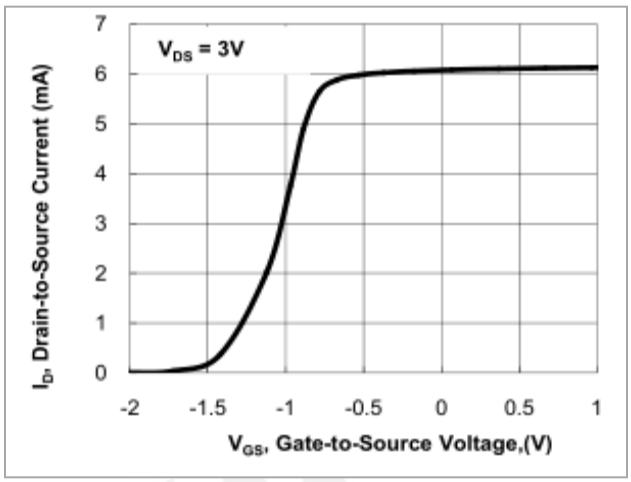


Fig 3. Capacitance Characteristics

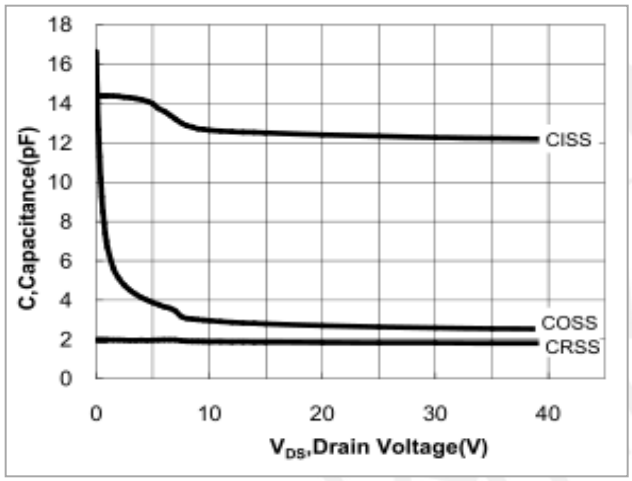


Fig. 4. Gate charge characteristics

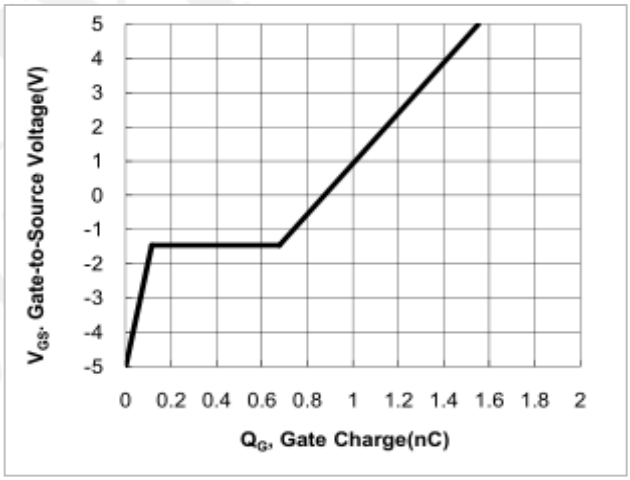
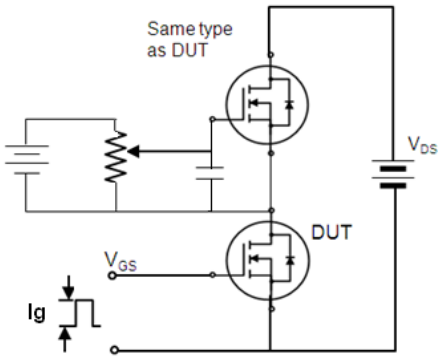


Fig. 5. Gate charge test circuit & waveform



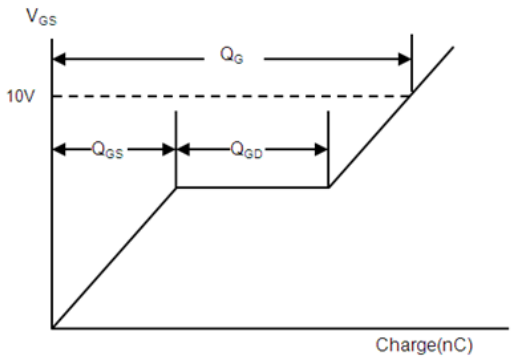


Fig. 6. Switching time test circuit & waveform

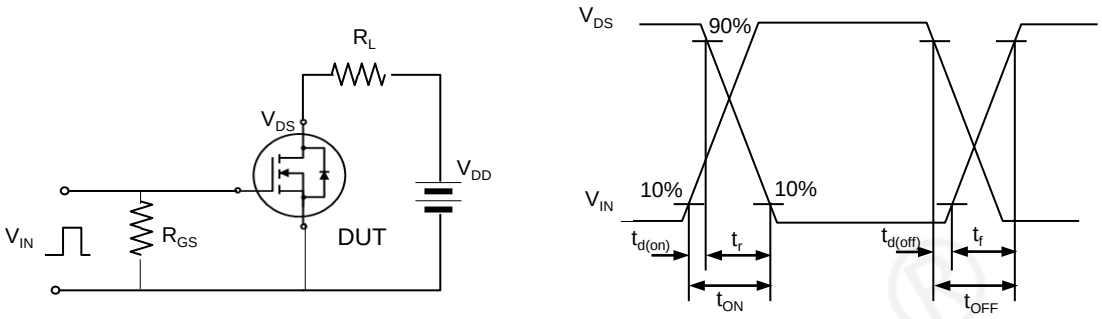
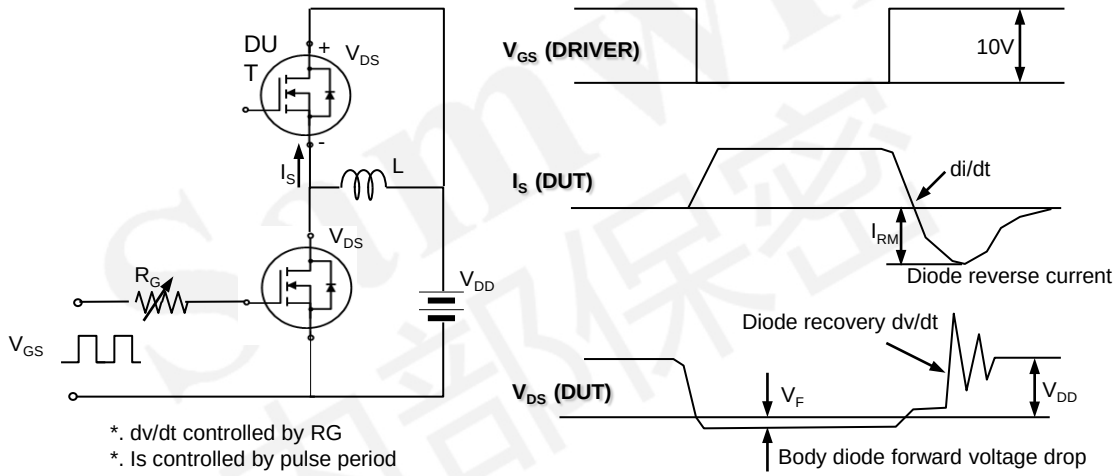


Fig. 7. Peak diode recovery dv/dt test circuit & waveform

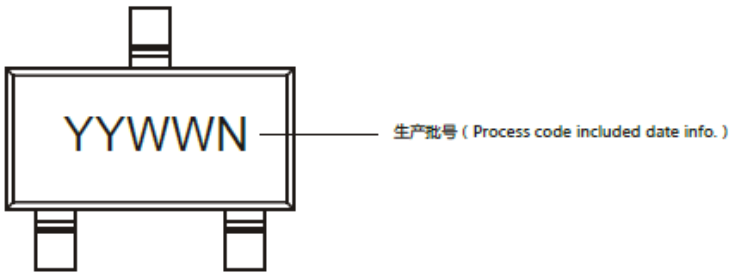


DISCLAIMER

* All the data & curve in this document was tested in XI'AN SEMIPOWER TESTING & APPLICATION CENTER.
* This product has passed the PCT,TC,HTRB,HTGB,HAST,PC and Solderdunk reliability testing.
* Qualification standards can also be found on the Web site (**http://www.semipower.com.cn**)
* Suggestions for improvement are appreciated, Please send your suggestions to **samwin@samwinsemi.com**

激光打印说明
DESCRIBE LASER MARKING

SW601Q



YYWWN:

Y: Packaging line number
Y: Year(2010 is A,2015 is F...)
WW: Week(1A is W1,1B is W2,2A is W27...)
N: Chip lot number

标签说明
Label

SAMWIN 标签说明：

01 - 生产批次LOT　02 - 封装形式 Package　03 - 数量 Quantity　04 - HF无卤
05 - 生产 批号（Process code included date info.）　06 - 产品型号 Part No.