

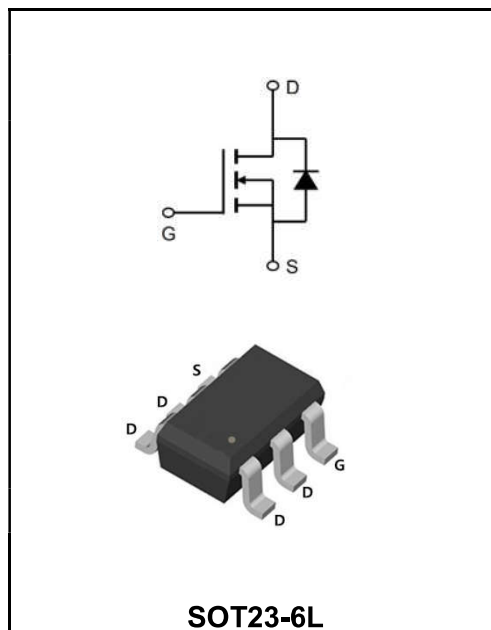
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	5A
V_{DSS}	100V
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	< 140mΩ (Type:110 mΩ)

Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply



SOT23-6L

Marking Code

YFW5N10LI	5N10
-----------	------

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous drain current ¹⁾ , T _C =25 °C	I_D	5	A
Pulsed drain current ²⁾ , T _C =25 °C	$I_{D, pulse}$	15	A
Power dissipation ³⁾ , T _C =25 °C	P_D	17	W
Single Pulse Avalanche Energy ⁵⁾	E_{AS}	1.2	mJ
Operation and storage temperature	T_{STG}, T_J	-55 to +150	°C
Thermal Resistance Junction-Case	$R_{\theta JC}$	7.4	°C/W
Thermal Resistance, Junction—Ambient ⁴⁾	$R_{\theta JA}$	62	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	100	-	-	V
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.5	2.5	V
Drain-source on-state resistance	$V_{GS}=10V, I_D=5A$	$R_{DS(on)}$	-	110	140	mΩ
	$V_{GS}=4.5V, I_D=3A$		-	160	180	
Gate-Source Leakage Current	$V_{GS}=20V$	I_{GSS}	-	-	100	nA
	$V_{GS}=-20V$		-	-	-100	
Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=100KHz$	C_{iss}	-	206.1	-	pF
Output Capacitance		C_{oss}	-	28.9	-	
Reverse Transfer Capacitance		C_{rss}	-	1.4	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=2\Omega$ $I_D=5A$	$t_{d(on)}$	-	14.7	-	ns
Rise Time		T_r	-	3.5	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	20.9	-	
Fall Time		t_f	-	2.7	-	
Total Gate Charge	$I_D=5A$ $V_{DS}=50V$ $V_{GS}=10V$	Q_g	-	4.3	-	nC
Gate-Source Charge		Q_{gs}	-	1.5	-	
Gate-Drain Charge		Q_{gd}	-	1.1	-	
Gate plateau voltage		$V_{plateau}$	-	5.0	-	
Diode forward current	$V_{GS}<V_{th}$	I_S	-	-	7	A
Pulsed Source Current		I_{SP}	-	-	21	A
Diode Forward Voltage	$V_{GS}=0V, I_S=7A$	V_{SD}	-	-	1.0	V
Reverse Recovery Time	$I_S=5A, dI/dt=100A/\mu s$	t_{rr}	-	32.1	-	ns
Reverse Recovery Charge		Q_{rr}	-	39.4	-	nC
Peak reverse recovery current		I_{rrm}	-	2.1	-	A

Note

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) Pd is based on max. junction temperature, using junction-case thermal resistance.
- 4) The value of RθJA is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25 °C.
- 5) VDD=50 V, RG=50 Ω, L=0.3 mH, starting Tj=25 °C.

Ratings and Characteristic Curves

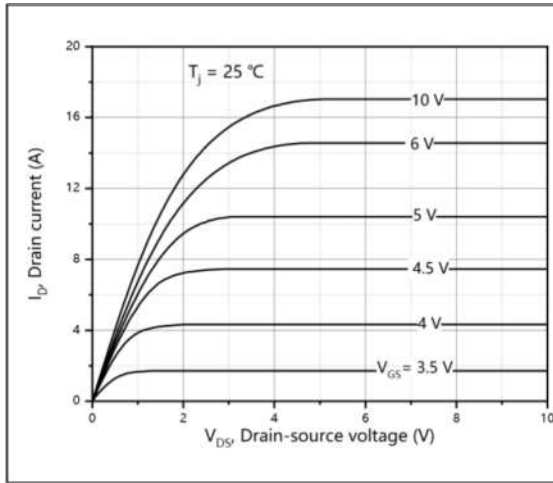


Figure 1, Typ. output characteristics

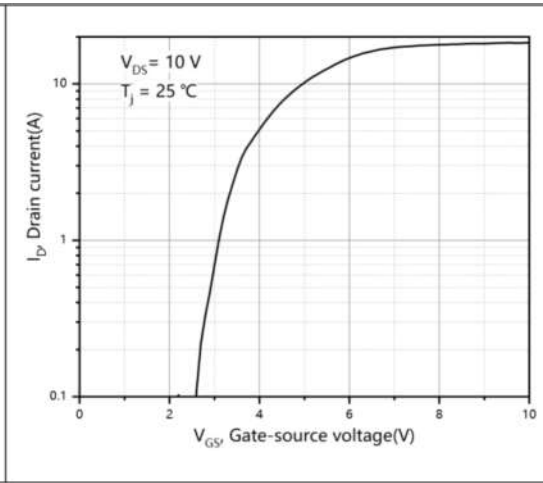


Figure 2, Typ. transfer characteristics

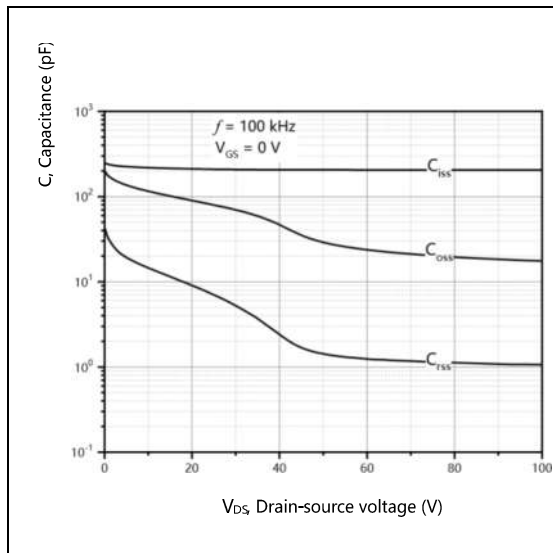


Figure 3, Typ. capacitances

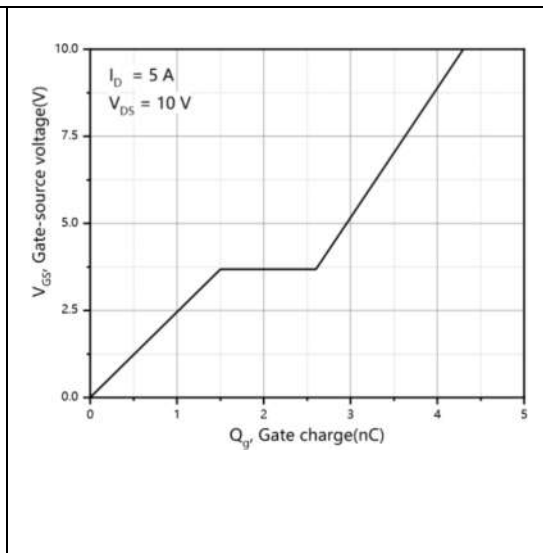


Figure 4, Typ. gate charge

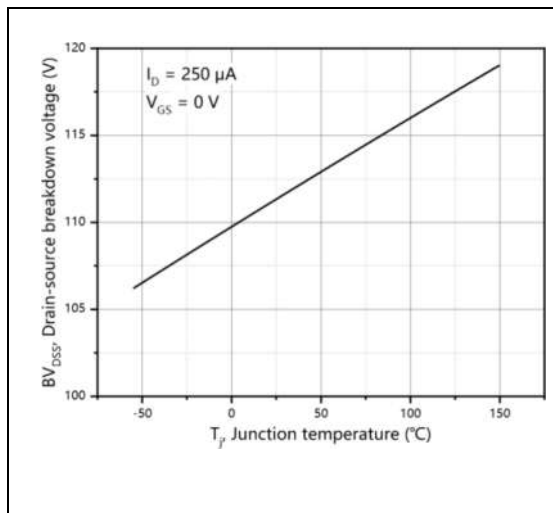


Figure 5, Drain-source breakdown voltage

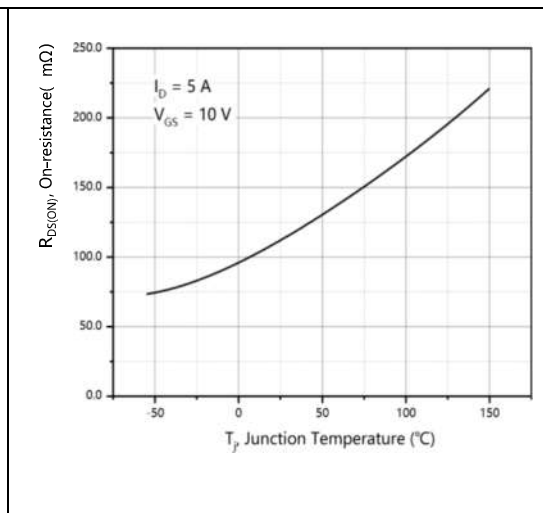


Figure 6, Drain-source on-state resistance

Ratings and Characteristic Curves

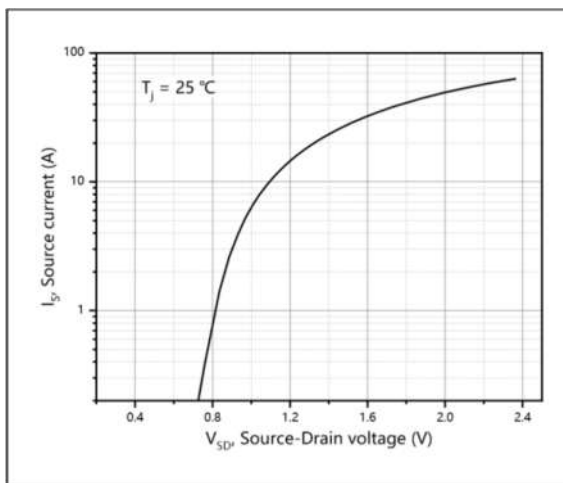


Figure 7, Forward characteristic of body diode

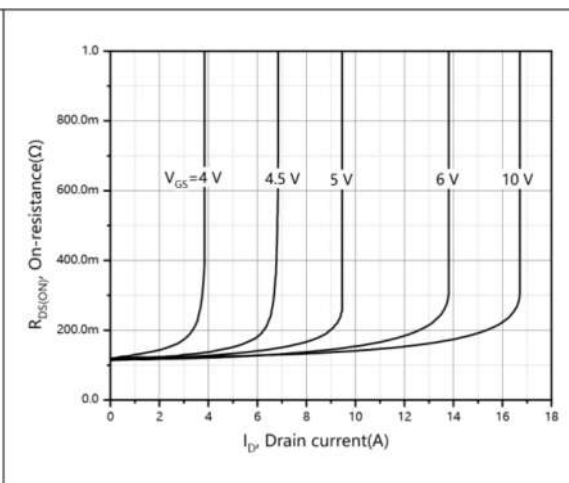


Figure 8, Drain-source on-state resistance

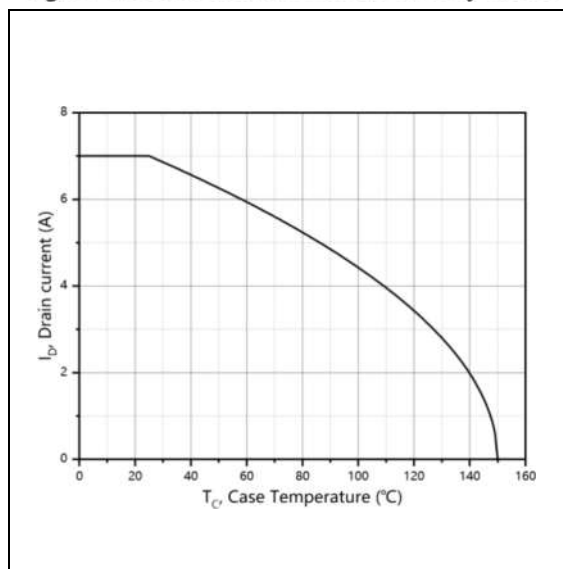


Figure 9, Drain current

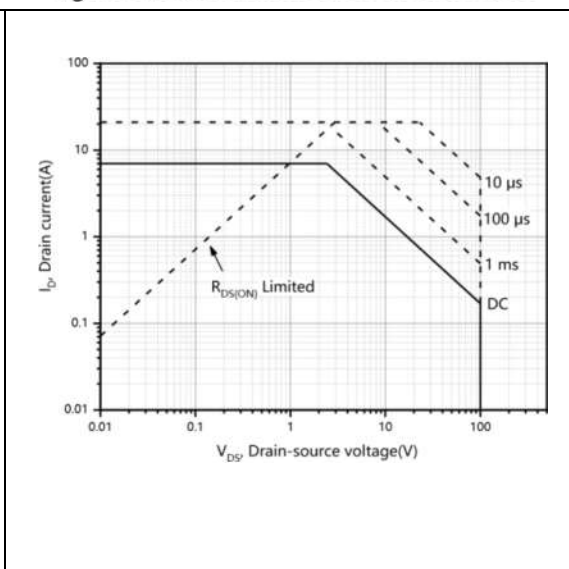


Figure 10, Safe operation area $T_C=25\text{ }^{\circ}\text{C}$

Test circuits and waveforms

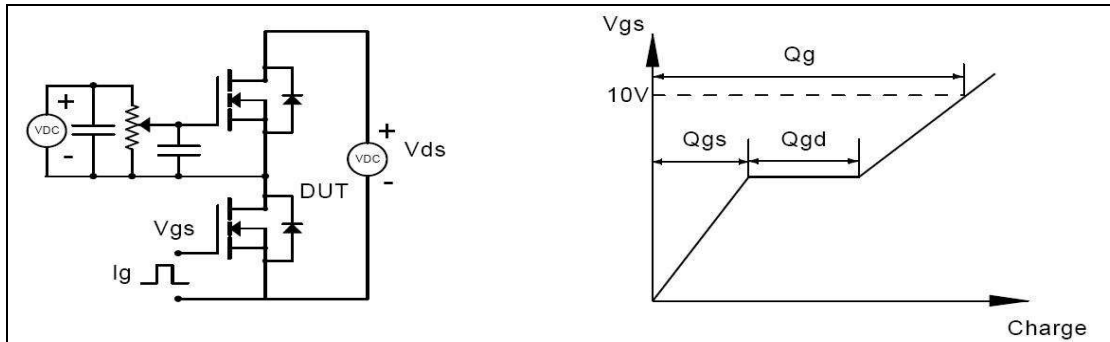


Figure 1, Gate charge test circuit & waveform

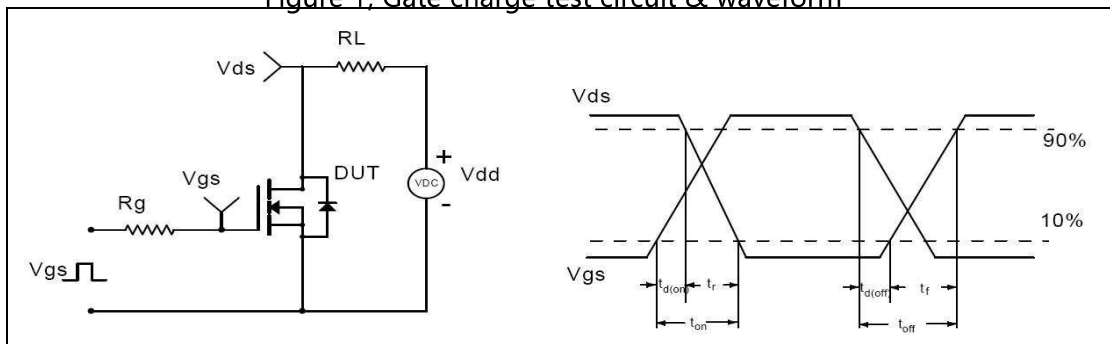


Figure 2, Switching time test circuit & waveforms

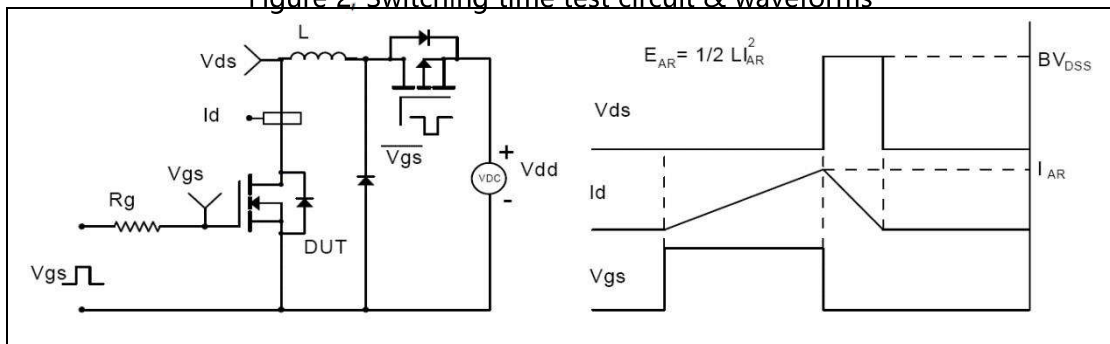


Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms

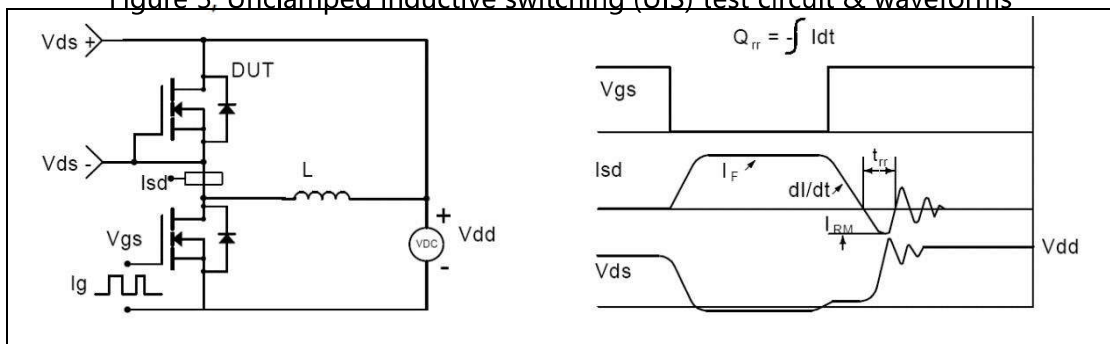


Figure 4, Diode reverse recovery test circuit & waveforms

Ordering information

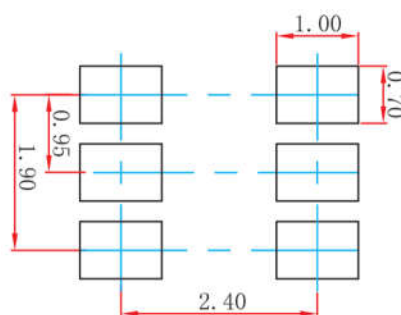
Package	Packing Description	Packing Quantity
SOT23-6L	Tape/Reel, 7" reel	3000PCS/Reel 120000PCS/Carton

Package Dimensions

SOT23-6L

Dim.	Millimeter(mm)		mil	
	Min.	Max.	Min.	Max.
A	1.05	1.25	41	49
A1	0	0.10	0	3.9
A2	1.05	1.15	41	45
b	0.30	0.50	11.8	19.7
c	0.10	0.20	3.9	7.9
D	2.82	3.02	111	119
E1	1.50	1.70	45	67
E	2.65	2.95	104	116
e	0.950(BSC)		37(BSC)	
e1	1.80	2.00	71	79
L	0.30	0.60	11.8	23.6
θ	0°	8°	0°	8°

The recommended mounting pad size



Disclaimer

The information presented in this document is for reference only. Guangdong Youfeng Microelectronics Co.,Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise. The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), YFW or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale. This publication supersedes & replaces all information previously supplied. For additional information, please visit our website <https://www.yfwdiode.com>, or consult YFW sales office for further assistance.