

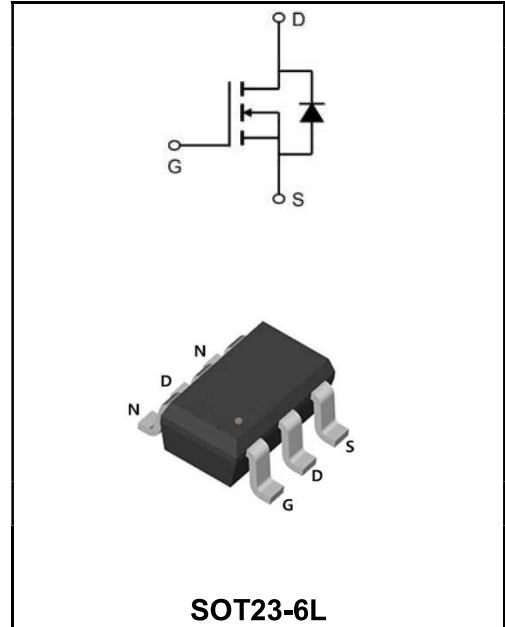
100V N-CHANNEL ENHANCEMENT MODE MOSFET

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFW5N10LI	SOT23-6L	MA6S	3000PCS/Tape

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	$R_{θJC}$	7.4	°C/W
Thermal Resistance, Junction-Ambient ⁴⁾	$R_{θJA}$	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

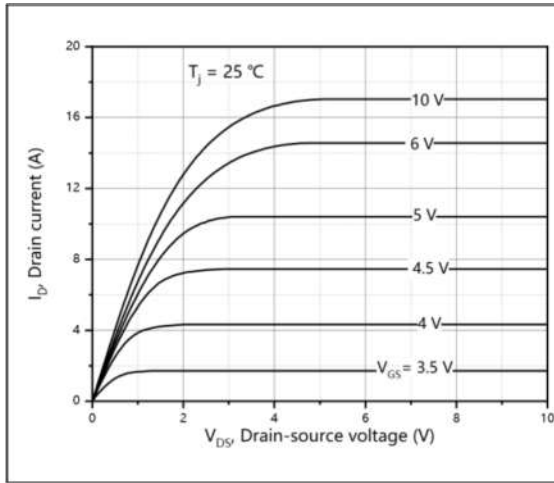


Figure 1, Typ. output characteristics

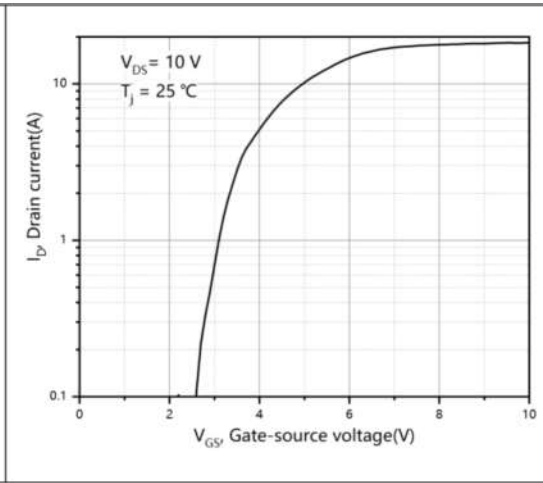


Figure 2, Typ. transfer characteristics

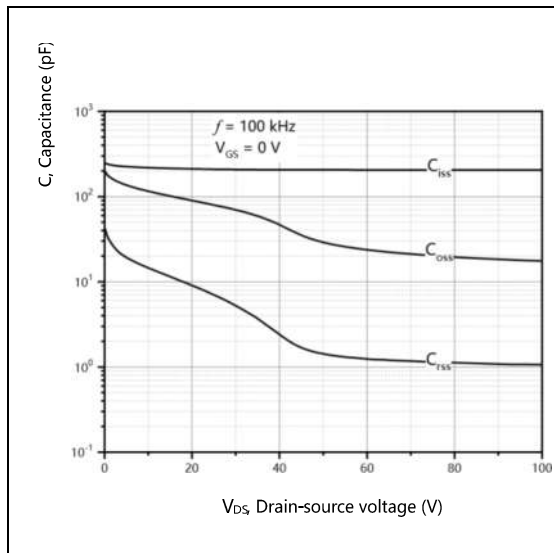


Figure 3, Typ. capacitances

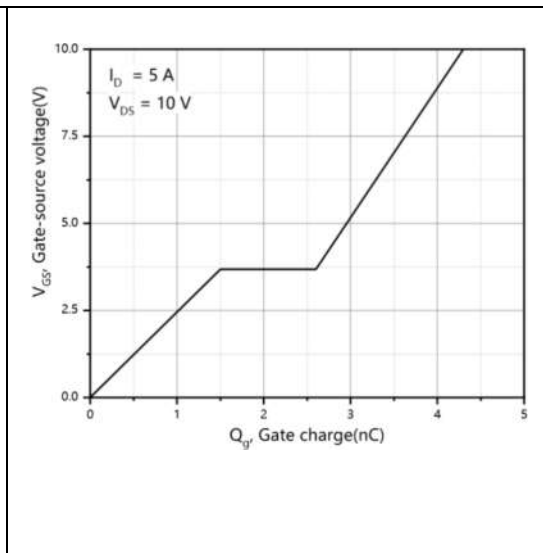


Figure 4, Typ. gate charge

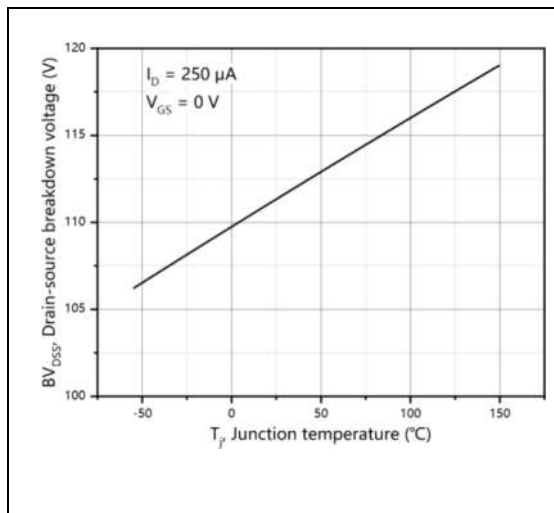


Figure 5, Drain-source breakdown voltage

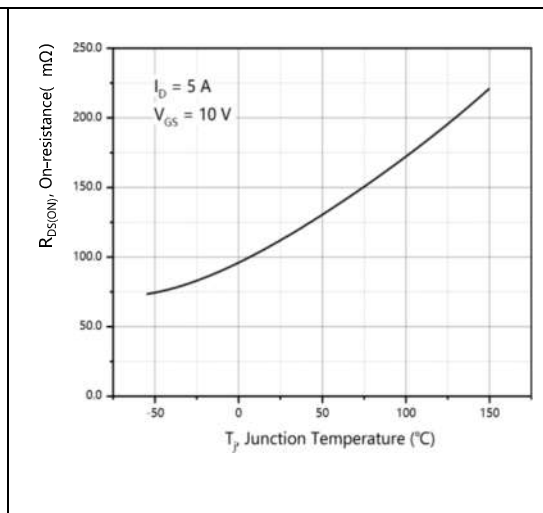


Figure 6, Drain-source on-state resistance

Ratings and Characteristic Curves

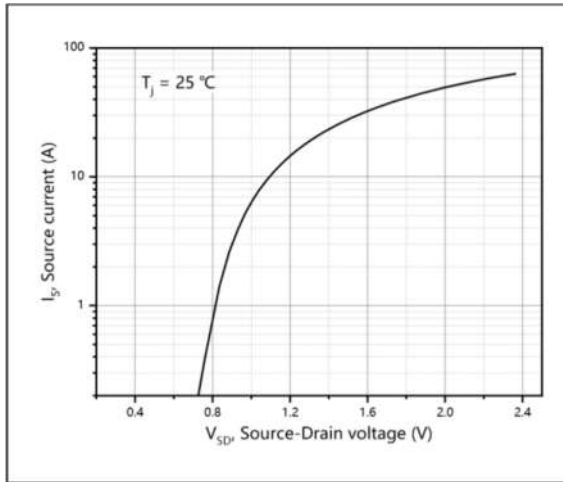


Figure 7, Forward characteristic of body diode

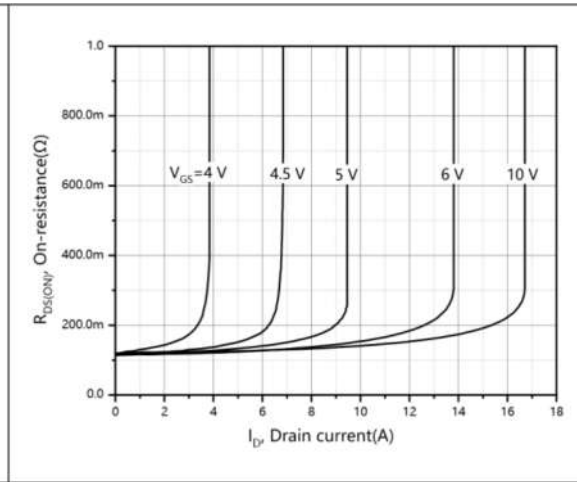


Figure 8, Drain-source on-state resistance

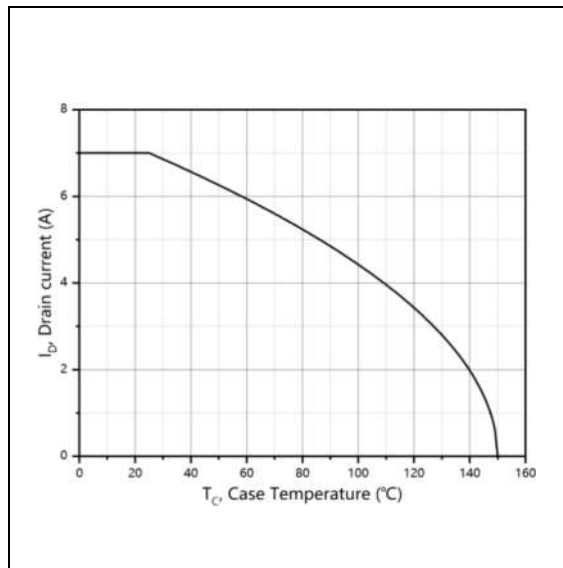


Figure 9, Drain current

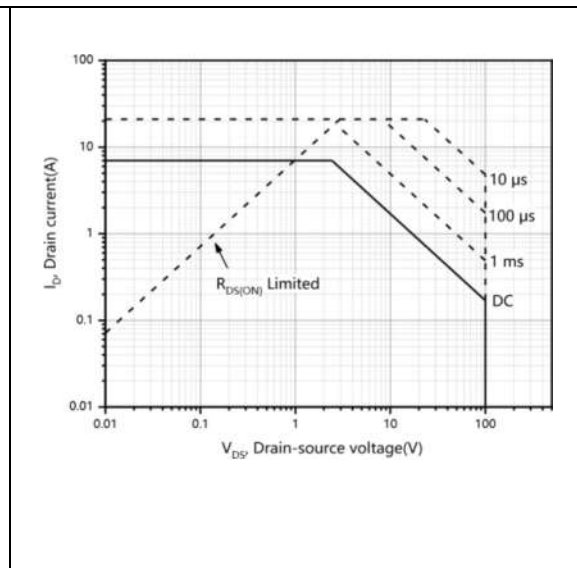


Figure 10, Safe operation area $T_C=25\text{ }^\circ\text{C}$

Test circuits and waveforms

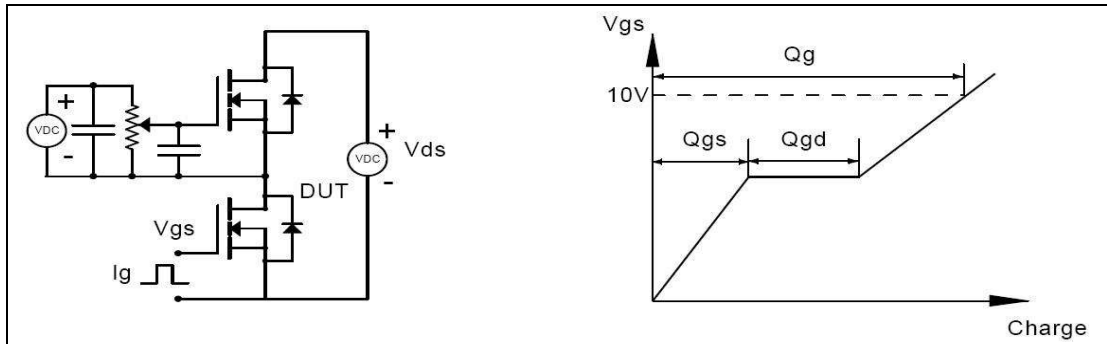


Figure 1, Gate charge test circuit & waveform

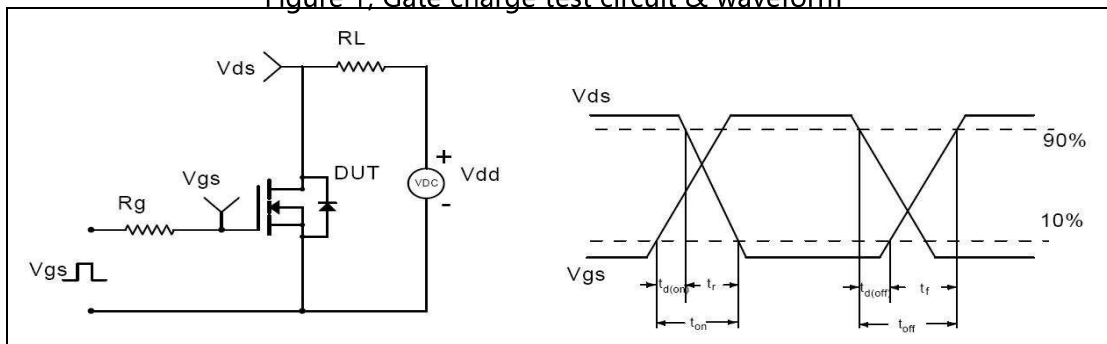


Figure 2, Switching time test circuit & waveforms

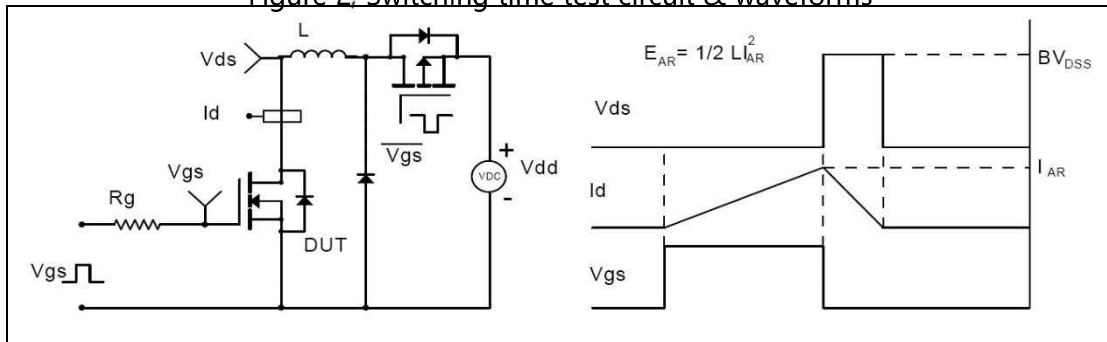


Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms

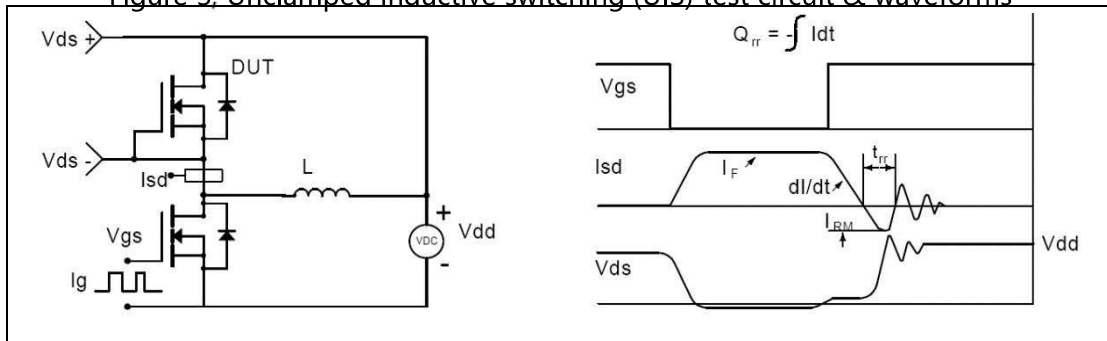
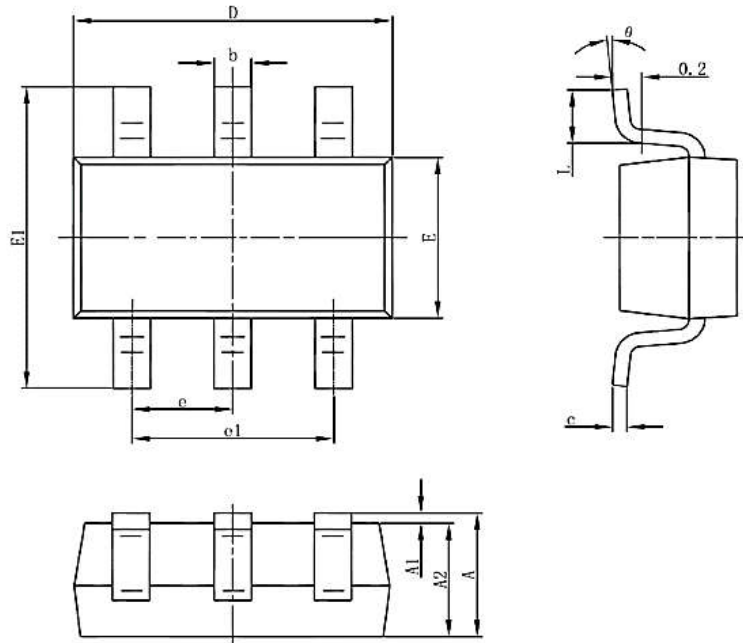


Figure 4, Diode reverse recovery test circuit & waveforms

SOT23-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
C	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 (BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0	8	0	8