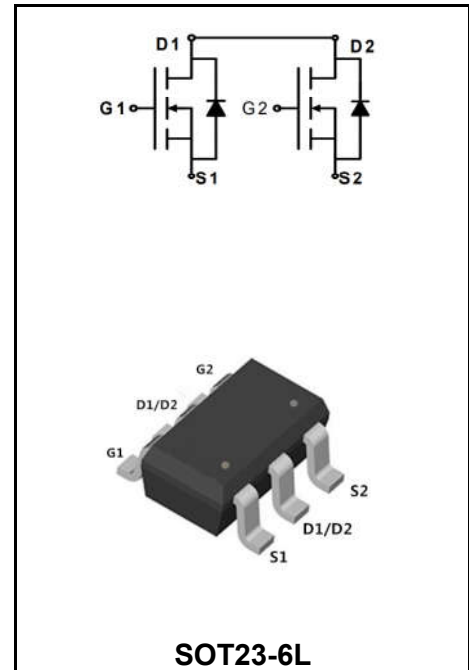


20V N+N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	8A
V_{DSS}	20V
$R_{DSON-typ}(@V_{GS}=4.5V)$	<17mΩ (Type:14 mΩ)
$R_{DSON-typ}(@V_{GS}=2.5V)$	<22mΩ (Type:18 mΩ)



Application

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFW8814LI	SOT23-6L	8814A	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

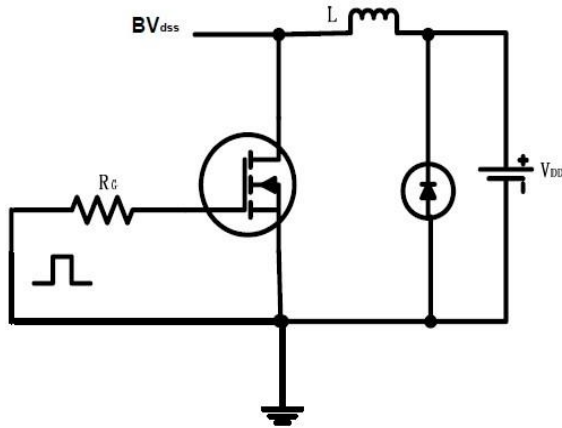
Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I_D	8	A
	I_{DM}	25	A
Maximum Power Dissipation	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	100	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

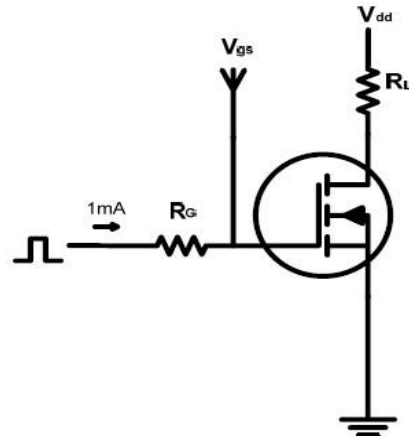
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250 \mu A$	BV_{DSS}	20	-	-	V
Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate-Body Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	V_{GS(th)}	0.5	0.8	1.2	V
Drain-Source On-State Resistance	$V_{GS} = 4.5V, I_D = 4A$	R_{DS(on)}	-	14	17	mΩ
	$V_{GS} = 2.5V, I_D = 3A$		-	18	22	
Forward Transconductance	$V_{DS} = 5V, I_D = 4A$	G_{fs}	-	10	-	S
Input Capacitance	$V_{GS}=0V$ $V_{DS}=8V$ $f=1MHz$	C_{iss}	-	800	-	pF
Output Capacitance		C_{oss}	-	155	-	
Reverse Transfer Capacitance		C_{rss}	-	125	-	
Turn-on Delay time	$V_{DD} = 10V$ $I_D = 1A$ $V_{GS} = 4V$ $R_{GEN} = 10\Omega$	T_{d(on)}	-	18.3	-	nS
Turn-on Rise Time		T_r	-	4.8	-	
Turn-Off Delay Time		t_{d(OFF)}	-	43.5	-	
Turn-Off Fall Time		T_f	-	20	-	
Total Gate Charge	$V_{DS}=10V$ $I_D=4A$ $V_{GS}=4V$	Q_g	-	11	-	nC
Gate-Source Charge		Q_{gs}	-	2.2	-	nC
Gate-Drain Charge		Q_{gd}	-	2.5	-	nC
Diode Forward Voltage (Note 3)	$V_{GS}=0V, I_S=2A$	V_{SD}	-	0.8	1.2	V
Diode Forward Current (Note 2)		I_S	-	-	2	A

Test circuits and Waveforms

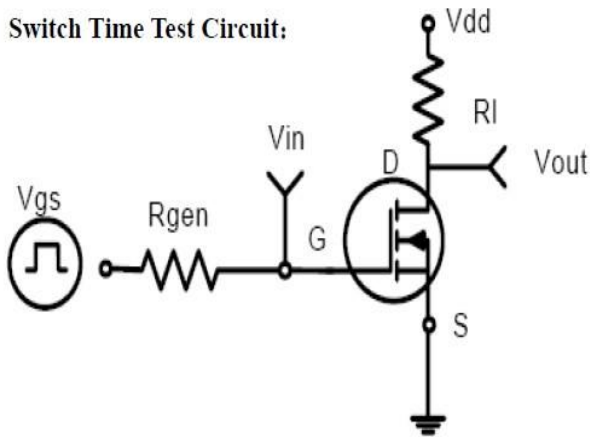
EAS test circuits:



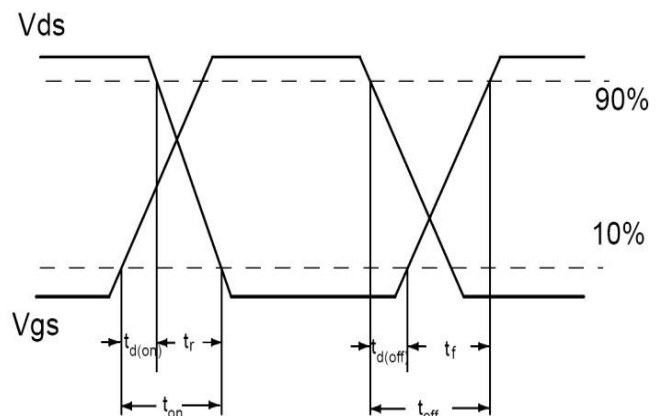
Gate charge test circuit:



Switch Time Test Circuit:



Waveforms:



NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production testing.

Ratings and Characteristic Curves

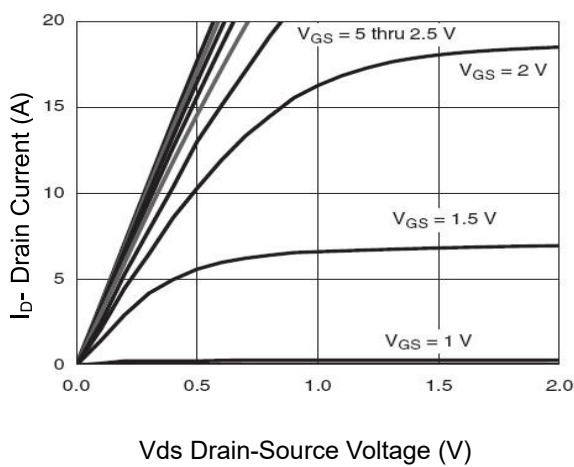


Figure 1: Typical Output Characteristics

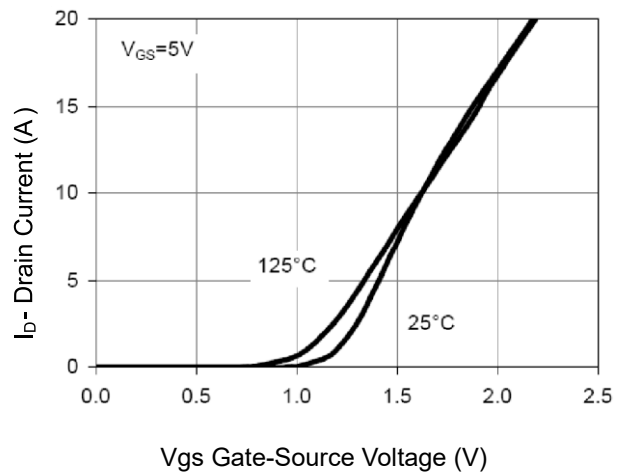


Figure 2: Transfer Characteristics

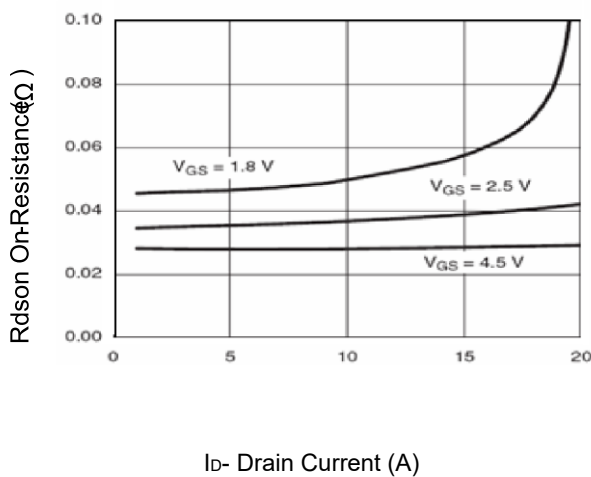


Figure 3: Drain-Source On-Resistance

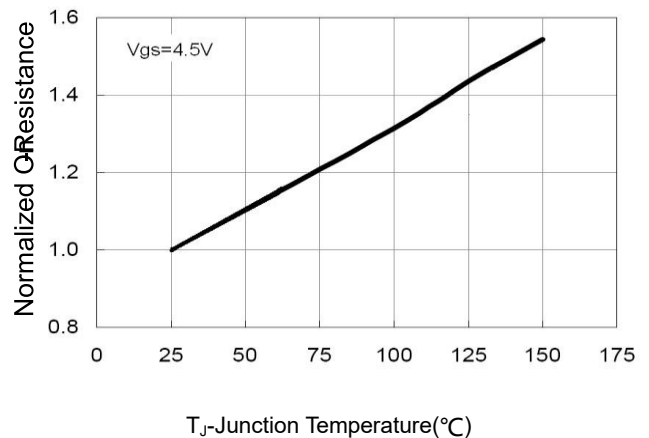


Figure 4: Drain-Source On-Resistance

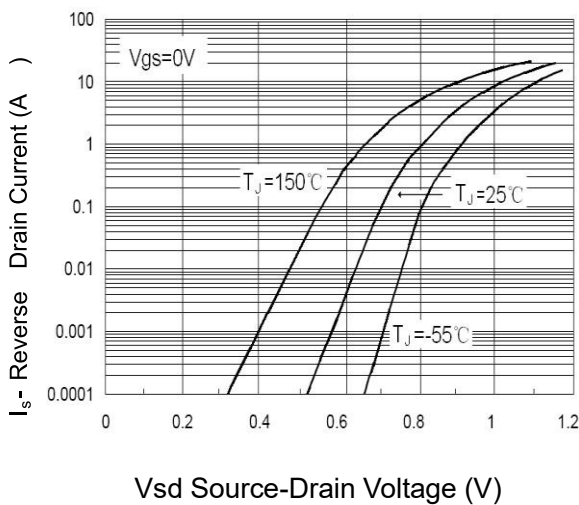


Figure 5 : Source- Drain Diode Forward

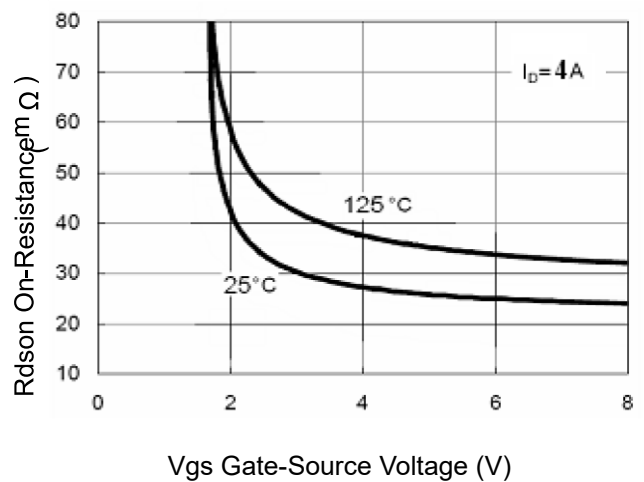
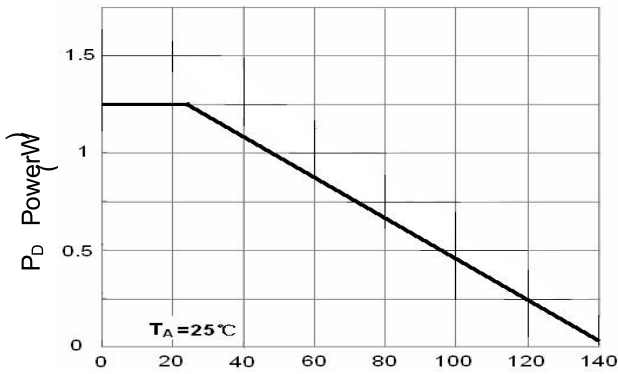
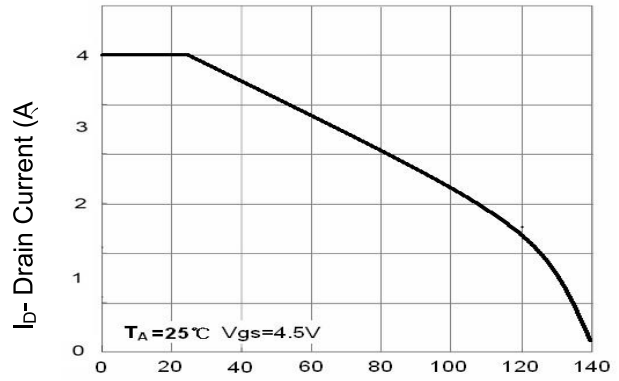


Figure 6: Rdson vs Vgs

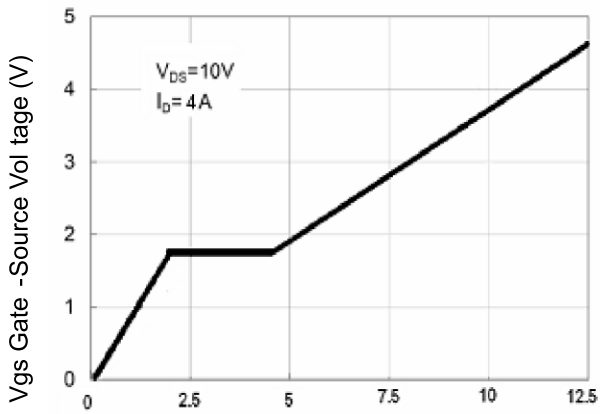
Ratings and Characteristic Curves



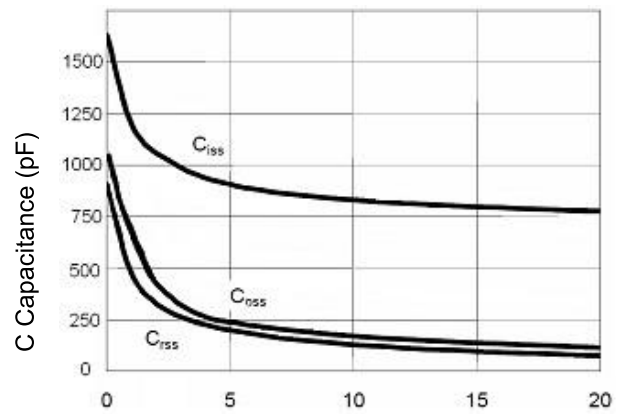
T_J-Junction Temperature(°C)
Figure 7: Power Dissipation



T_J-Junction Temperature(°C)
Figure 8: Drain Current



Q_g Gate Charge (nC)
Figure 9: Gate Charge



V_{ds} Drain-Source Voltage (V)
Figure 10: Capacitance vs Vds

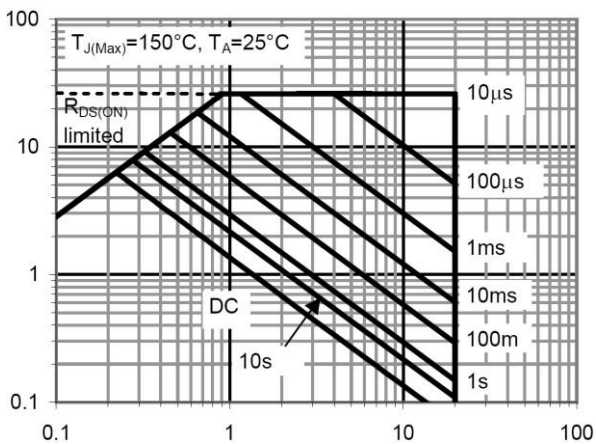


Figure 11: Safe Operation Area

Ratings and Characteristic Curves

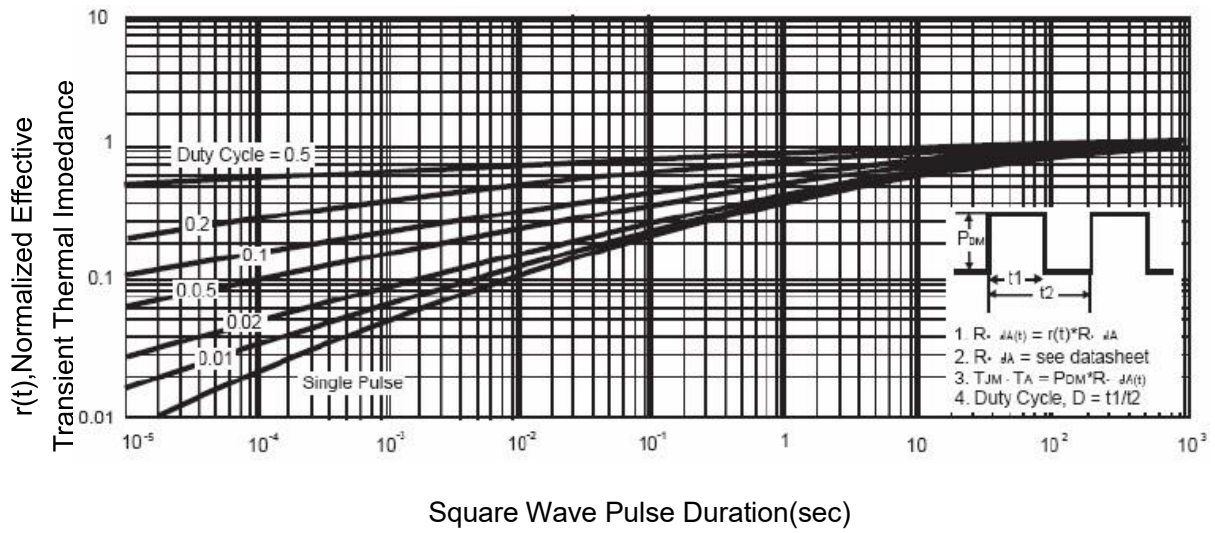
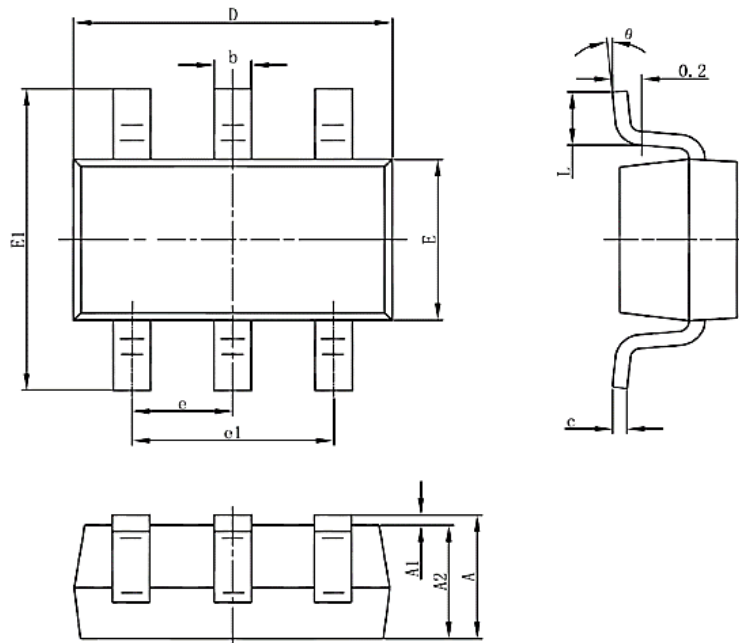


Figure 12: Normalized Maximum Transient Thermal Impedance

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