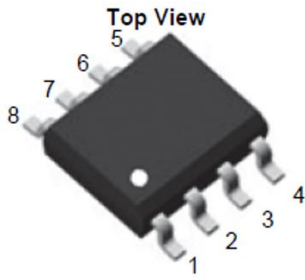
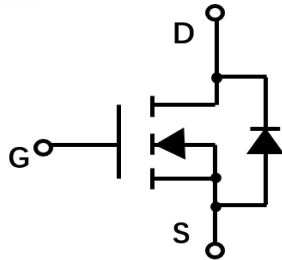
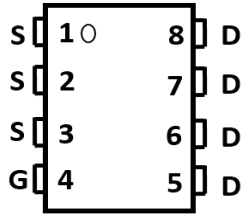


N-Channel Enhancement Mode Field Effect Transistor



SOP-8



Product Summary

V_{DS}	60V
I_D	8.2A
$R_{DS(ON)}$ (at $V_{GS} = 10V$)	22mohm
$R_{DS(ON)}$ (at $V_{GS} = 4.5V$)	34mohm

General Description

MV MOSFET technology
High density cell design for Low $R_{DS(ON)}$
High Speed switching

Applications

Battery protection
Load switch
Power management

Absolute Maximum Ratings ($T_A=25$ unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-source Voltage	V_{DS}	60	V	
Gate-source Voltage	V_{GS}	20	V	
Drain Current ^A	I_D	$T_A=25$	8.2	A
		$T_A=70$	6.6	
Pulsed Drain Current ^B	I_{DM}	39	A	
Total Power Dissipation	P_D	$T_A=25$	3.1	W
		$T_A=70$	2	
Thermal Resistance Junction-to-Ambient	R		40	/ W
		Steady-State	75	
Thermal Resistance Junction-to-Case	Steady-State	R	30	/ W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 +150		

Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJS4438A	F2	Q4438	4000	8000	64000	



YJS4438A

Electrical Characteristics (T_J=25 unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	
Gate-Body Leakage Current	I _{GSS}	V _{GS} = 20V, V _{DS} =0V			100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =8.2A		14.5	22	
		V _{GS} = 4.5V, I _D =7.6A		17	34	
Diode Forward Voltage	V _{SD}	I _S =8.2A V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				8.2	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1MHZ		2027		pF
Output Capacitance	C _{oss}			132		
Reverse Transfer Capacitance	C _{riss}			116		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =30V, I _D =10A		51		nC
Gate-Source Charge	Q _{gs}			8.1		
Gate-Drain Charge	Q _{gd}			11.4		
Reverse Recovery Charge	Q _{rr}	I _F =20A, di/dt=500A/us		11.4		
Reverse Recovery Time	t _{rr}			22		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =30V, I _D =2A, R _{GEN} =3		11		ns
Turn-on Rise Time	t _r			21		
Turn-off Delay Time	t _{D(off)}			40		
Turn-off fall Time	t _f			23		

A. Pulse Test: Pulse Width 300us, Duty cycle 2%.

B. R_{JA} is the sum of the junction-to-lead and lead-to-ambient thermal resistance, where the lead thermal reference is defined as the solder mounting surface of the drain pins. R_{JL} is guaranteed by design, while R_{JA} is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.



Typical Performance Characteristics

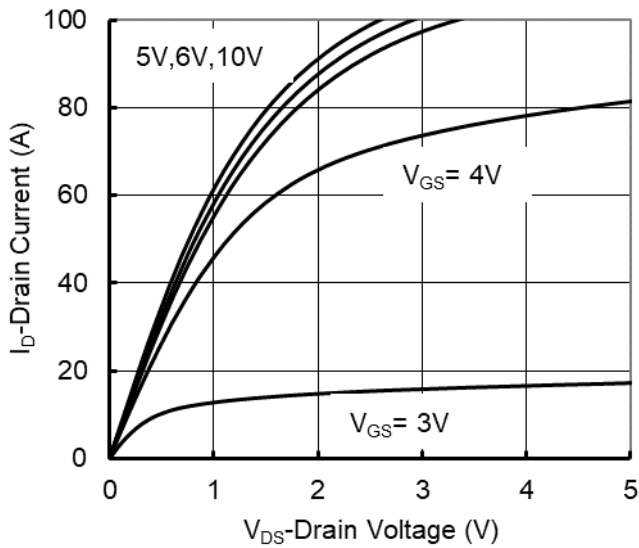


Figure 1. Output Characteristics

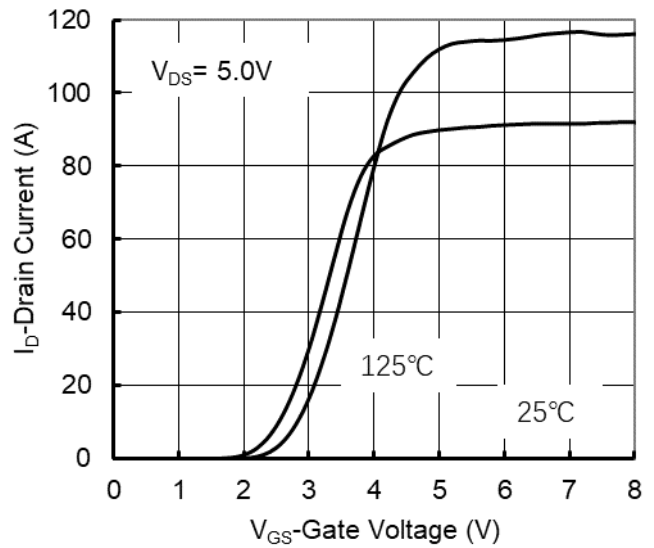


Figure 2. Transfer Characteristics

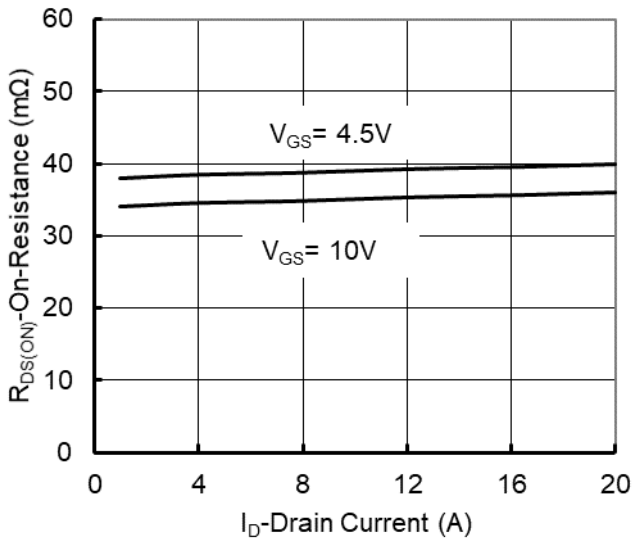


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

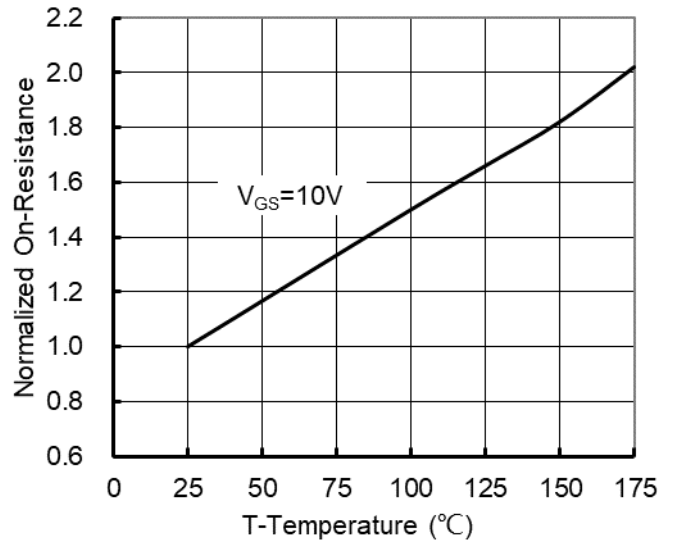


Figure 4. On-Resistance vs. Junction Temperature

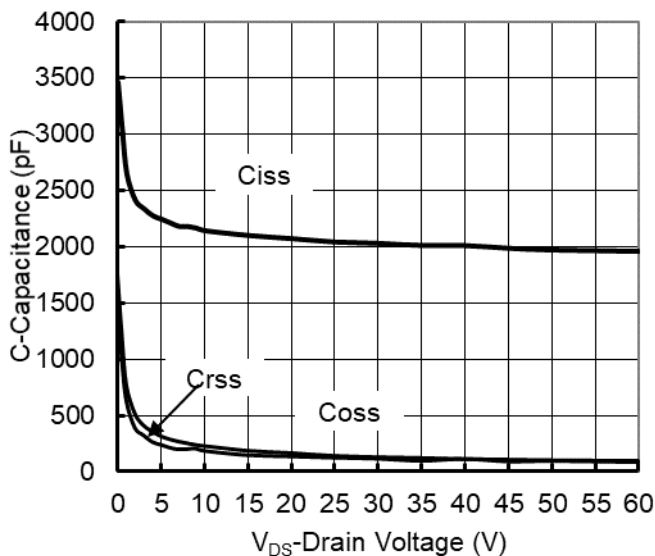


Figure 5. Capacitance Characteristics

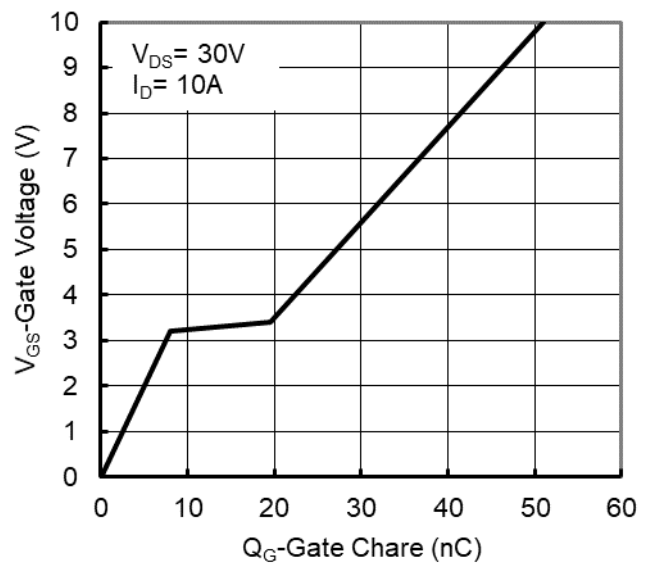


Figure 6. Gate Charge

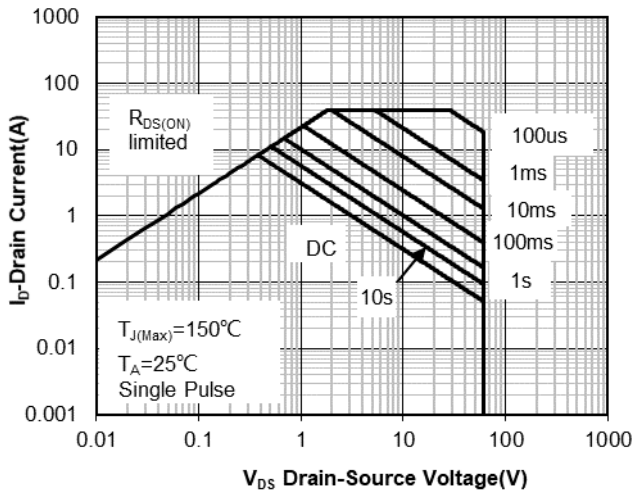


Figure 7. Safe Operation Area

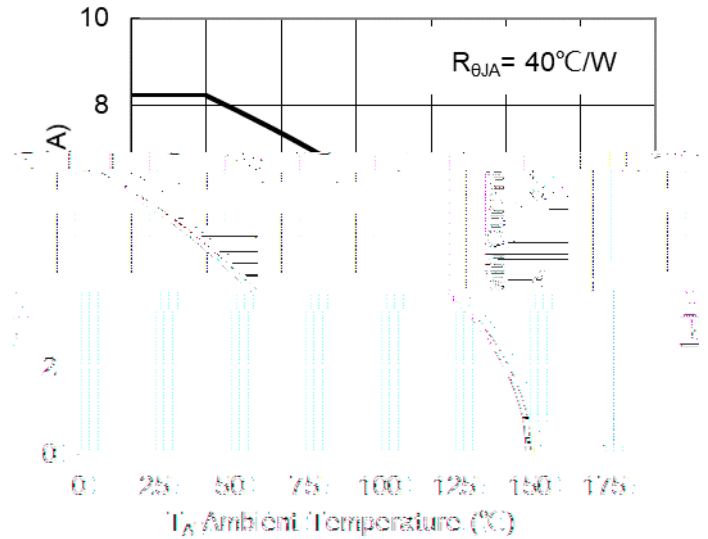


Figure 8. Maximum Continuous Drain Current vs Ambient Temperature

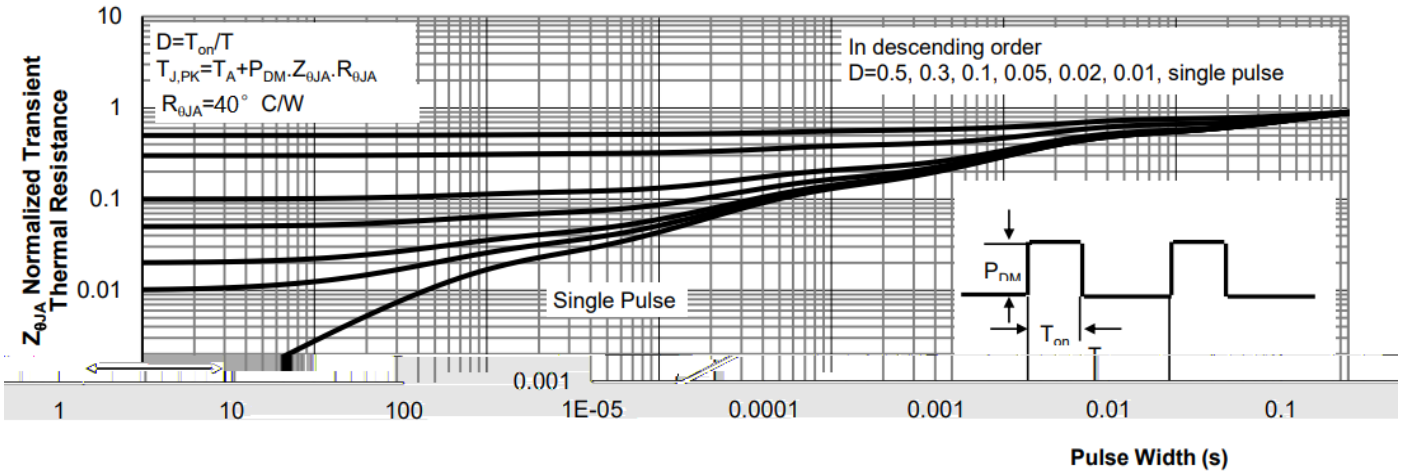
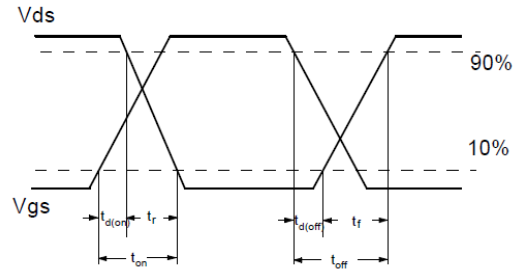
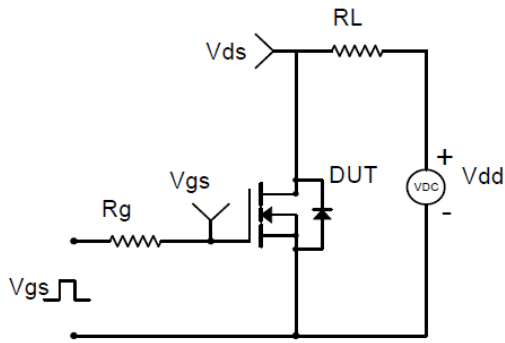
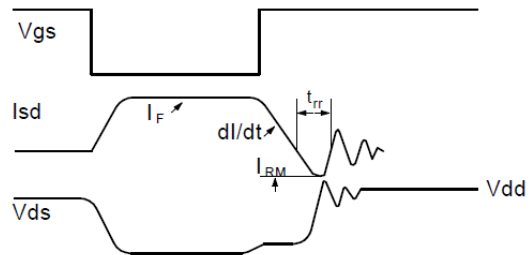
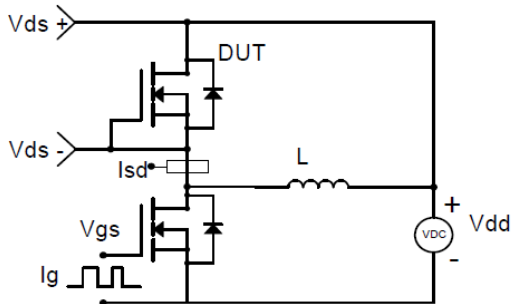


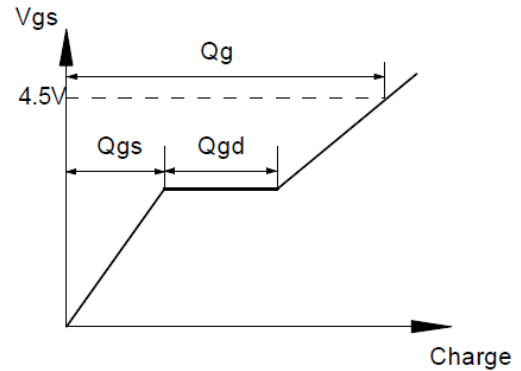
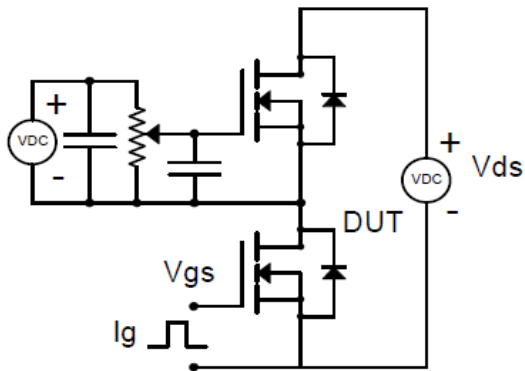
Figure 9. Normalized Maximum Transient Thermal Impedance



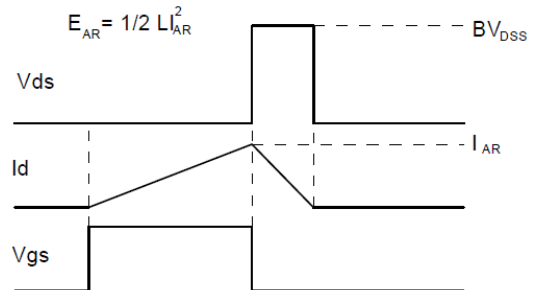
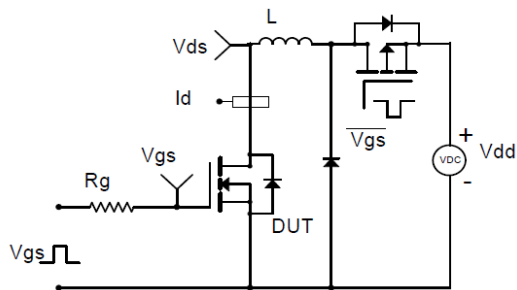
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



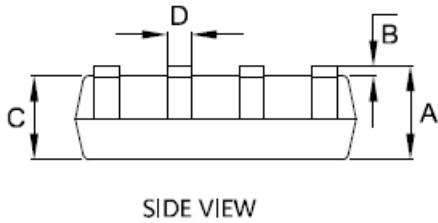
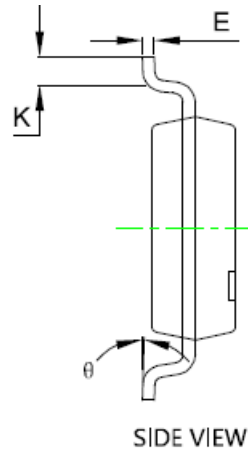
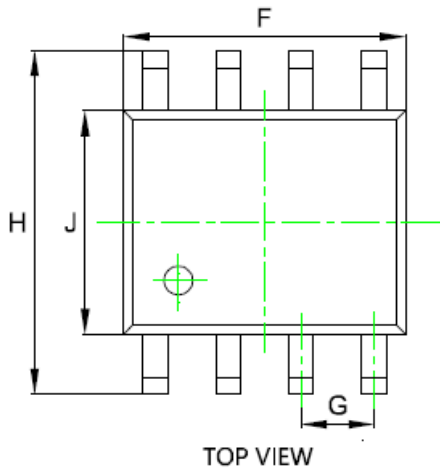
Gate Charge Test Circuit & Waveform



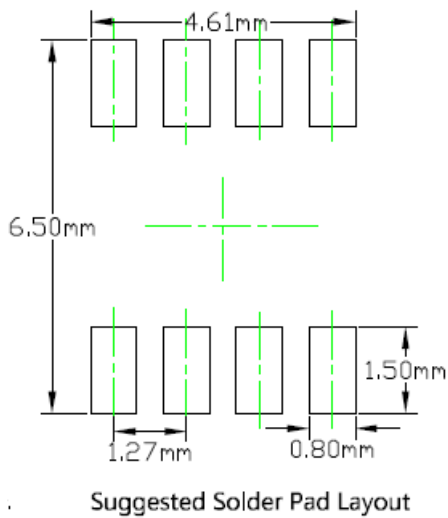
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



SOP-8 Package information



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.053	0.069	1.350	1.750
B	0.004	0.010	0.100	0.250
C	0.053	0.061	1.350	1.550
D	0.013	0.020	0.330	0.510
E	0.007	0.010	0.170	0.250
F	0.189	0.197	4.800	5.000
G	0.050BSC		1.270BSC	
H	0.228	0.244	5.800	6.200
J	0.150	0.157	3.800	4.000
K	0.016	0.050	0.400	1.270
θ	0°	8°	0°	8°



Note

1. Controlling dimension: in millimeters
2. General tolerance: 0.5mm.
3. The pad layout is for reference purposes only.



YJS4438A

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