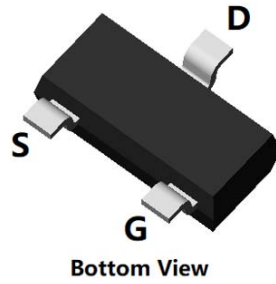
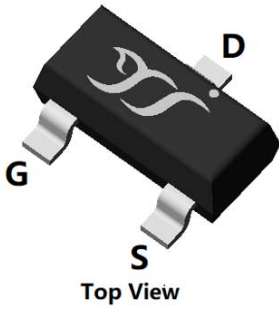
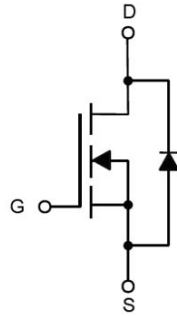


N-Channel Enhancement Mode Field Effect Transistor



SOT-23



Product Summary

• V_{DS}	20V
• I_D	6.8A
• $R_{DS(ON)}$ (at $V_{GS}=4.5V$)	< 18mohm
• $R_{DS(ON)}$ (at $V_{GS}=2.5V$)	< 22mohm
• $R_{DS(ON)}$ (at $V_{GS}=1.8V$)	< 39mohm

General Description

- Trench Power LV MOSFET technology
- High Power and current handling capability
- Part no. with suffix "Q" means AEC-Q101 qualified

Applications

- PWM applications
- Load switch

■ Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	20	V
Gate-source Voltage		V_{GS}	± 10	V
Drain Current	$T_A=25^{\circ}C$	I_D	6.8	A
	$T_A=70^{\circ}C$		5.4	
Pulsed Drain Current ^A		I_{DM}	27	A
Total Power Dissipation	$T_A=25^{\circ}C$	P_D	1.25	W
	$T_A=70^{\circ}C$		0.8	W
Thermal Resistance Junction-to-Ambient ^B		$R_{\theta JA}$	100	$^{\circ}C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^{\circ}C$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJL2312AQ	F2	S12.	3000	30000	120000	7" reel



YJL2312AQ

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.45	0.62	1.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =6.8A		13.5	18	mΩ
		V _{GS} =2.5V, I _D =3A		17	22	
		V _{GS} =1.8V, I _D =2.5A		22	39	
Diode Forward Voltage	V _{SD}	I _S =6.8A, V _{GS} =0V			1.2	V
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHZ		888		pF
Output Capacitance	C _{oss}			133		
Reverse Transfer Capacitance	C _{rss}			117		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =6.8A		11.05		nC
Gate-Source Charge	Q _{gs}			1.73		
Gate-Drain Charge	Q _{gd}			3.1		
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V, V _{DS} =10V, I _D =6.8A R _{GEN} =3Ω		7		ns
Turn-on Rise Time	t _r			46		
Turn-off Delay Time	t _{D(off)}			30		
Turn-off fall Time	t _f			52		

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

B. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design, while R_{θJA} 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

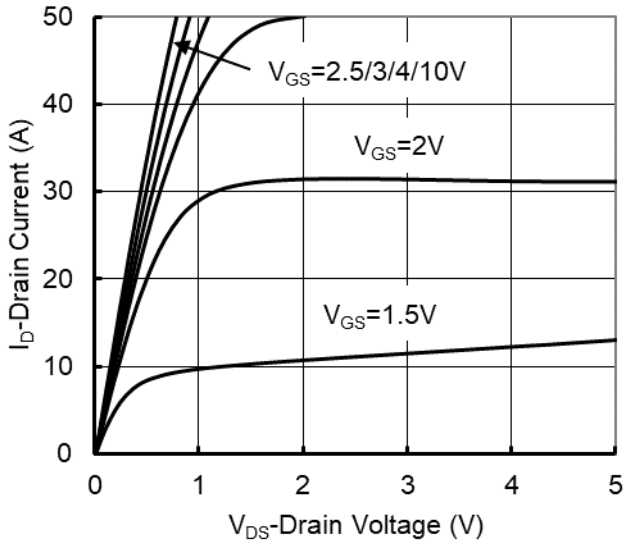


Figure1. Output Characteristics

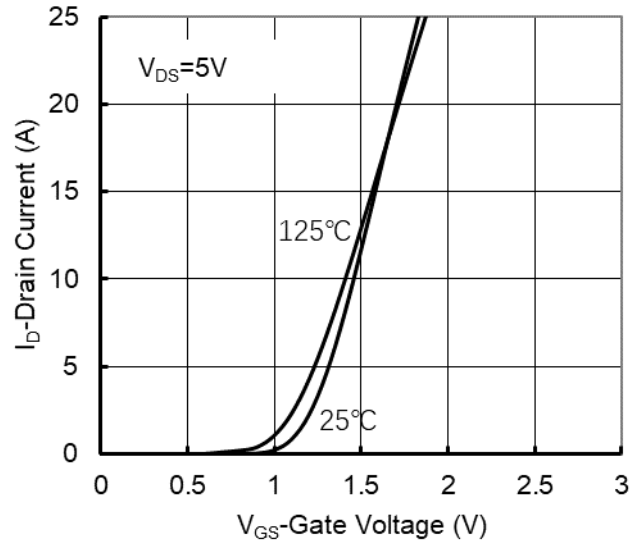


Figure2. Transfer Characteristics

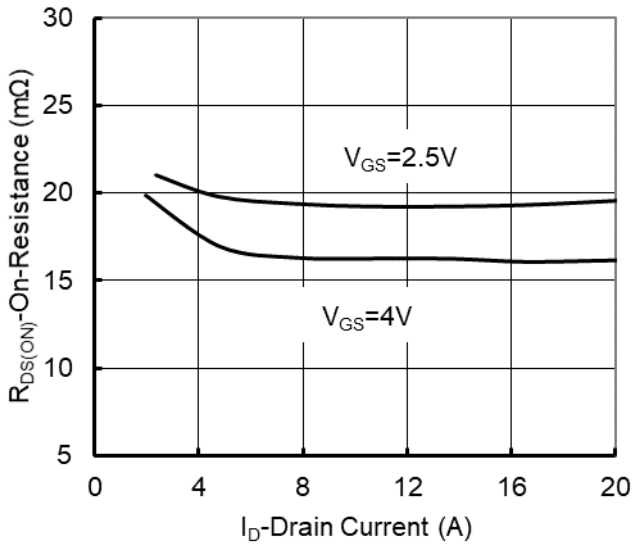


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

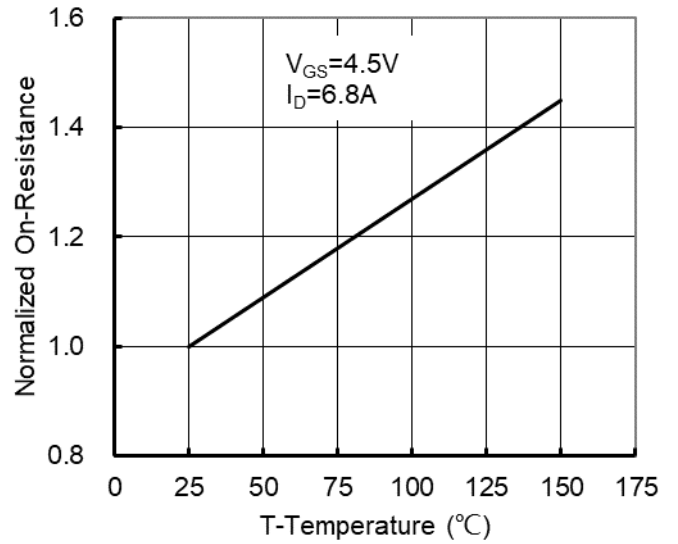


Figure 4: On-Resistance vs. Junction Temperature

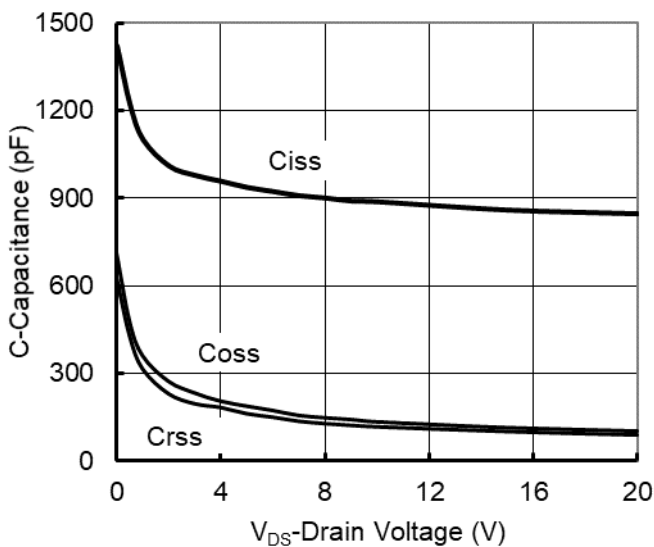


Figure5. Capacitance Characteristics

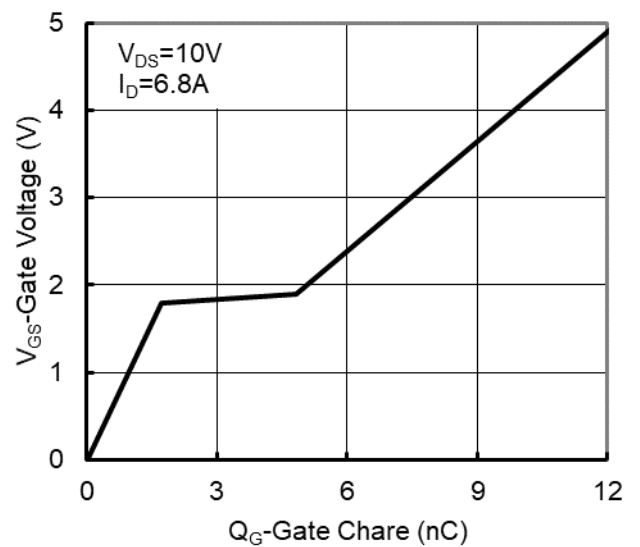


Figure6. Gate Charge



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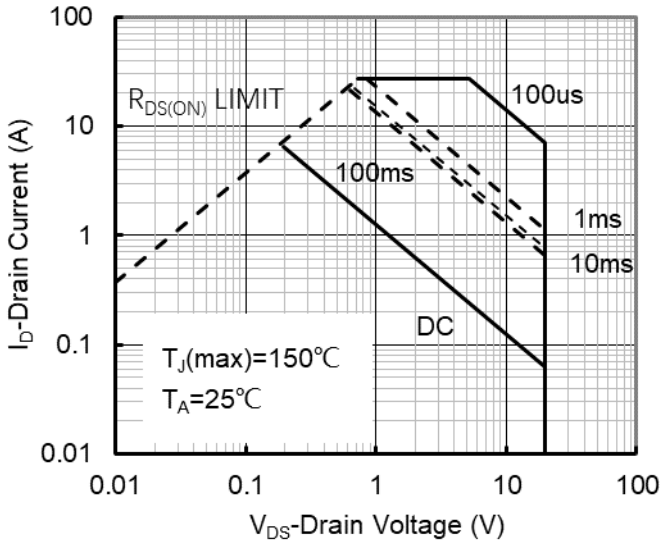


Figure7. Safe Operation Area

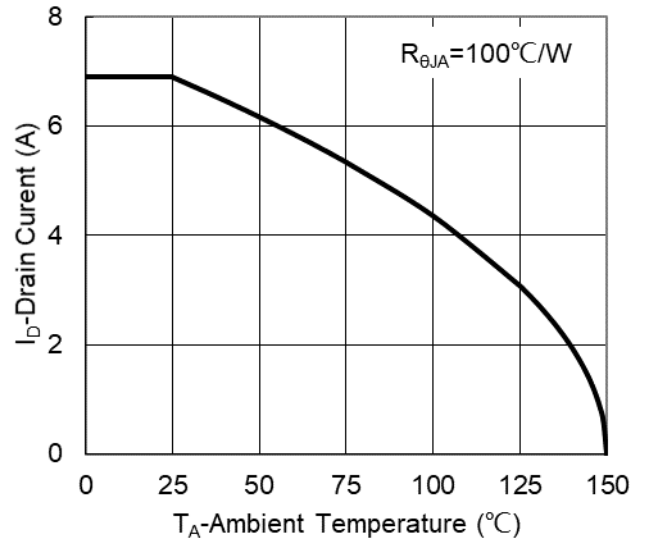


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

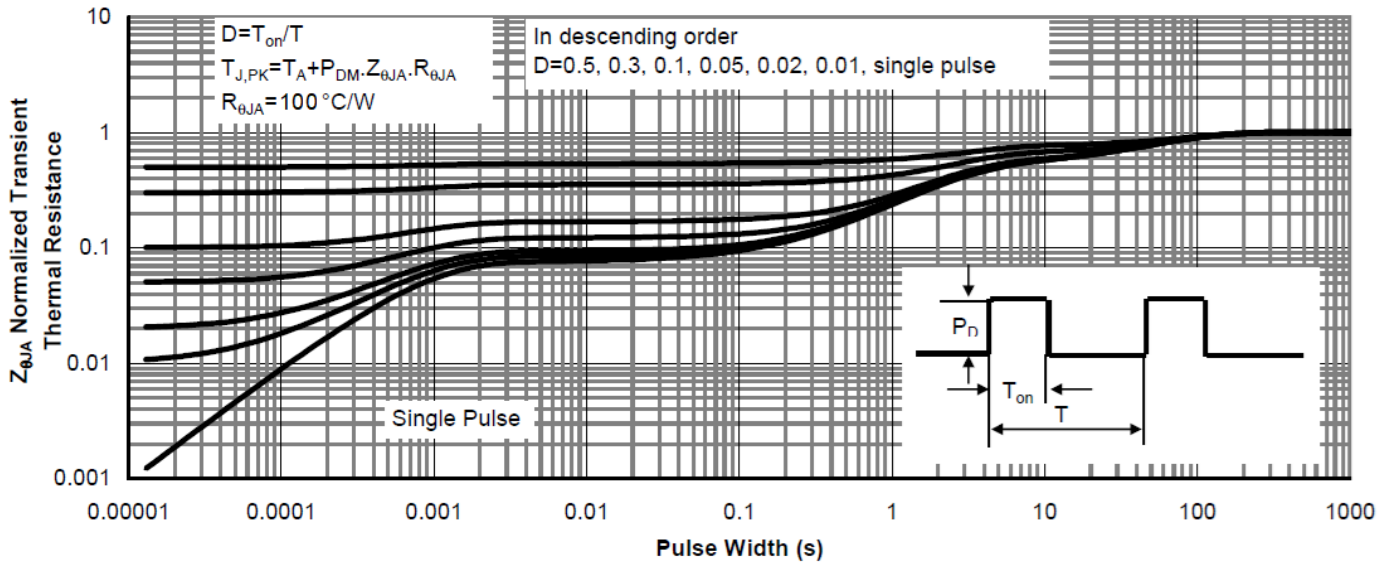
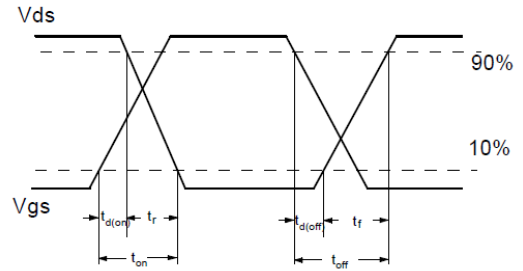
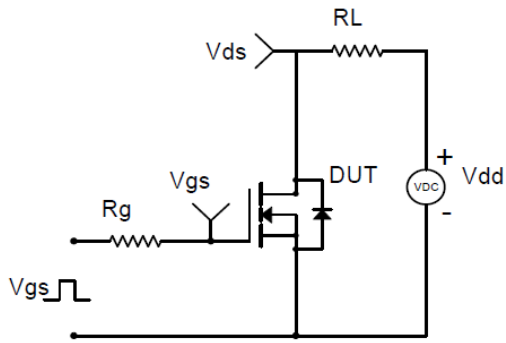
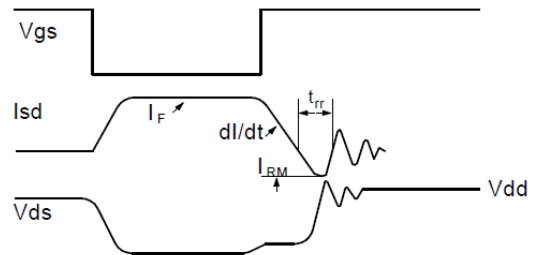
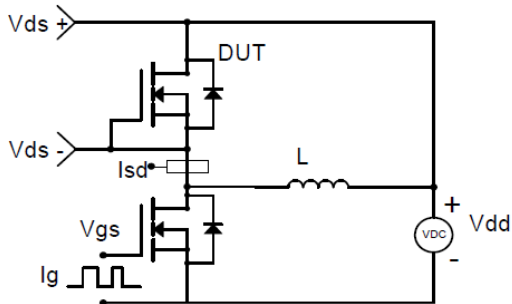


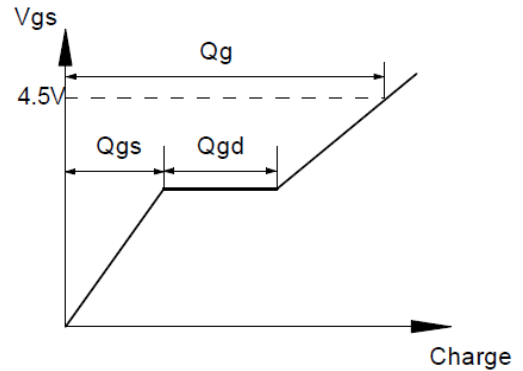
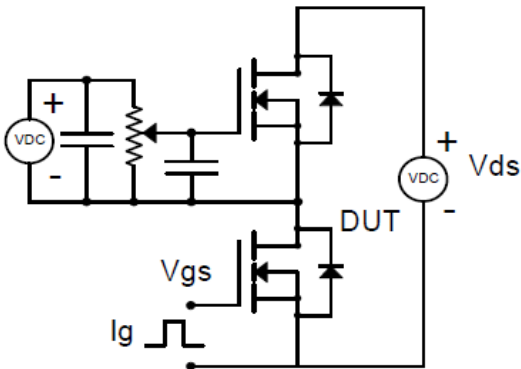
Figure9. Normalized Maximum Transient Thermal Impedance



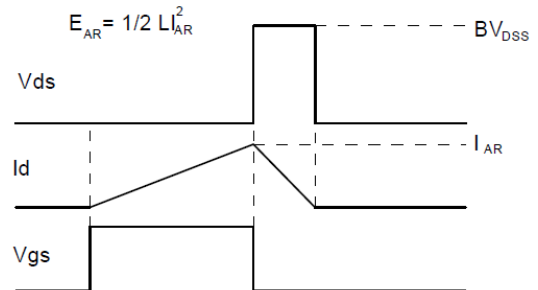
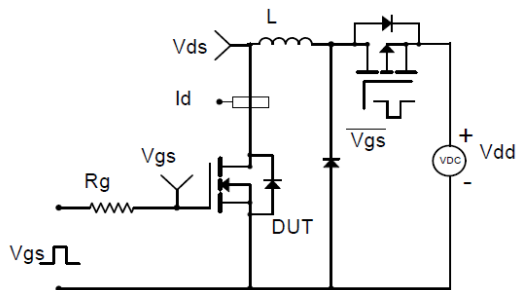
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

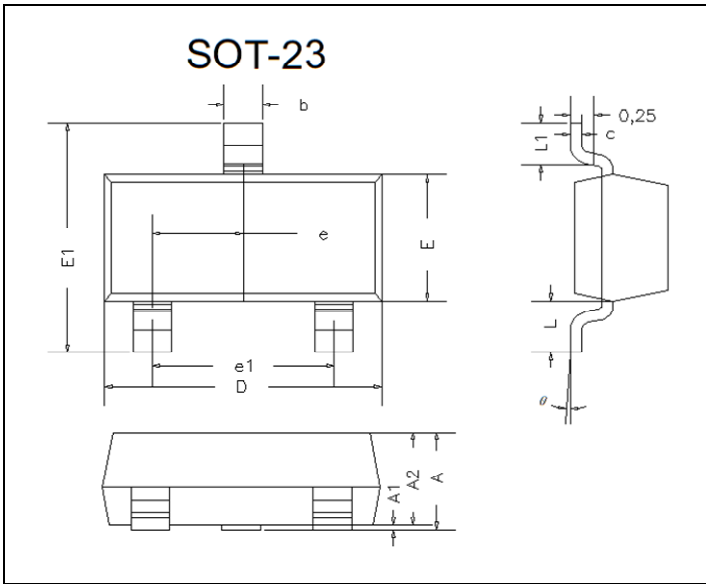


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



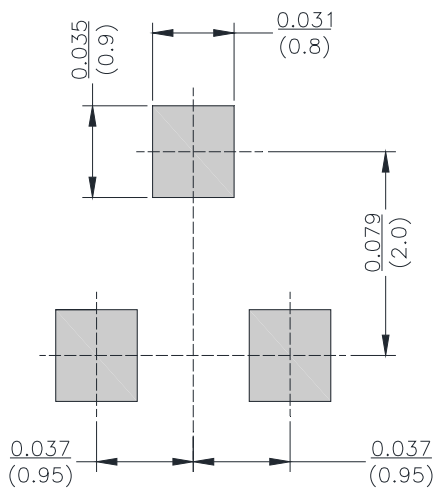
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■ SOT-23 Package information



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.035	0.045	0.90	1.15	
A1	0.000	0.004	0.00	0.10	
A2	0.035	0.041	0.90	1.05	
b	0.012	0.020	0.30	0.50	
c	0.004	0.008	0.10	0.20	
D	0.110	0.118	2.80	3.00	
E	0.047	0.055	1.20	1.40	
E1	0.089	0.100	2.25	2.55	
e	0.370TYP		0.95TYP		
e1	0.071	0.079	1.80	2.00	
L	0.220REF		0.55REF		
L1	0.012	0.020	0.30	0.50	
θ	0°	8°	0°	8°	

■ SOT-23 Suggested Pad Layout





YJL2312AQ

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