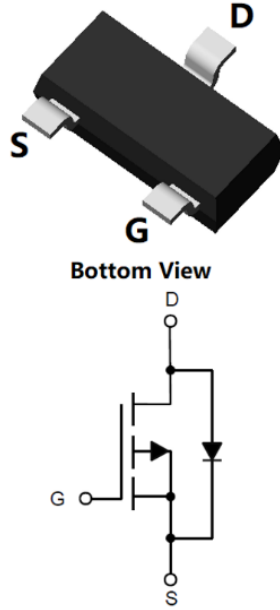
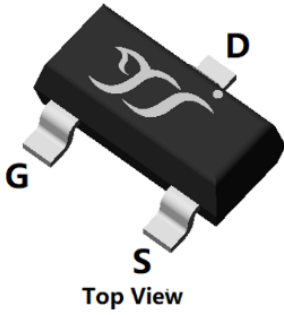


P-Channel Enhancement Mode Field Effect Transistor



SOT-23

Product Summary

- V_{DS} -20V
- I_D -5.4A
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <39mohm
- $R_{DS(ON)}$ (at $V_{GS}=-2.5V$) <49mohm
- $R_{DS(ON)}$ (at $V_{GS}=-1.8V$) <63mohm
- 100% ∇V_{DS} Tested

General Description

- Trench Power LV MOSFET technology
- High Power and Current handing capability
- Moisture Sensitivity Level 1
- Low Gate Charge

Applications

- Battery protection
- Power management
- 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	I_D	$T_A=25^\circ C$	-5.4
		$T_A=70^\circ C$	-4.4
Pulsed Drain Current ^A	I_{DM}	-22	A
Total Power Dissipation	P_D	$T_A=25^\circ C$	1.2
		$T_A=70^\circ C$	0.8
Thermal Resistance Junction-to-Ambient ^B	$R_{\theta JA}$	104	$^\circ C/W$
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
YJL2305B	F2	S5B.	3000	30000	120000	7" reel



YJL2305B

■ 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	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-5.4A		27	39	mΩ
		V _{GS} =-2.5V, I _D =-4A		36	49	
		V _{GS} =-1.8V, I _D =-3A		48	63	
Diode Forward Voltage	V _{SD}	I _S =-5.4A, V _{GS} =0V			-1.2	V
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHZ		1010		pF
Output Capacitance	C _{oss}			130		
Reverse Transfer Capacitance	C _{rss}			109		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-4A		10.98		nC
Gate-Source Charge	Q _{gs}			2.17		
Gate-Drain Charge	Q _{gd}			2.54		
Reverse Recovery Charge	Q _{rr}	I _F =-4A, di/dt=100A/us		4.38		ns
Reverse Recovery Time	t _{rr}			24.8		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-4.5V, V _{DS} =-10V, R _L =2.5Ω R _{GEN} =3Ω		8.4		ns
Turn-on Rise Time	t _r			36.2		
Turn-off Delay Time	t _{D(off)}			76.8		
Turn-off fall Time	t _f			56.2		

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

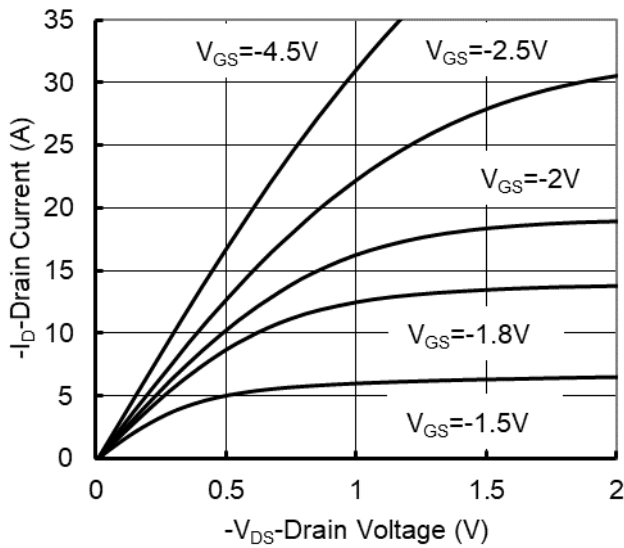


Figure1. Output Characteristics

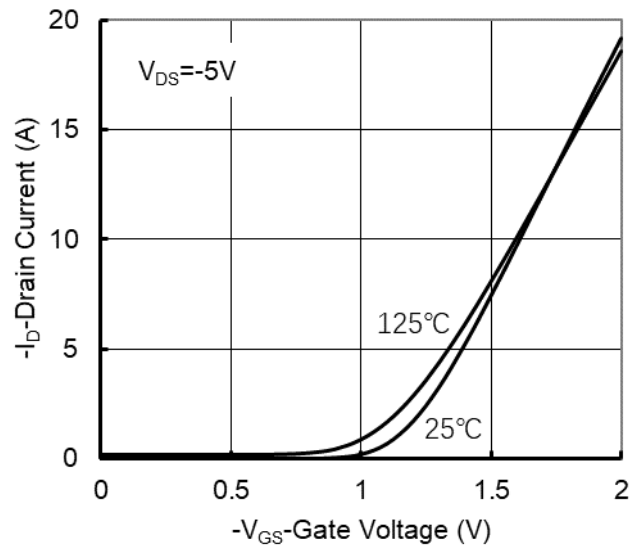


Figure2. Transfer Characteristics

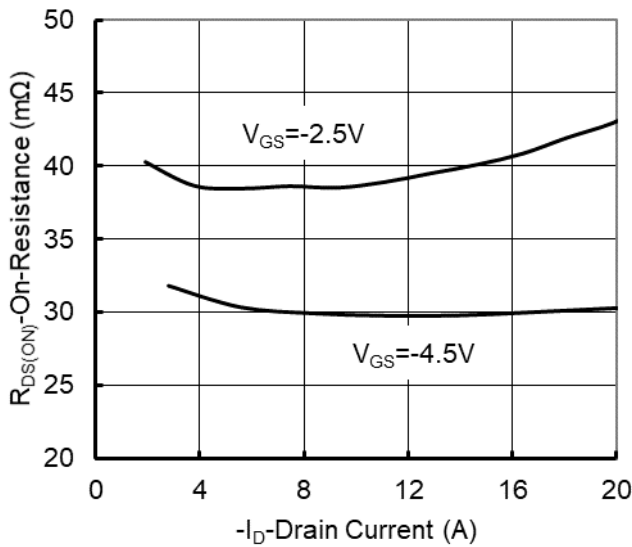


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

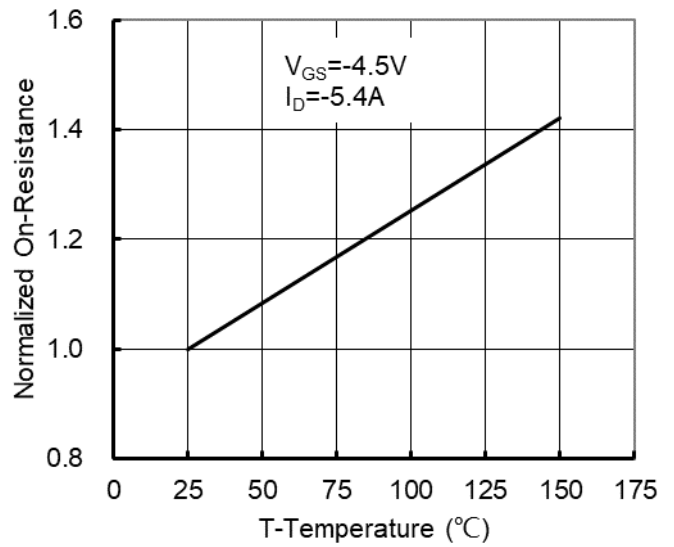


Figure 4: On-Resistance vs. Junction Temperature

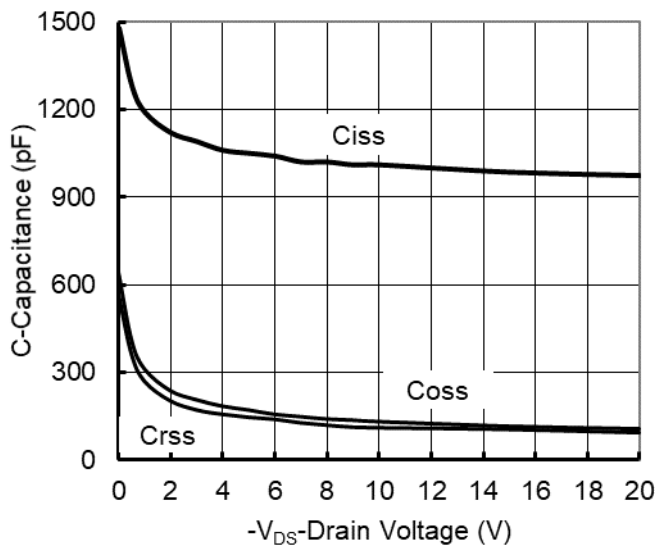


Figure5. Capacitance Characteristics

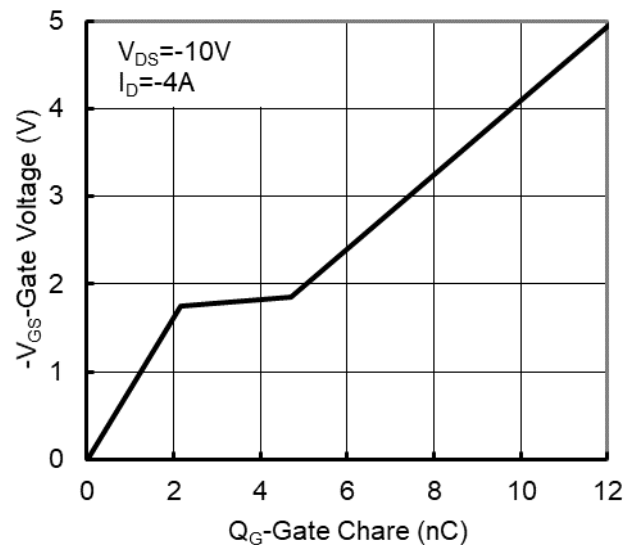


Figure6. Gate Charge



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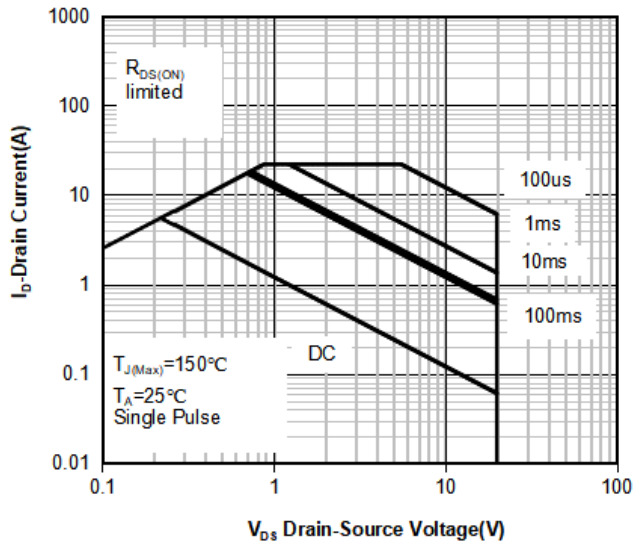


Figure7. Safe Operation Area

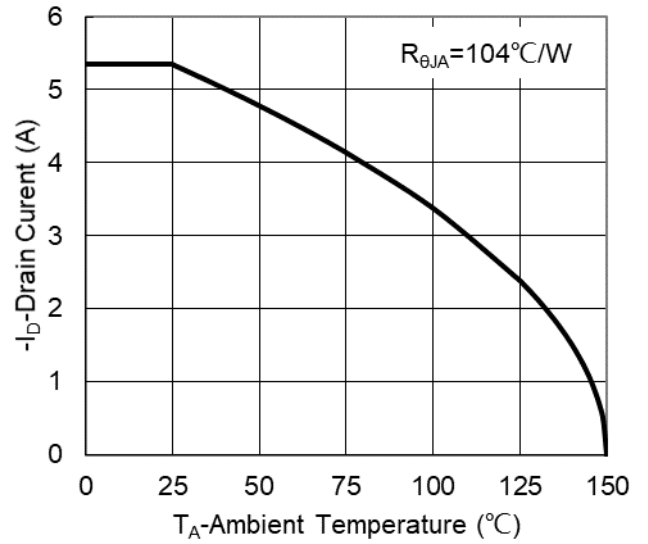


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

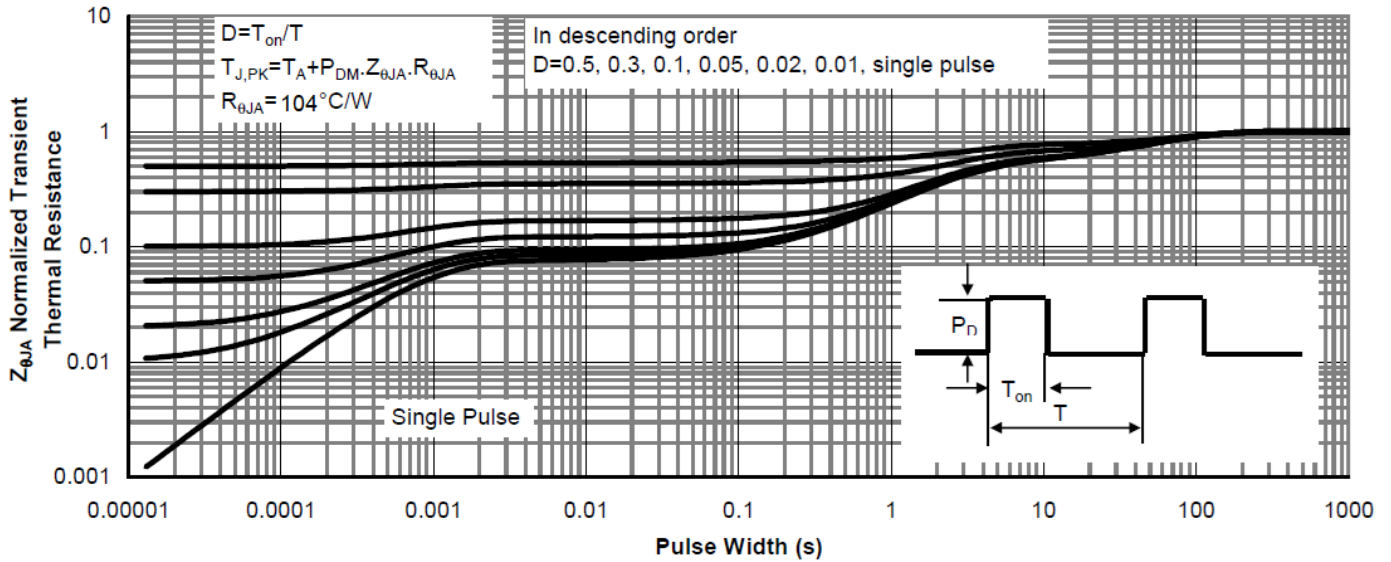
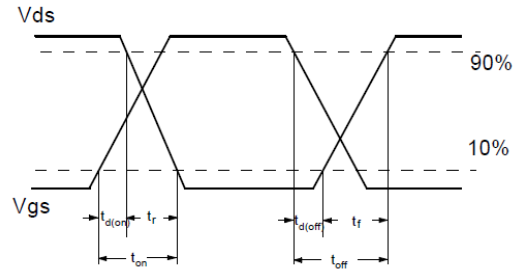
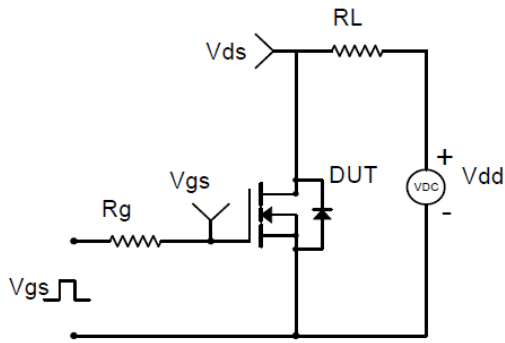
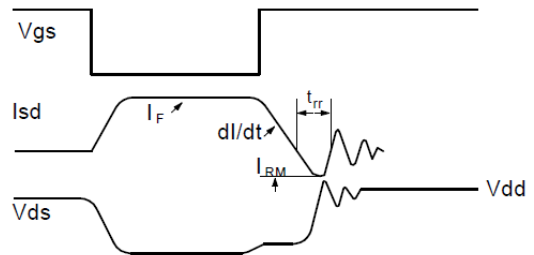
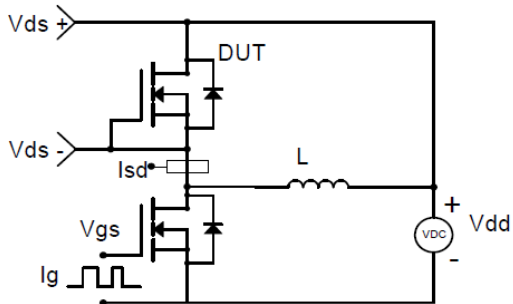


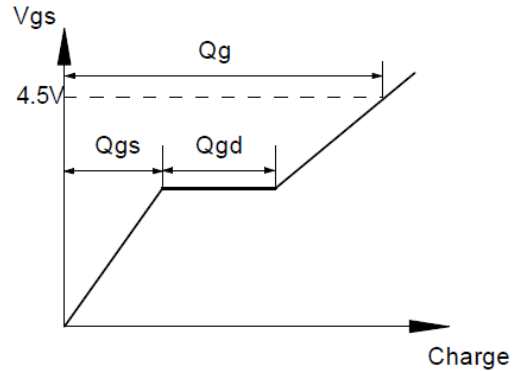
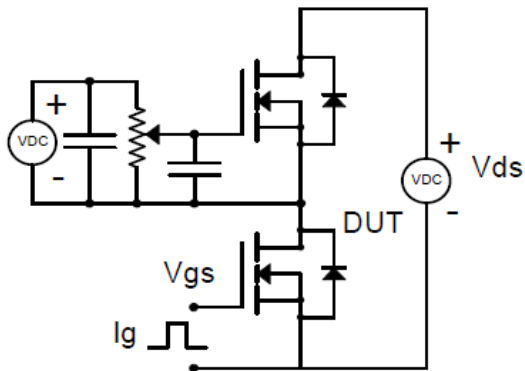
Figure9. Normalized Maximum Transient Thermal Impedance



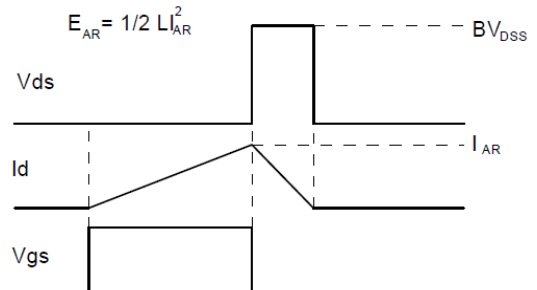
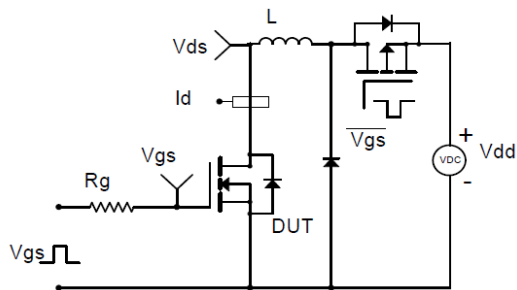
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

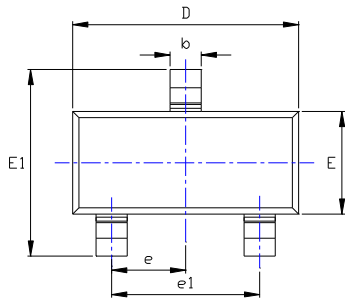


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

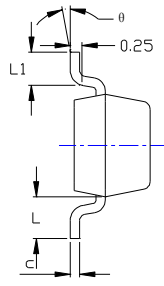


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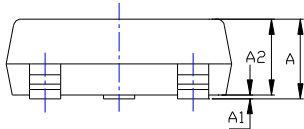
■ SOT-23 Package Information



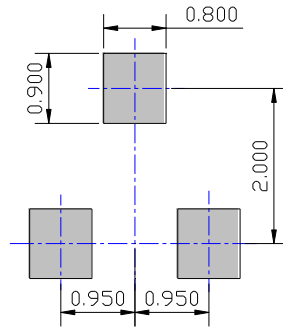
TOP VIEW



SIDE VIEW



SIDE VIEW



UNIT: mm

SUGGESTED SOLDER PAD LAYOUT

SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.045	0.900	1.150
A1	0.000	0.004	0.000	0.100
A2	0.035	0.041	0.900	1.050
b	0.012	0.020	0.300	0.500
c	0.004	0.008	0.100	0.200
D	0.110	0.118	2.800	3.000
E	0.047	0.055	1.200	1.400
E1	0.089	0.100	2.250	2.550
e	0.037TYP		0.950TYP	
e1	0.071	0.079	1.800	2.000
L	0.022REF		0.550REF	
L1	0.012	0.200	0.300	0.500
θ	0°	8°	0°	8°

NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
- 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



YJL2305B

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