



YJL3400A

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YJL3400B
FOR NEW DESIGN

N-Channel Enhancement Mode Field Effect Transistor

Product Summary

V_{DS}	30V
I_D	5.6A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	25mohm
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	31mohm
$R_{DS(ON)}$ (at $V_{GS}=2.5V$)	45mohm

General Description

Trench Power LV MOSFET technology
 High density cell design for low $R_{DS(ON)}$
 High Speed switching

+

Epoxy Meets UL 94 V-0 Flammability Rating
 Halogen Free

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}	30	V
Gate-source Voltage		V_{GS}	12	V
Drain Current	$T_A=25$	I_D	5.6	A
	$T_A=70$		4.5	



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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 =250	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	
Gate-Body Leakage Current	I _{GSS1}	V _{GS} = 12V, V _{DS} =0V			100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250	0.65	0.9	1.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5.6A		20	25	m
		V _{GS} =4.5V, I _D =5A		23	31	
		V _{GS} =2.5V, I _D =3A		27	45	
Diode Forward Voltage	V _{SD}	I _S =5.6A, V _{GS} =0V			1.2	V
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz		630		pF
Output Capacitance	C _{oss}			55		
Reverse Transfer Capacitance	C _{rss}			71		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =5.6A		17.25		nC
Gate-Source Charge	Q _{gs}			2.1		
Gate-Drain Charge	Q _{gd}			2		
Reverse Recovery Chrage	Q _{rr}	I _F =5.6A, di/dt=100A/us		1.1		
Reverse Recovery Time	t _{rr}			13.1		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DS} =15V, I _D =5.6A R _{GEN} =-		4.4		ns
Turn-on Rise Time	t _r			28.2		
Turn-off Delay Time	t _{D(off)}			16.2		
Turn-off fall Time	t _f			26		

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

B. R_{JA} 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_{JC} 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.

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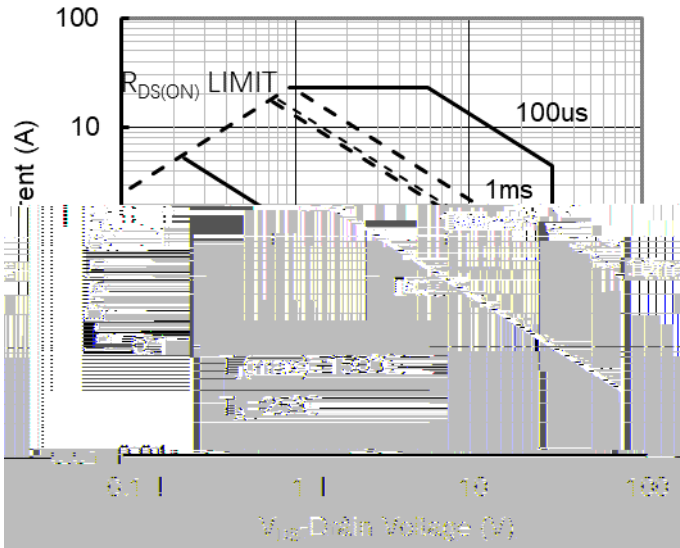


Figure7. Safe Operation Area

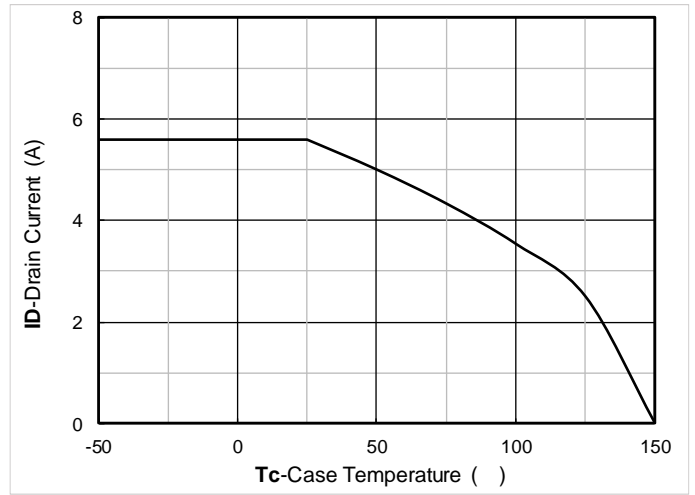


Figure8. Current dissipation

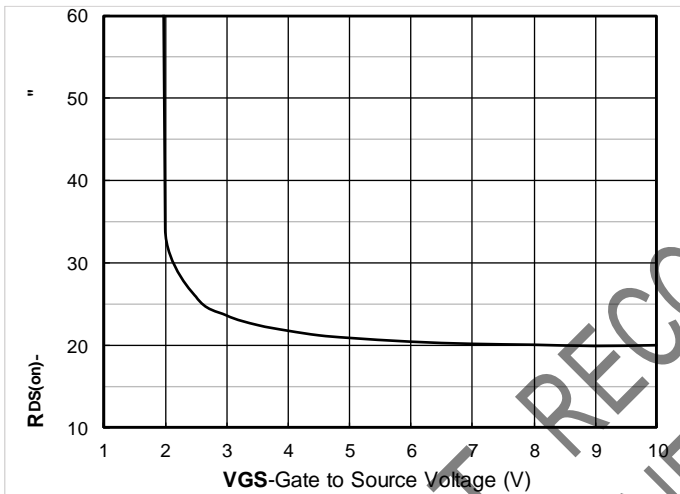


Figure 9. On-Resistance vs Gate to Source Voltage

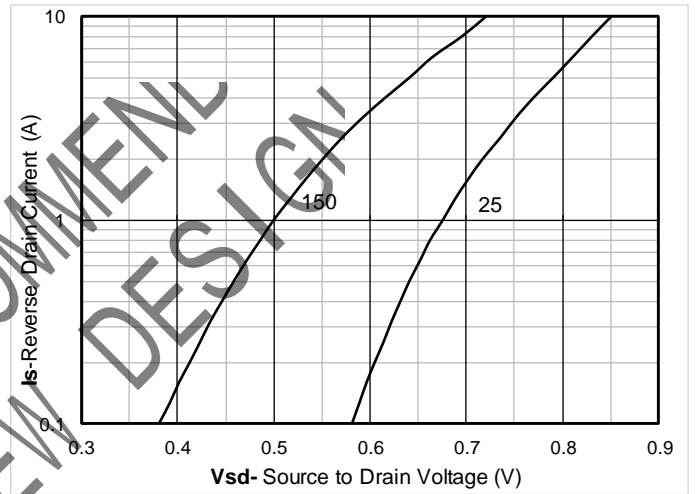


Figure 10. Forward characteristics of reverse diode

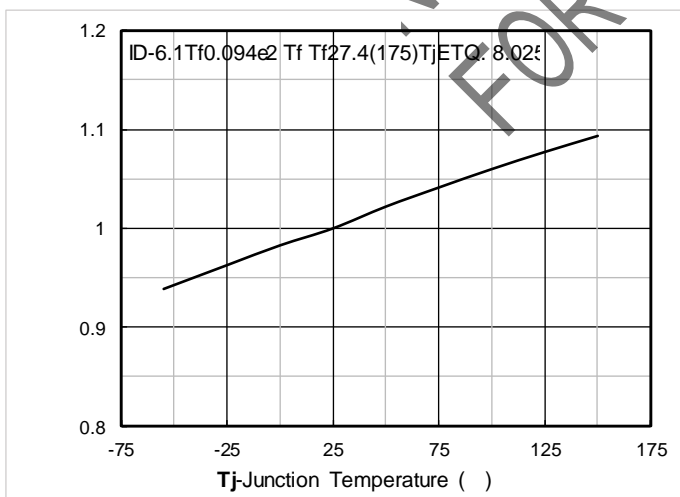


Figure 11. Normalized breakdown voltage

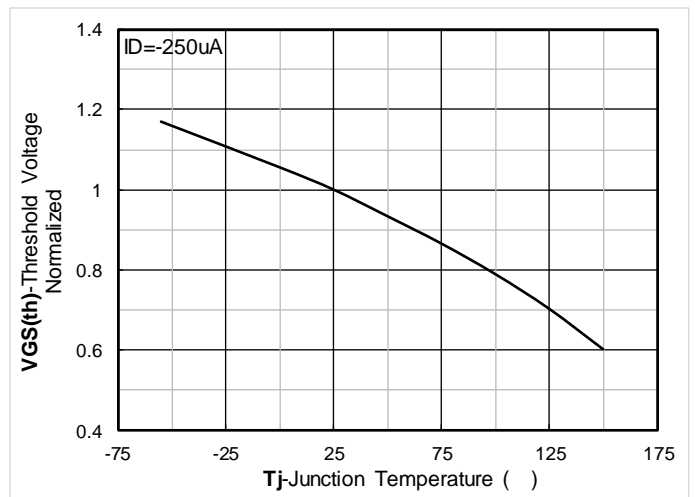


Figure 12. Normalized Threshold voltage



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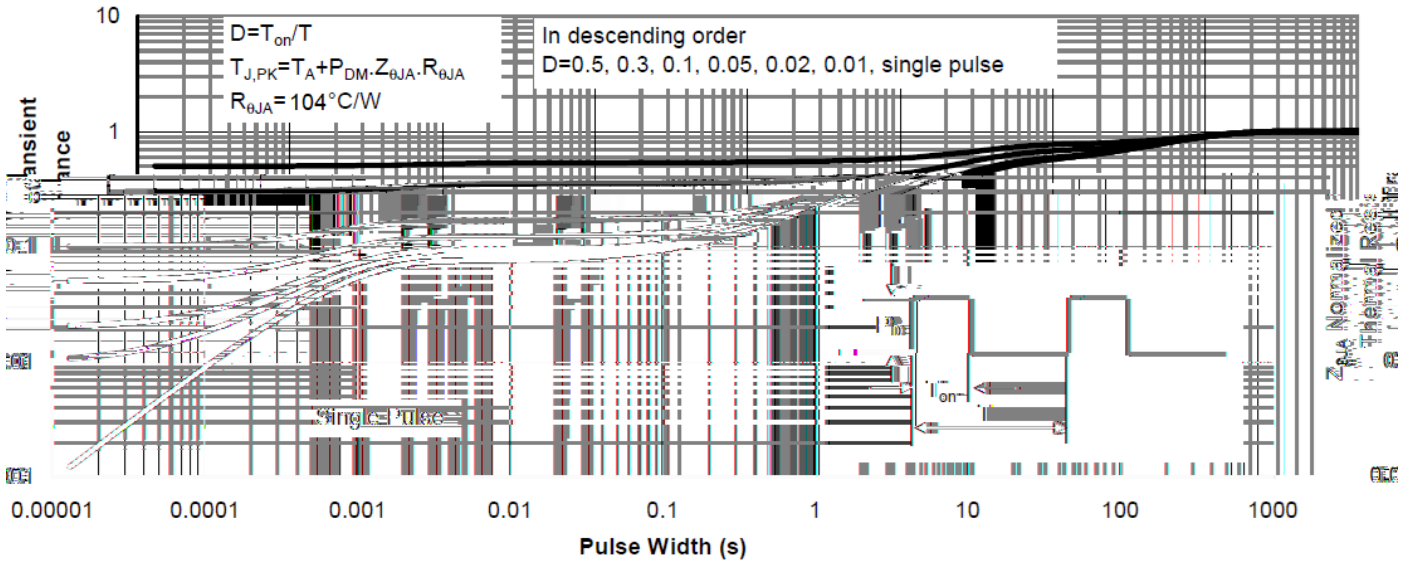
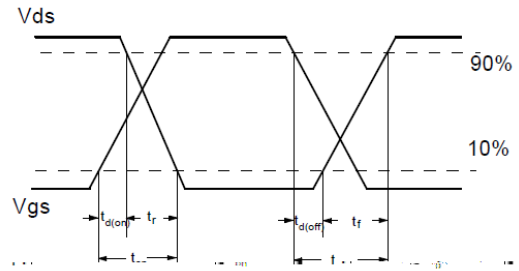
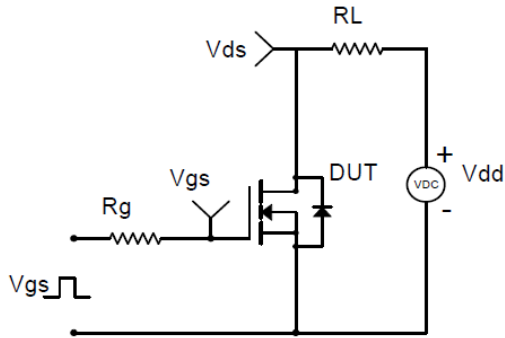
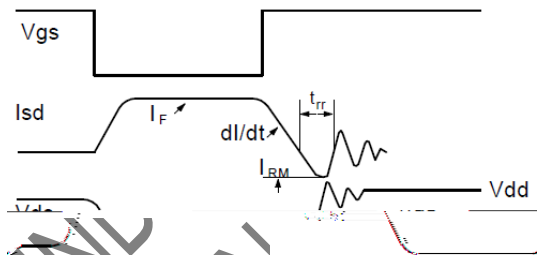
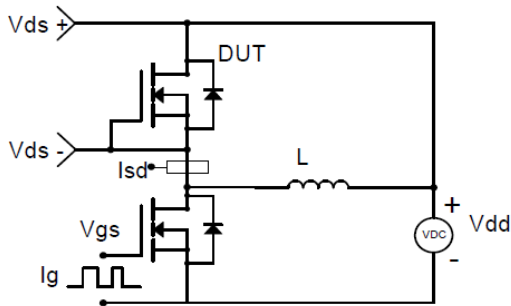


Figure13. Normalized Maximum Transient Thermal Impedance

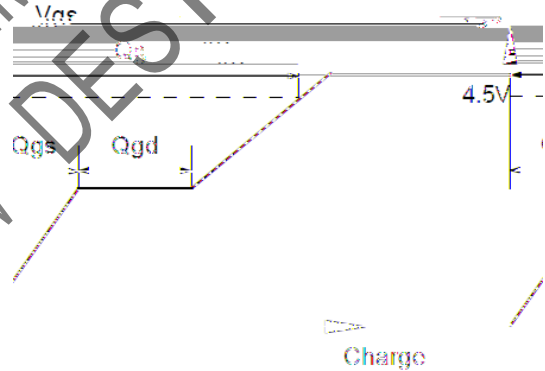
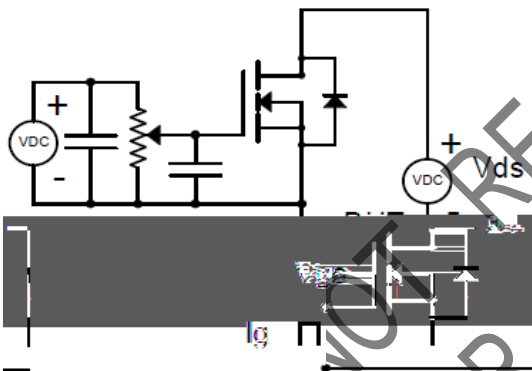
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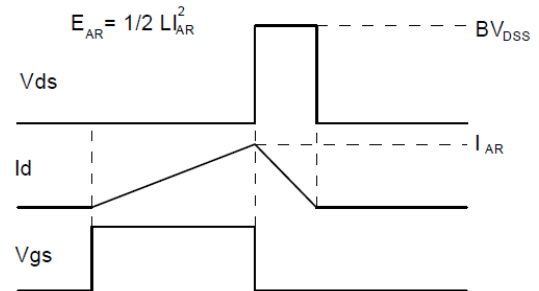
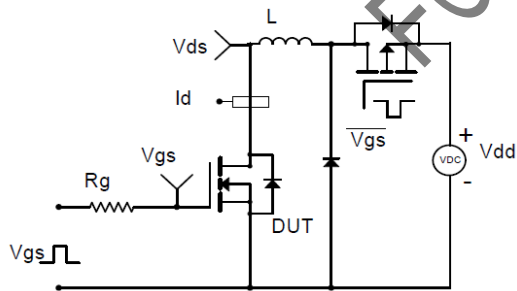
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform



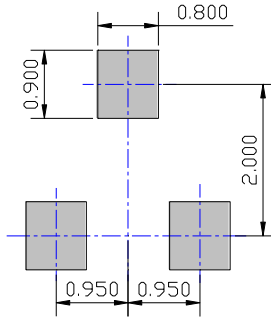
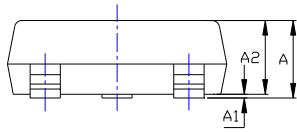
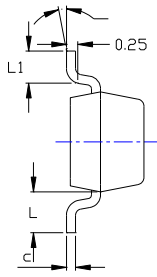
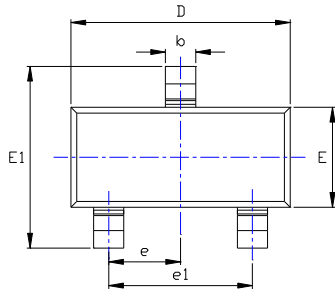
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



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SOT-23 Package information



UNIT mm

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	0.020	0.300	0.500
	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.

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