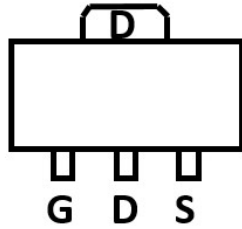
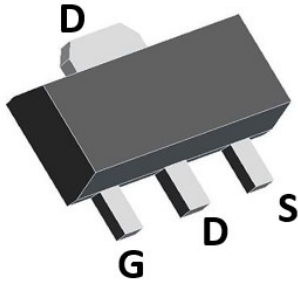
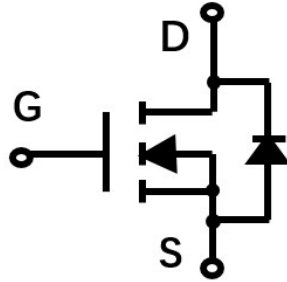


N-Channel Enhancement Mode Field Effect Transistor



SOT-89



Product Summary

• V_{DS}	20 V
• I_D	10 A
• $R_{DS(ON)}$ (at $V_{GS}=4.5V$)	<11 mohm
• $R_{DS(ON)}$ (at $V_{GS}=2.5V$)	<15 mohm
• $R_{DS(ON)}$ (at $V_{GS}=1.8V$)	<20 mohm

General Description

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- DC-DC Converters
- Power management functions

■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ 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	$T_A=25^\circ\text{C}$ 10	A
		$T_A=70^\circ\text{C}$ 8	
Pulsed Drain Current ^A	I_{DM}	43	A
Total Power Dissipation	P_D	$T_A=25^\circ\text{C}$ 1.5	W
		$T_C=25^\circ\text{C}$ 4.0	
Thermal Resistance Junction-to-Ambient ^B	$R_{\theta JA}$	83	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	31	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ\text{C}$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJH10N02A	F1	2010	1000	10000	40000	7" reel



YJH10N02A

■ 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 =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 =5A		7	11	mΩ
		V _{GS} = 2.5V, I _D =3A		8.5	15	
		V _{GS} = 1.8V, I _D =2A		13	20	
Diode Forward Voltage	V _{SD}	I _S =10A,V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				10	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =10V,V _{GS} =0V,f=1MHZ		2250		pF
Output Capacitance	C _{oss}			334		
Reverse Transfer Capacitance	C _{rss}			271		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V,V _{DS} =10V,I _D =15A		27.9		nC
Gate-Source Charge	Q _{gs}			4.1		
Gate-Drain Charge	Q _{gd}			7.4		
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =15A,dI/dt=100A/μs		2.2		ns
Body Diode Reverse Recovery Time	T _{rr}			16.3		
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V,V _{DD} =10V,I _D =10A,R _L =1Ω R _{GEN} =3Ω		13		
Turn-on Rise Time	t _r			53		
Turn-off Delay Time	t _{D(off)}			61		
Turn-off fall Time	t _f			76		

A. Pulse Test: Pulse Width ≤ 300μs, 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

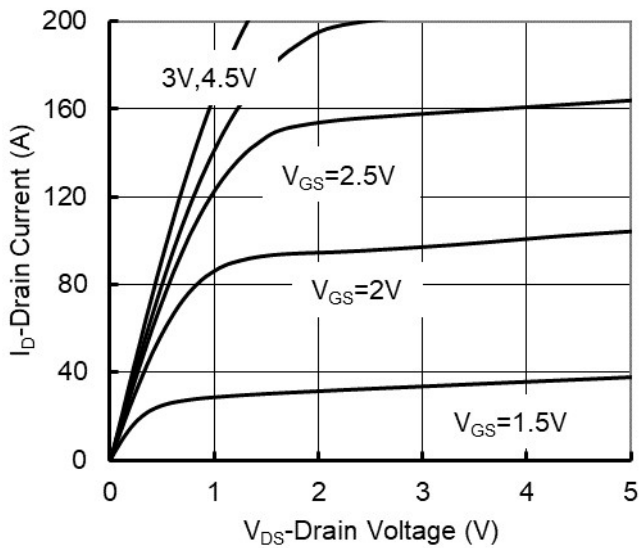


Figure1. Output Characteristics

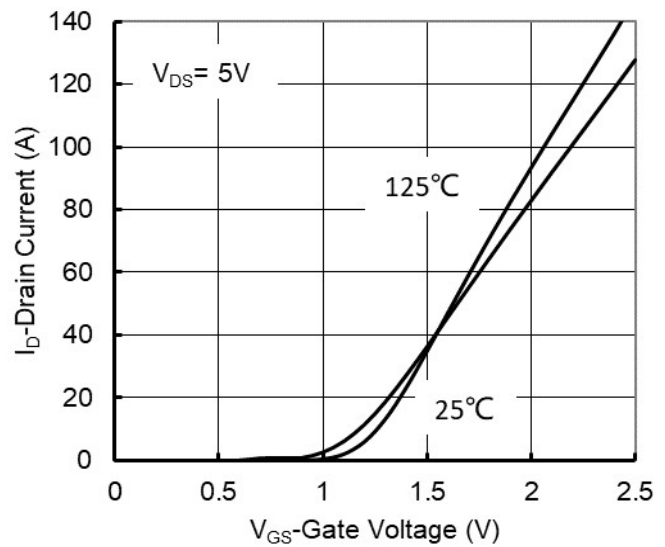


Figure2. Transfer Characteristics

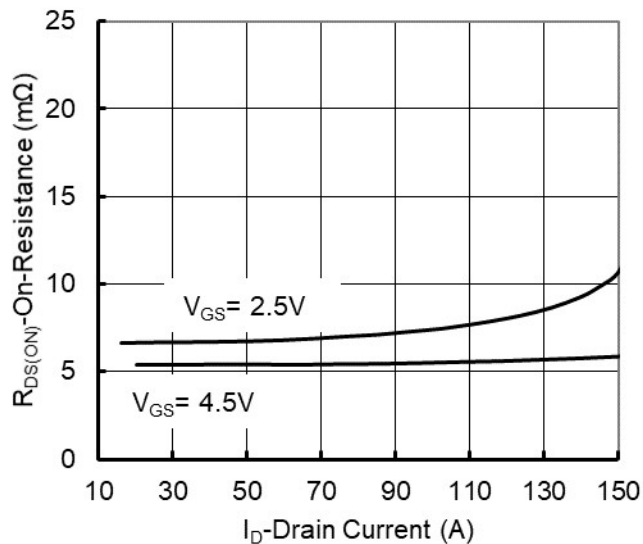


Figure3. On-Resistance vs. Drain Current

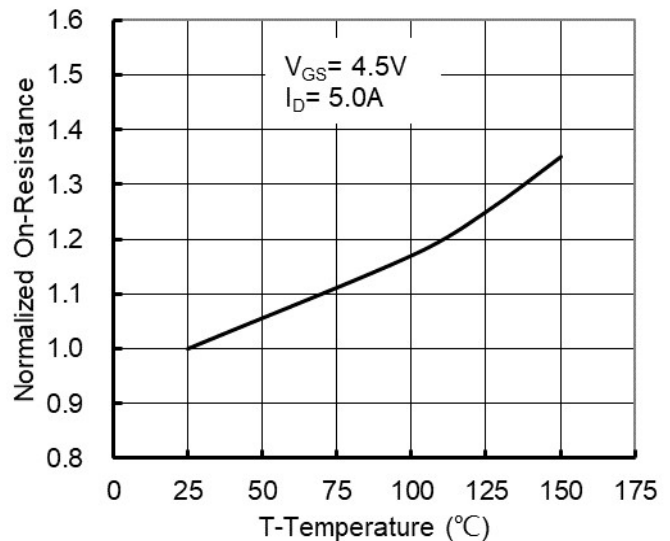


Figure4. On-Resistance vs. Junction Temperature

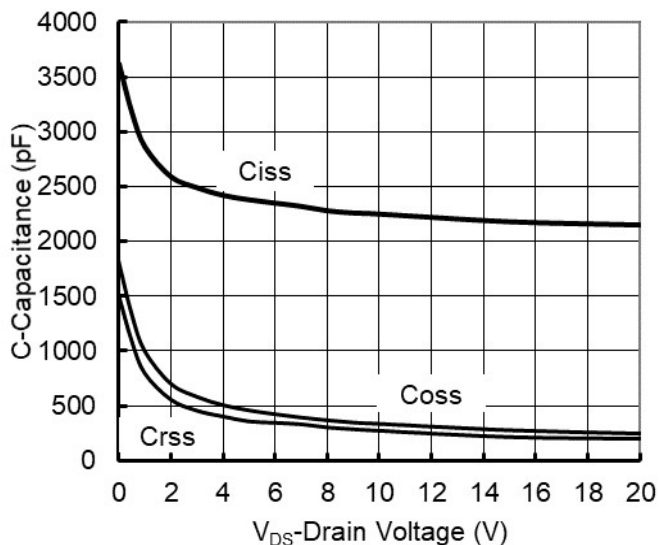


Figure5. Capacitance Characteristics

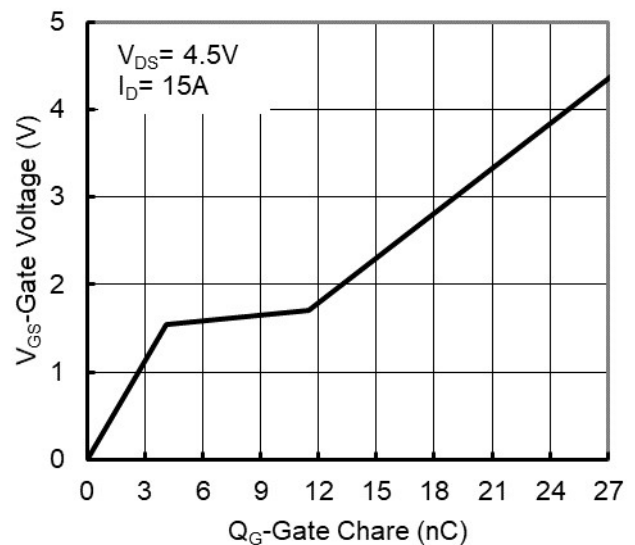


Figure6. Gate Charge

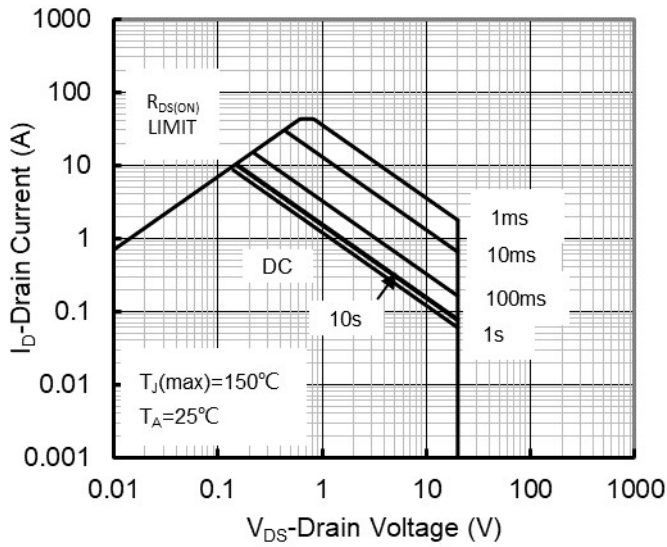


Figure7. Safe Operation Area

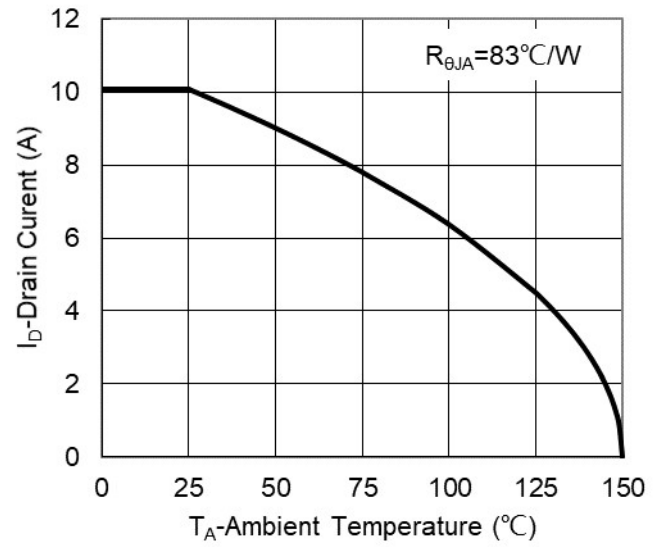


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

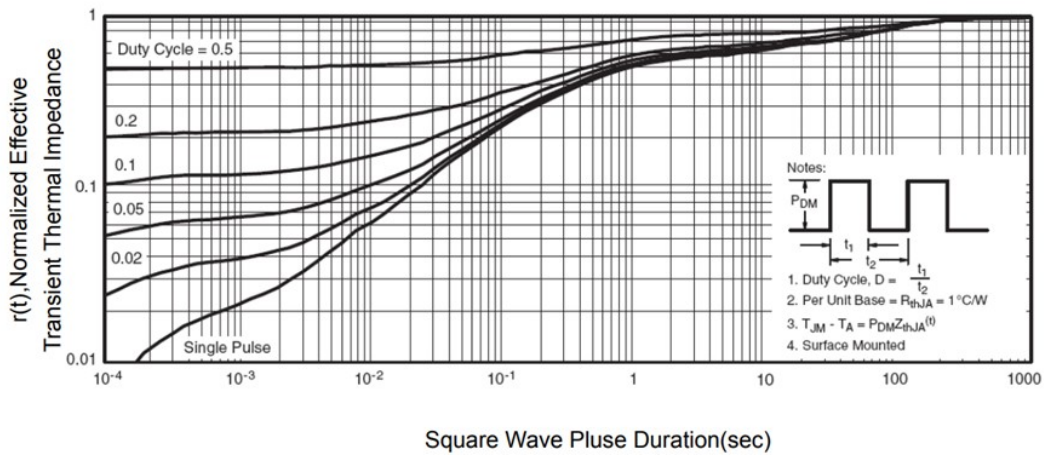
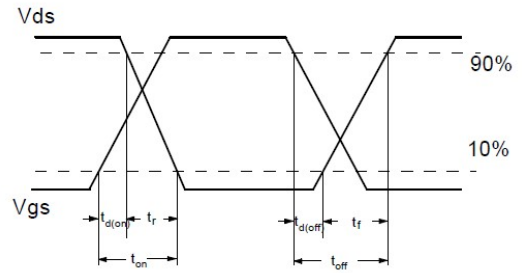
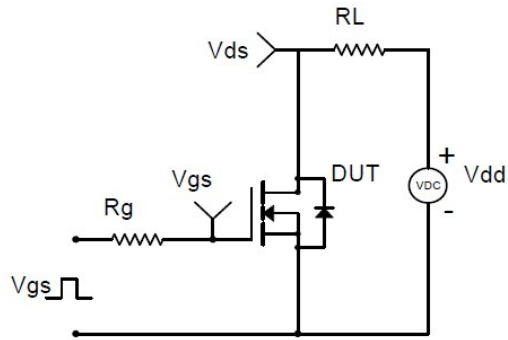
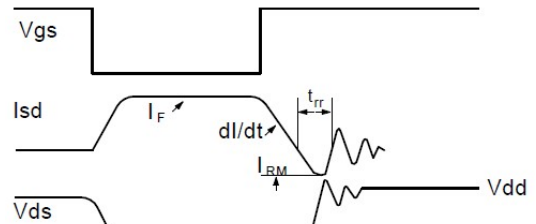
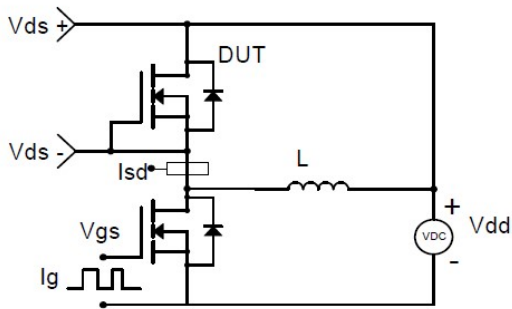


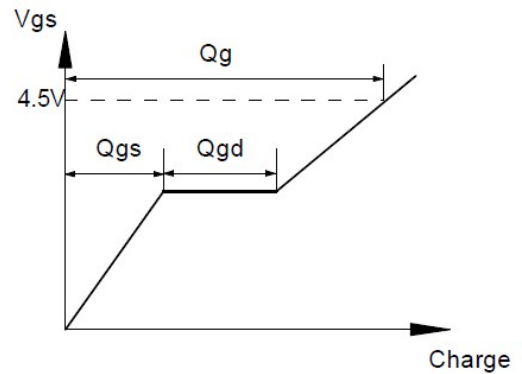
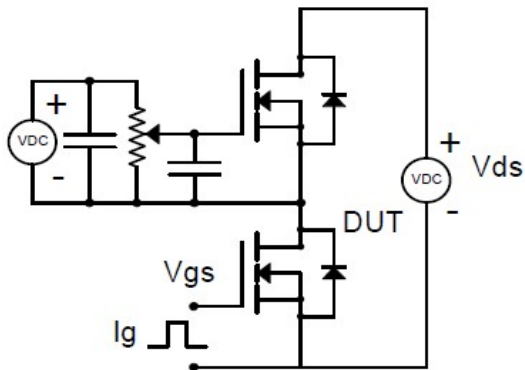
Figure9.Normalized Maximum Transient Thermal Impedance



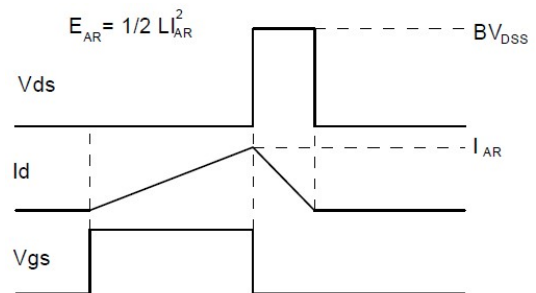
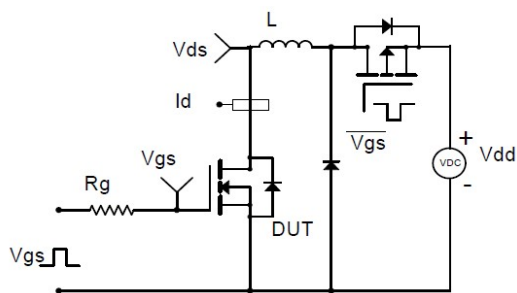
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

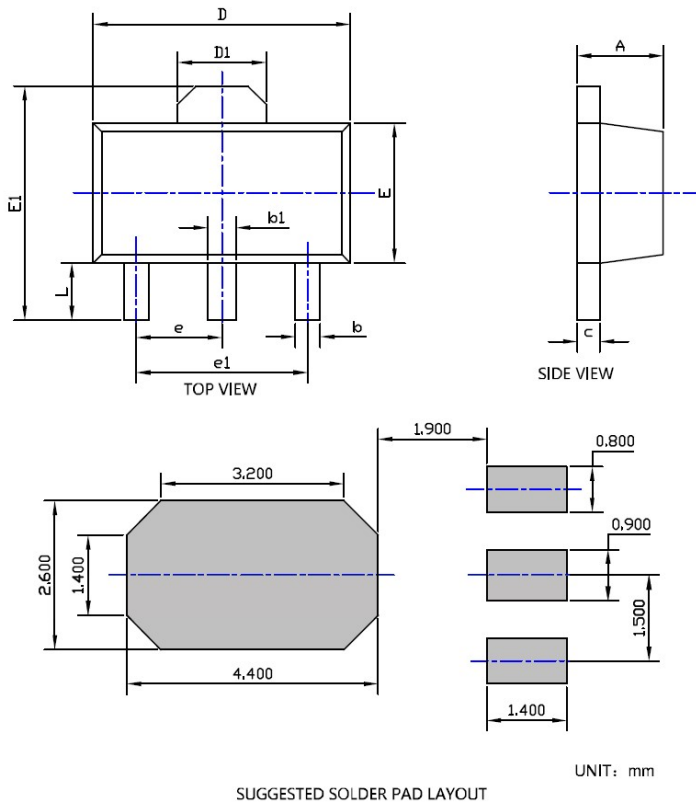


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



YJH10N02A

■ SOT-89 Package information



SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.055	0.059	0.063	1.400	1.500	1.600
b	0.014	---	0.020	0.350	---	0.520
b1	0.016	---	0.023	0.400	---	0.580
c	0.014	---	0.017	0.350	---	0.440
D	0.173	0.177	0.181	4.400	4.500	4.600
D1	0.061REF			1.550REF		
E	0.093	0.096	0.100	2.350	2.450	2.550
E1	0.155	---	0.167	3.940	---	4.250
e	0.059TYP			1.500TYP		
e1	0.118TYP			3.000TYP		
L	0.035	0.039	0.043	0.900	1.000	1.100

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.



Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.