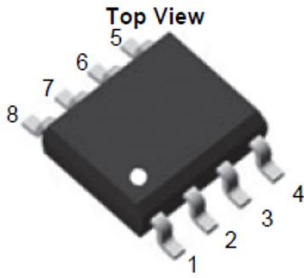
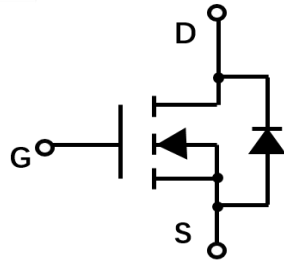
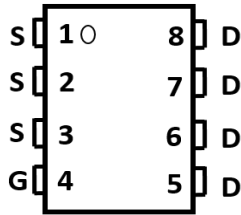


## N-Channel Enhancement Mode Field Effect Transistor



**SOP-8**



### Product Summary

- $V_{DS}$  40 V
- $I_D$  10 A
- $R_{DS(ON)}$  (at  $V_{GS}=10V$ ) < 15 mohm
- $R_{DS(ON)}$  (at  $V_{GS}=4.5V$ ) < 24 mohm

### General Description

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

### Applications

- High current load applications
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

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

Parameter	Symbol	Limit	Unit
Drain-source Voltage	$V_{DS}$	40	V
Gate-source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	$I_D$	$T_A=25^\circ\text{C}$	10
		$T_A=100^\circ\text{C}$	7.0
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	50	A
Single Pulse Avalanche Energy <sup>B</sup>	$E_{AS}$	70	mJ
Total Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	3.0
		$T_A=100^\circ\text{C}$	1.2
Thermal Resistance Junction-to-Case <sup>C</sup>	$R_{\theta JC}$	30	$^\circ\text{C}/\text{W}$
	$R_{\theta JA}$	41.5	
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
YJS10N04A	F2	Q10N04	4000	8000	64000	13" reel



# YJS10N04A

## ■ Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	40			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =40V, V <sub>GS</sub> =0V			1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> =8.0A		12.5	15	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> =4.0A		15.5	24	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =10A, V <sub>GS</sub> =0V		0.85	1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				10	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f=1MHZ		750		pF
Output Capacitance	C <sub>oss</sub>			150		
Reverse Transfer Capacitance	C <sub>rss</sub>			80		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =20V, I <sub>D</sub> =10A		15		nC
Gate-Source Charge	Q <sub>gs</sub>			3		
Gate-Drain Charge	Q <sub>gd</sub>			2.5		
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =10A, di/dt=100A/us		26		
Reverse Recovery Time	t <sub>rr</sub>			29		
Turn-on Delay Time	t <sub>D(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =20V, I <sub>D</sub> =2A, R <sub>L</sub> =1Ω R <sub>GEN</sub> =3Ω		6		ns
Turn-on Rise Time	t <sub>r</sub>			17.5		
Turn-off Delay Time	t <sub>D(off)</sub>			31		
Turn-off fall Time	t <sub>f</sub>			17		

A. Repetitive Rating: Pulse width limited by maximum junction temperature.

B. T<sub>J</sub>=25°C, V<sub>DD</sub>=20V, V<sub>G</sub>=10V, L=0.5mH, R<sub>g</sub>=25 Ω.

C. Surface Mounted on FR4 Board, t ≤ 10 sec.



## ■ Typical Performance Characteristics

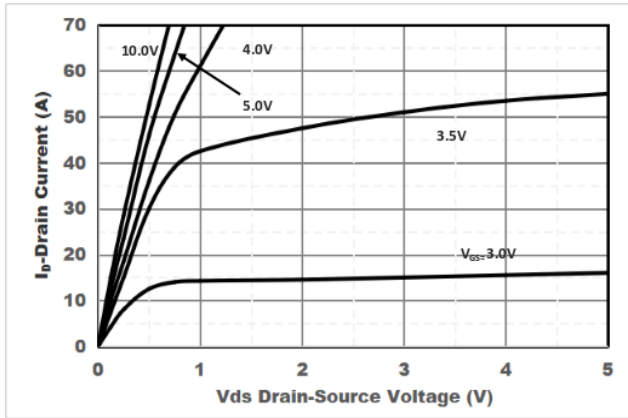


Figure1. Output Characteristics

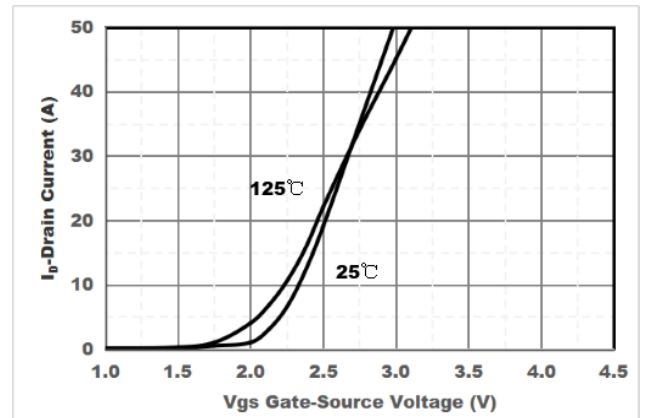


Figure2. Transfer Characteristics

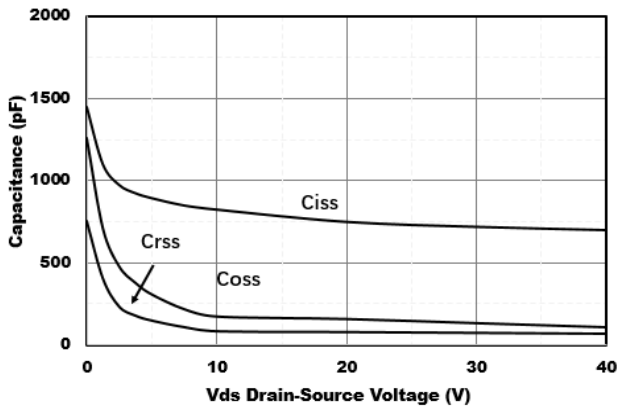


Figure3. Capacitance Characteristics

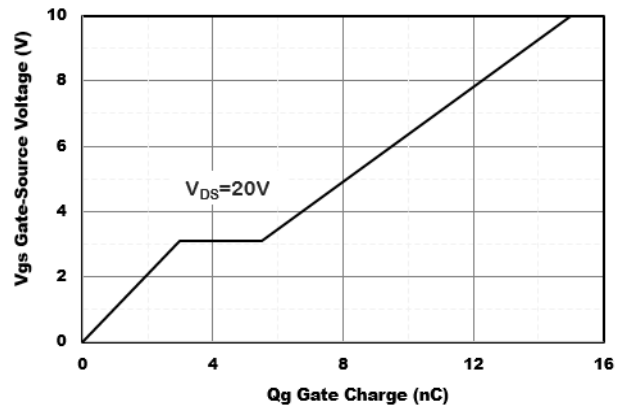


Figure4. Gate Charge

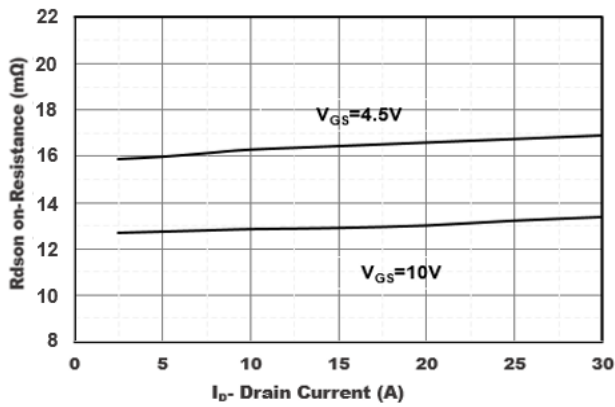


Figure5. Drain-Source on Resistance

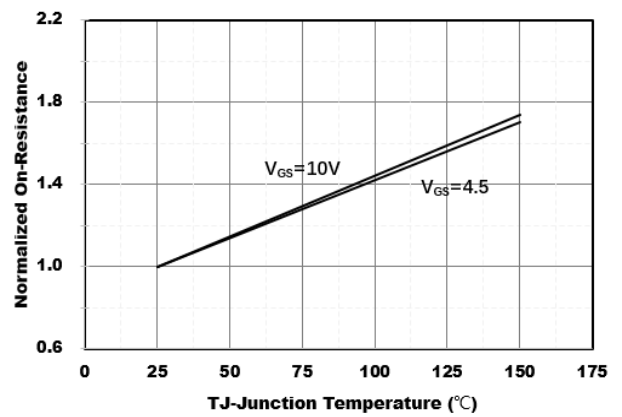


Figure6. Drain-Source on Resistance



# YJS10N04A

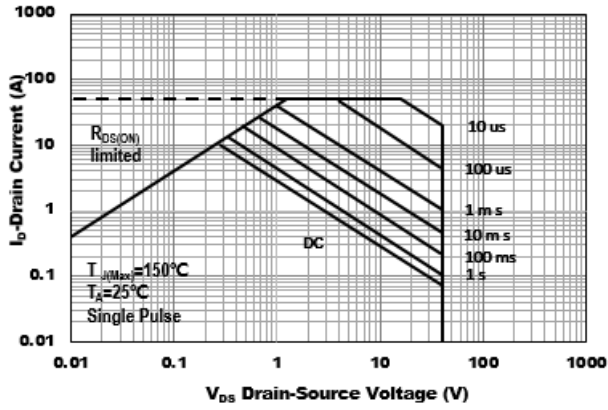


Figure7. Safe Operation Area

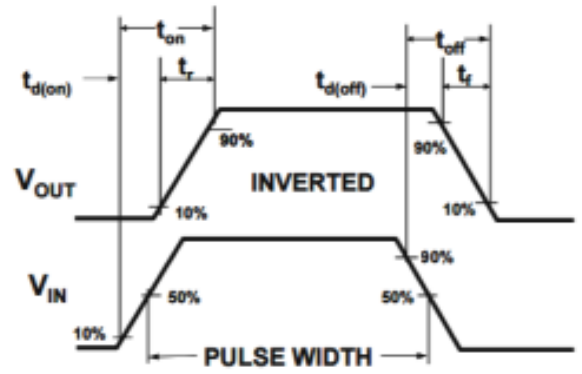
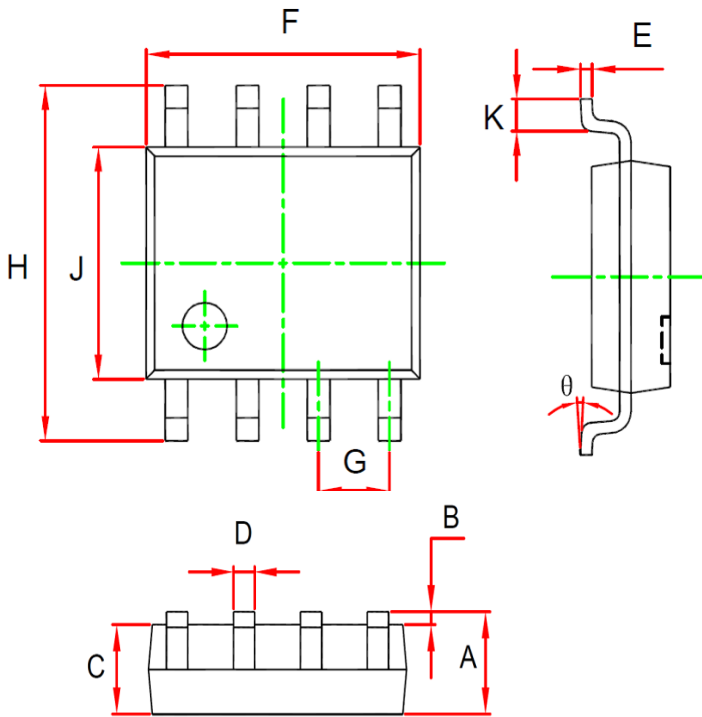


Figure8. Switching wave



# YJS10N04A

## ■SOP-8 Package information



DIMENSIONS					
DIM	INCHES		MM		NOTE
	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	0.050 (BSC)		1.270 (BSC)		
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°	



## YJS10N04A

---

### 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.