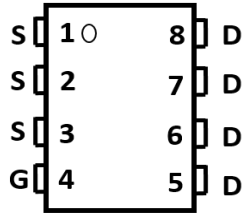
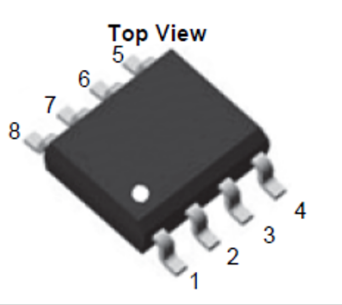
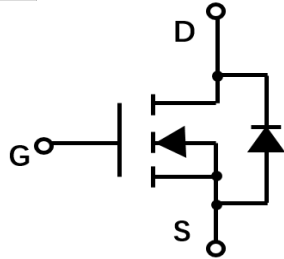


## N-Channel Enhancement Mode Field Effect Transistor



**SOP-8**



### Product Summary

- $V_{DS}$  100V
- $I_D$  12A
- $R_{DS(ON)}$  (at  $V_{GS}=10V$ ) < 17 mohm

### General Description

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

### Applications

- DC/DC Primary Side Switch
- Telecom/Server
- Synchronous Rectification

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

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	$V_{DS}$	100	V
Gate-source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	$I_D$	$T_A=25^\circ\text{C}$	12
		$T_A=100^\circ\text{C}$	7.5
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	70	A
Avalanche Energy, Single Pulse(L=0.5mH)	$E_{AS}$	80	mJ
Total Power Dissipation <sup>B</sup>	$P_D$	3.1	W
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	$^\circ\text{C}$

### ■ Thermal resistance

Parameter	Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient <sup>C</sup>	$R_{\theta JA}$	31	40	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Ambient <sup>C</sup>		Steady-State	59	
Thermal Resistance Junction-to-Lead	$R_{\theta JL}$	16	24	

### ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJS12G10A	F2	Q12G10.	4000	8000	64000	13" reel



# YJS12G10A

## ■ Electrical Characteristics ( $T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ\text{C}$			1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	2.8	4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$		14.5	17	m $\Omega$
Diode Forward Voltage	$V_{SD}$	$I_S=12A, V_{GS}=0V$			1.3	V
Maximum Body-Diode Continuous Current	$I_S$				12	A
Gate resistance	$R_G$	$f=1\text{MHz}, \text{Open drain}$		1		$\Omega$
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$		1135		pF
Output Capacitance	$C_{oss}$			399		
Reverse Transfer Capacitance	$C_{riss}$			18		
<b>Switching Parameters</b>						
Total Gate Charge	$Q_g$	$V_{GS}=10V, V_{DS}=50V, I_D=10A$		16		nC
Gate-Source Charge	$Q_{gs}$			5.6		
Gate-Drain Charge	$Q_{gd}$			2.4		
Reverse Recovery Charge	$Q_{rr}$	$I_F=10A, di/dt=100A/\mu s$		42		ns
Reverse Recovery Time	$t_{rr}$			39.8		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=50V, I_D=10A$ $R_{GEN}=2.2\Omega$		39.2		ns
Turn-on Rise Time	$t_r$			11		
Turn-off Delay Time	$t_{D(off)}$			53.2		
Turn-off fall Time	$t_f$			15.8		

A. Repetitive rating; pulse width limited by max. junction temperature.

B.  $P_d$  is based on max. junction temperature, using  $\leq 10s$  junction-ambient thermal resistance.

C. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ . The value in any given application depends on the user's specific board design.



# YJS12G10A

## ■ Typical Performance Characteristics

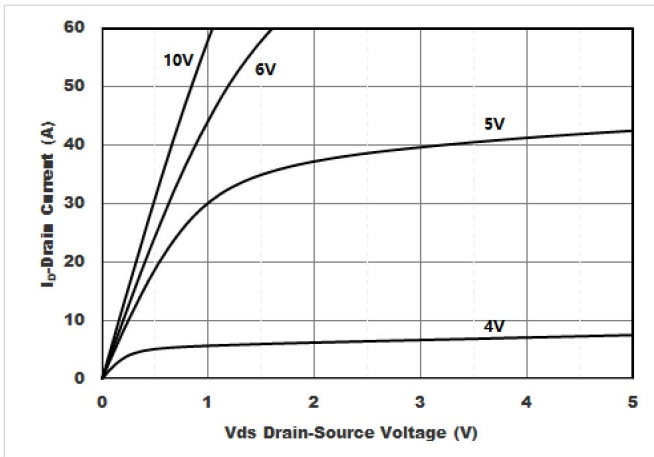


Figure1. Output Characteristics

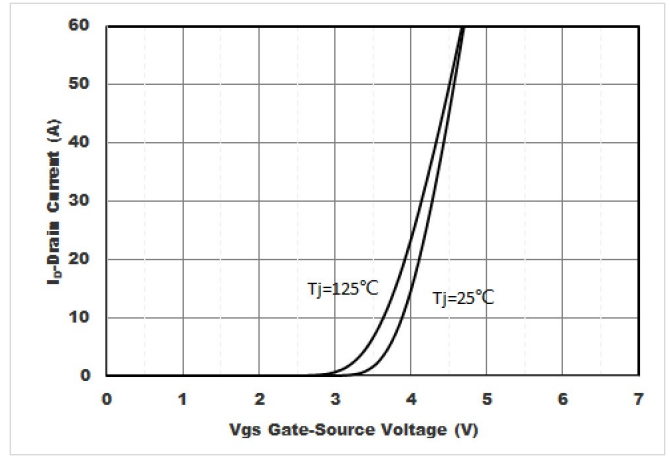


Figure2. Transfer Characteristics

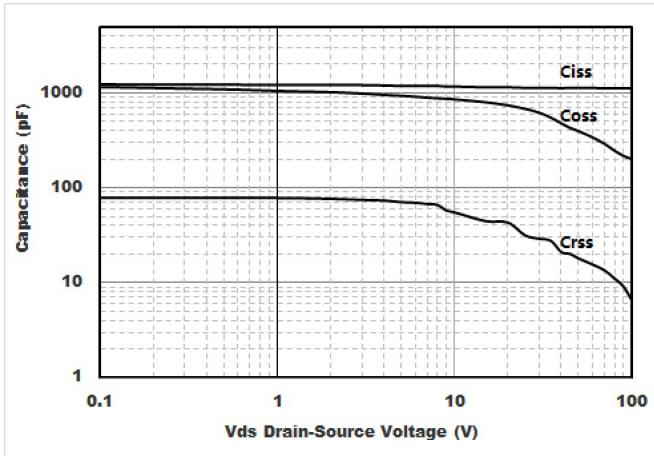


Figure3. Capacitance Characteristics

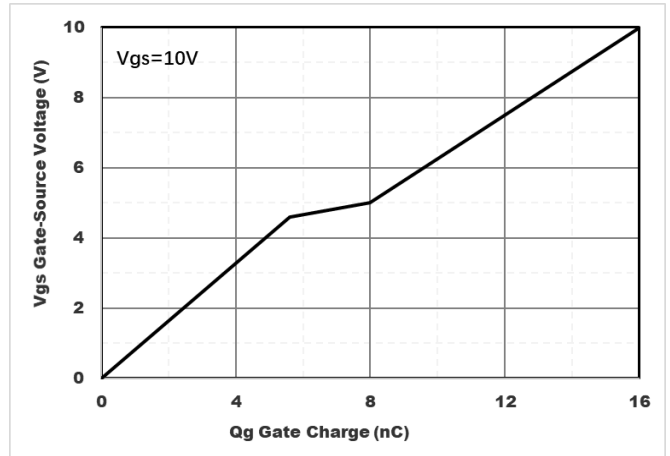


Figure4. Gate Charge

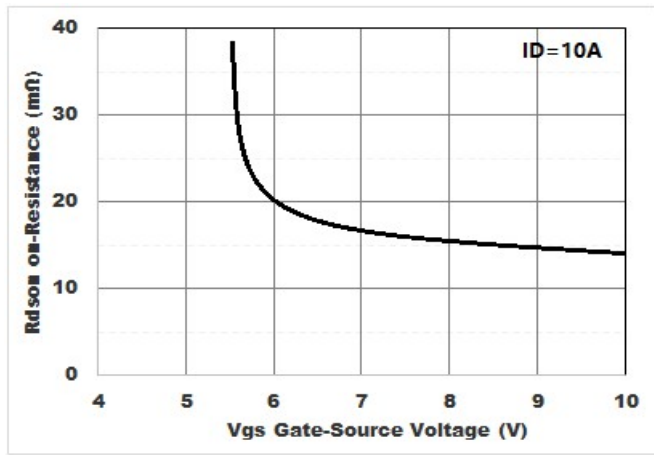


Figure5. Drain-Source on Resistance

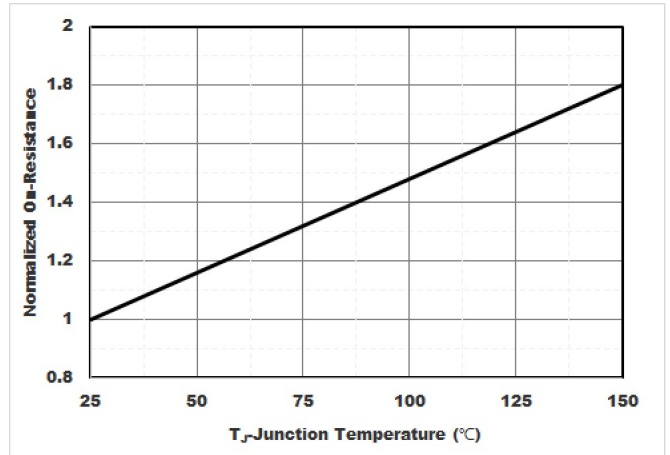


Figure6. Drain Current



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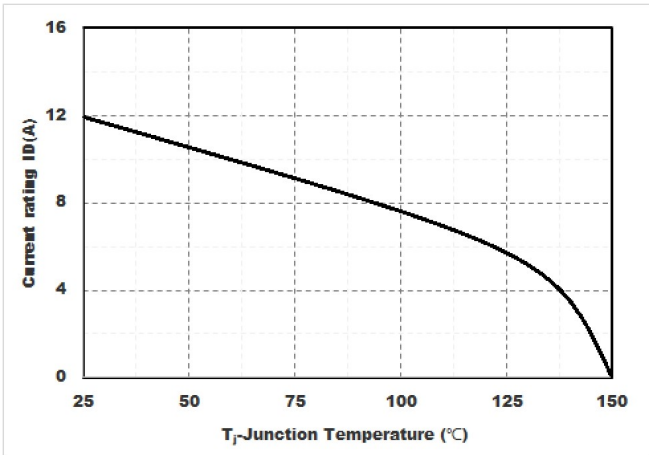


Figure7. Drain current

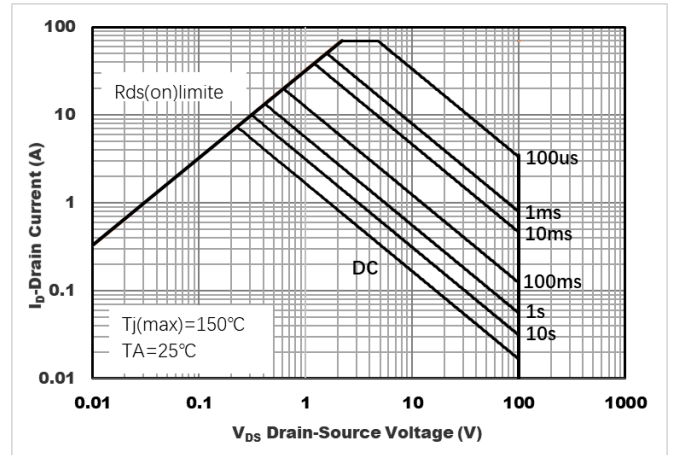


Figure8. Safe Operation Area

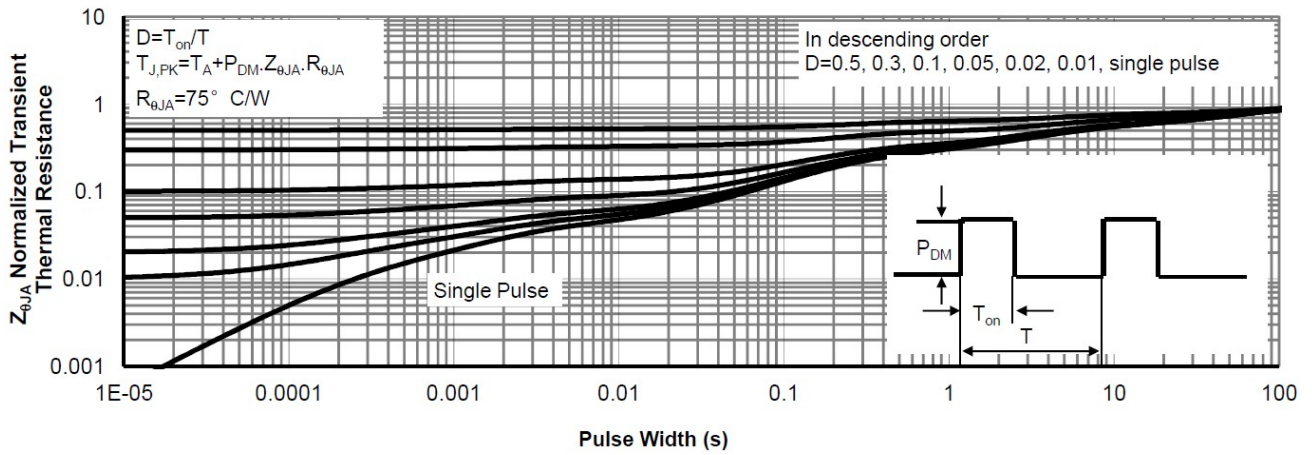
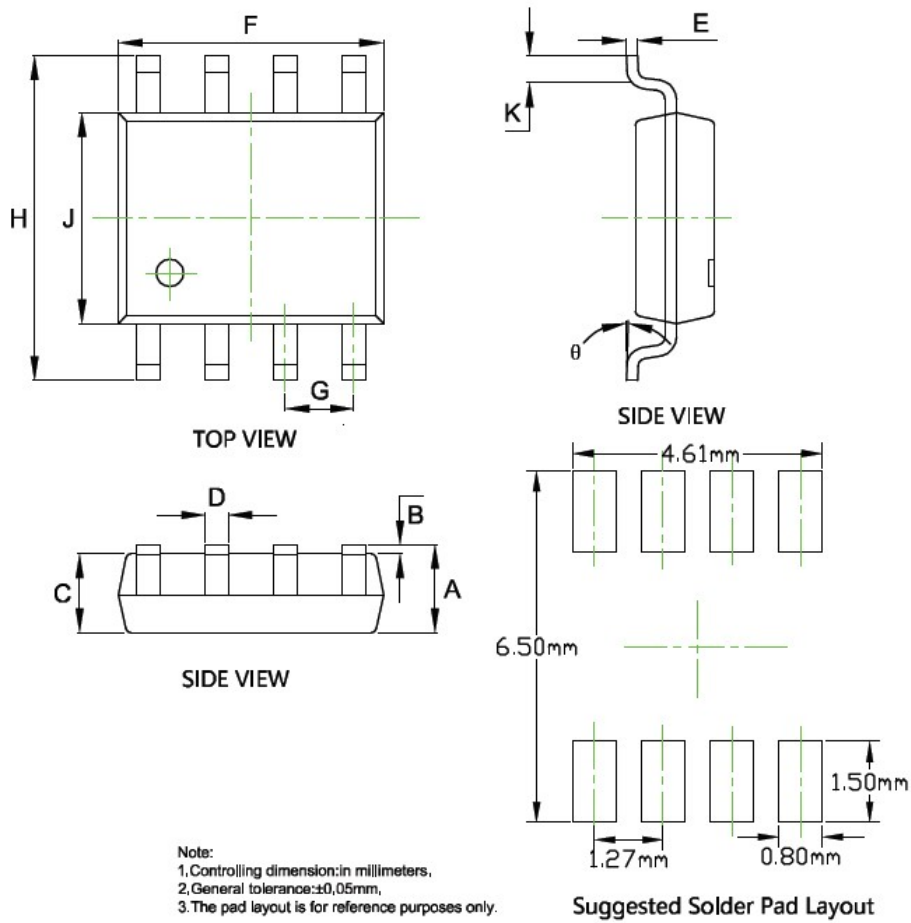


Figure9. Normalized Maximum Transient Thermal Impedance



# YJS12G10A

## ■ SOP-8 Package information



Suggested Solder Pad Layout

DIMENSIONS				
SYMBOL	INCHES		Millimeter	
	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	0.050BSC		1.270BSC	
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
$\theta$	0°	8°	0°	8°



# YJS12G10A

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