

N-Channel Enhancement Mode Field Effect Transistor

Product Summary

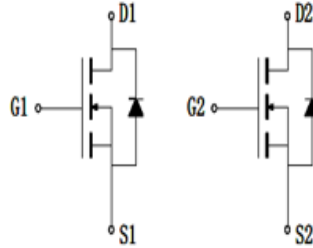
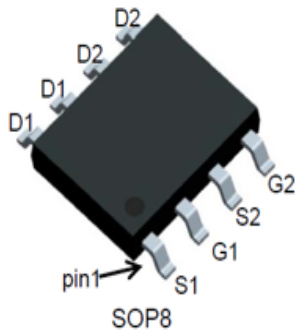
• V_{DS}	30 V
• I_D	12 A
• $R_{DS(ON)}$ (at $V_{GS}=10V$)	<12 mohm
• $R_{DS(ON)}$ (at $V_{GS}=4.5V$)	<15 mohm

General Description

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

Applications

- Battery protection
- Load switch
- Power management



SOP-8

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	30	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A=25^{\circ}C$ @ Steady State	I_D	12	A
	$T_A=70^{\circ}C$ @ Steady State		9.6	
Pulsed Drain Current ^A		I_{DM}	50	A
Total Power Dissipation @ $T_A=25^{\circ}C$		P_D	2.5	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B		$R_{\theta JA}$	50	$^{\circ}C/W$
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
YJSD12N03A	F2	.Q12N03	4000	8000	64000	13" reel



YJSD12N03A

■ 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	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V,V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =8.0A		9	12	mΩ
		V _{GS} = 4.5V, I _D =6.0A		11	15	
Diode Forward Voltage	V _{SD}	I _S =12A,V _{GS} =0V		0.85	1.2	V
Maximum Body-Diode Continuous Current	I _S				12	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =15V,V _{GS} =0V,f=1MHZ		950		pF
Output Capacitance	C _{oss}			204		
Reverse Transfer Capacitance	C _{rss}			121		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =15V,I _D =12A		28		nC
Gate Source Charge	Q _{gs}			7		
Gate Drain Charge	Q _{gd}			5		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V,V _{DD} =20V, I _D =2A,R _L =1Ω R _{GEN} =3Ω		8.3		ns
Turn-on Rise Time	t _r			14.9		
Turn-off Delay Time	t _{D(off)}			16		
Turn-off Fall Time	t _f			6.5		

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

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.



■ Typical Performance Characteristics

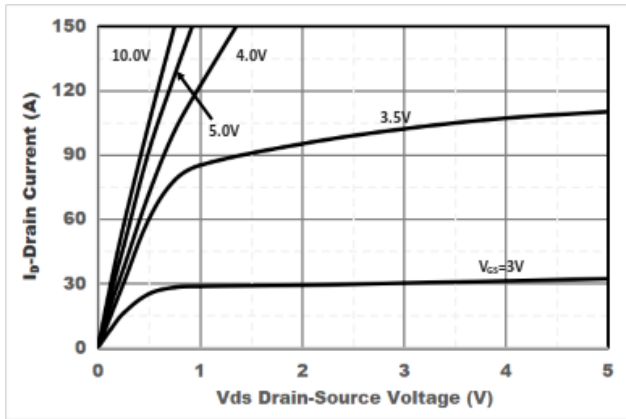


Figure1. Output Characteristics

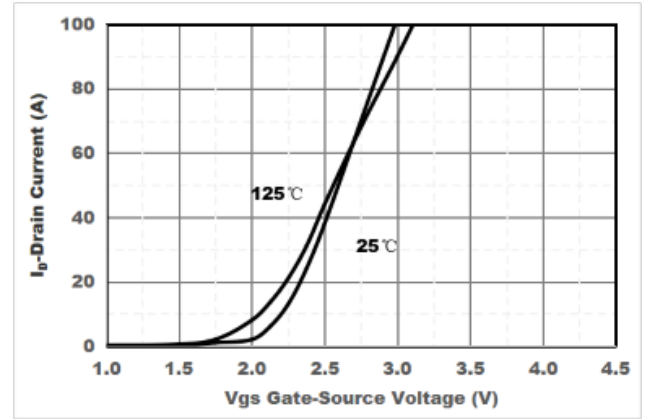


Figure2. Transfer Characteristics

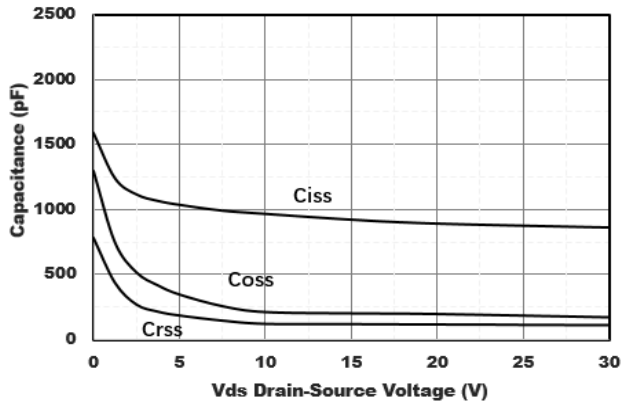


Figure3. Capacitance Characteristics

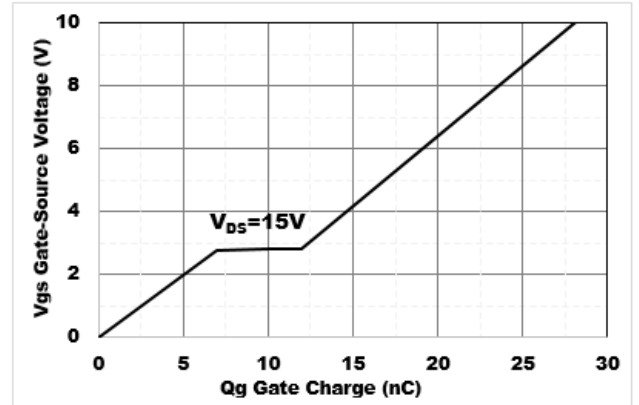


Figure4. Gate Charge

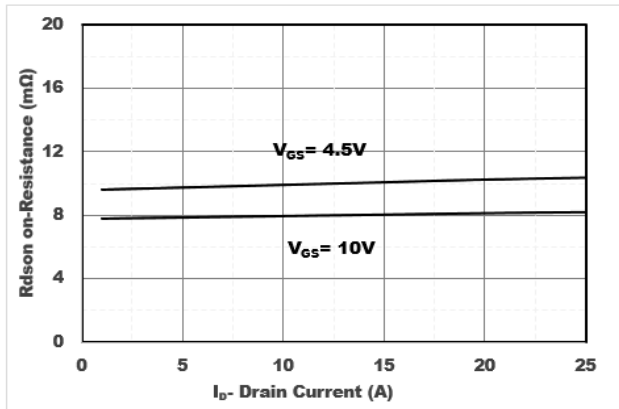


Figure5. Drain-Source on Resistance

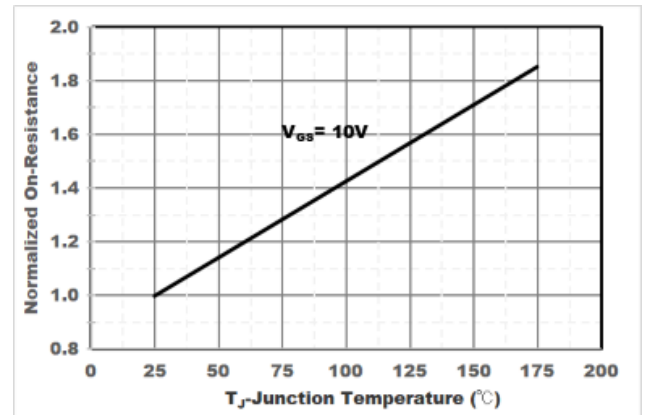


Figure6. Drain-Source on Resistance



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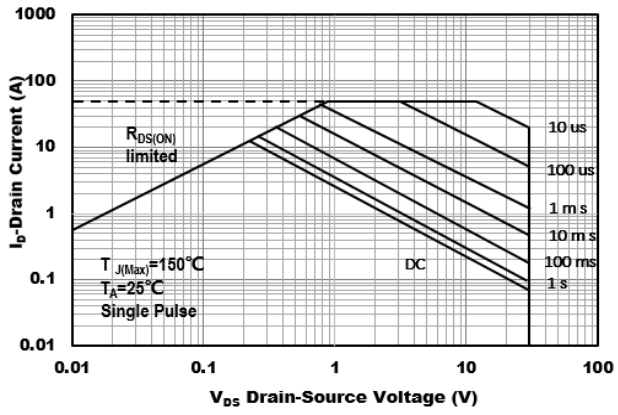


Figure7. Safe Operation Area

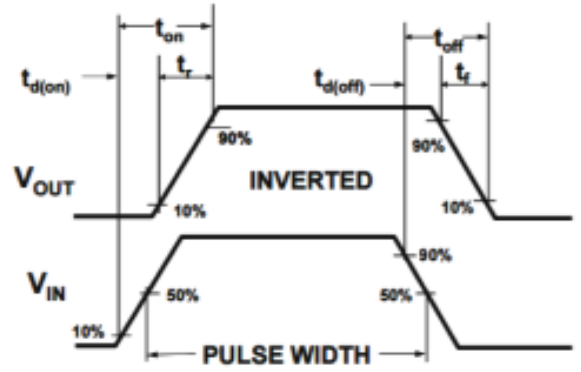
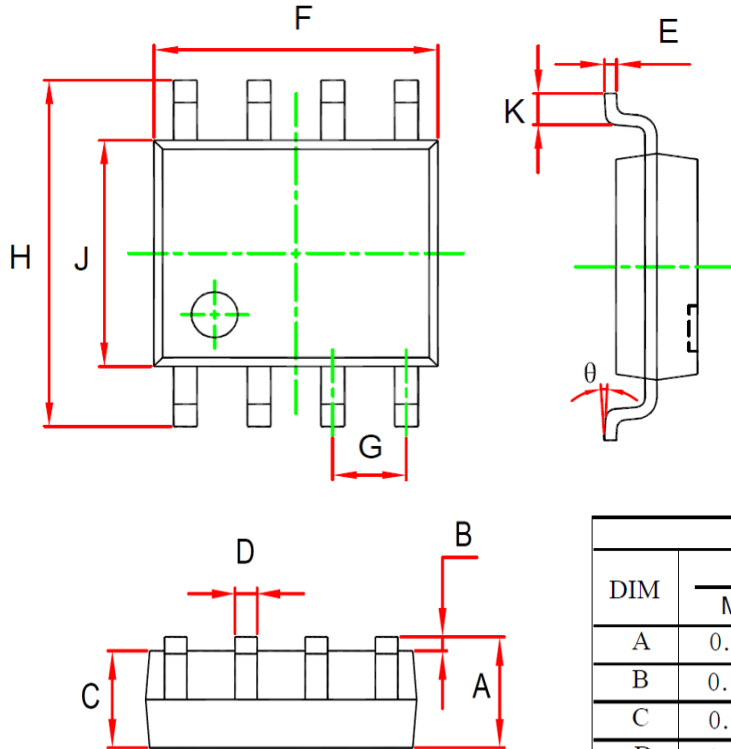


Figure8. Switching wave



YJSD12N03A

■ 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°	



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