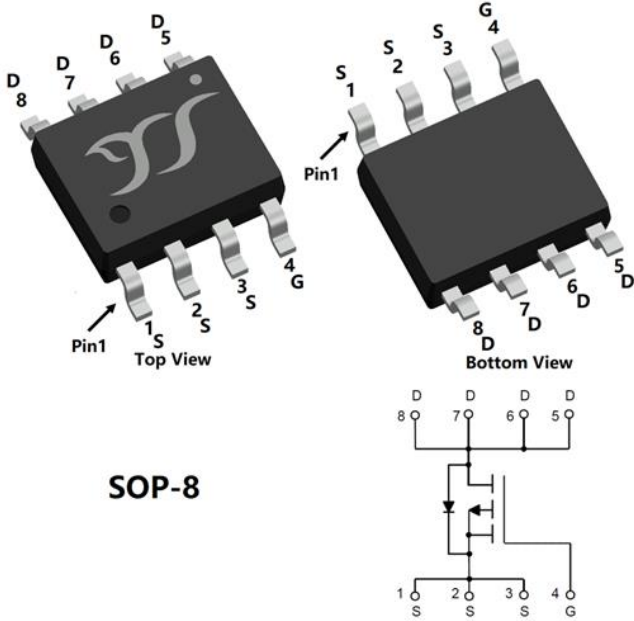


P-Channel Enhancement Mode Field Effect Transistor



SOP-8

Product Summary

- V_{DS} -60V
- I_D -5.9A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) <47 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <60 mohm
- 100% EAS Tested

General Description

- Split gate trench MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- Low C_{rss}
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Load switch
- Battery protection

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

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	-60	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current	I_D	$T_A=25^\circ C$	-5.9
		$T_A=100^\circ C$	-3.7
Pulsed Drain Current ^A	I_{DM}	-30	A
Avalanche energy ^B	EAS	81	mJ
Total Power Dissipation ^C	P_D	3.1	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

■ Thermal resistance

Parameter	Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	$R_{\theta JA}$	31	40	$^\circ C/W$
Thermal Resistance Junction-to-Ambient ^D		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
YJS06GP06A	F2	Q06GP06A	4000	8000	64000	13" reel



YJS06GP06A

■ 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	-60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V	T _J =25°C		-1	μA
			T _J =55°C		-5	
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	-1.3	-1.8	-2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D =-6A		35	47	mΩ
		V _{GS} = -4.5V, I _D =-3A		45	60	
Gate Resistance	R _g	f=1MHz		12		Ω
Diode Forward Voltage	V _{SD}	I _S =-6A, V _{GS} =0V		-0.85	-1.3	V
Maximum Body-Diode Continuous Current	I _S				-6.0	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, f=1MHz		1100		pF
Output Capacitance	C _{oss}			350		
Reverse Transfer Capacitance	C _{rss}			28		
Switching Parameters						
Total Gate Charge	Q _{g(-10V)}	V _{GS} =-10V, V _{DS} =-30V, I _D =-3A		18.7		nC
Total Gate Charge	Q _{g(-4.5V)}			8.8		
Gate-Source Charge	Q _{gs}			4.7		
Gate-Drain Charge	Q _{gd}			3.0		
Reverse Recovery Charge	Q _{rr}	I _F =-3A, di/dt=100A/us		8.2		nC
Reverse Recovery Time	t _{rr}			20.2		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-30V, I _{DS} =-3A R _{GEN} =6Ω		7.5		ns
Turn-on Rise Time	t _r			39.5		
Turn-off Delay Time	t _{D(off)}			43.6		
Turn-off fall Time	t _f			55.1		

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

B. V_{DD}=50V, R_G=25Ω, L=0.5mH, I_{AS}=18A.

C. Pd is based on max. junction temperature, using ≤10s junction-ambient thermal resistance.

D. The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.



■ Typical Performance Characteristics

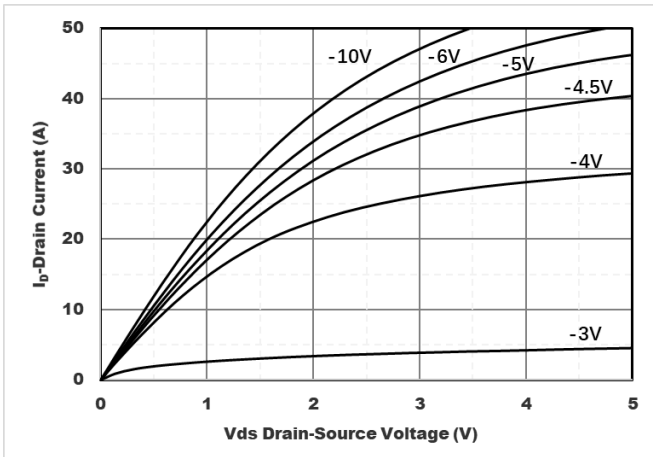


Figure1. Output Characteristics

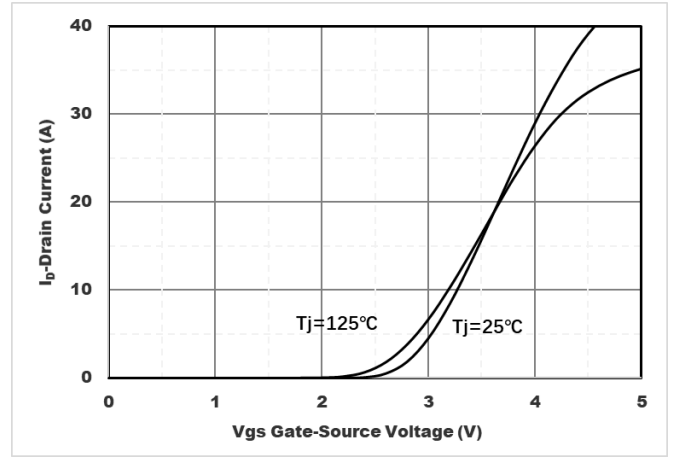


Figure2. Transfer Characteristics

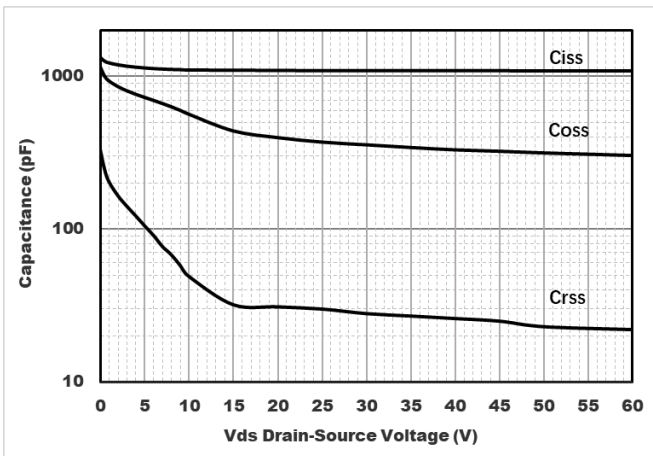


Figure3. Capacitance Characteristics

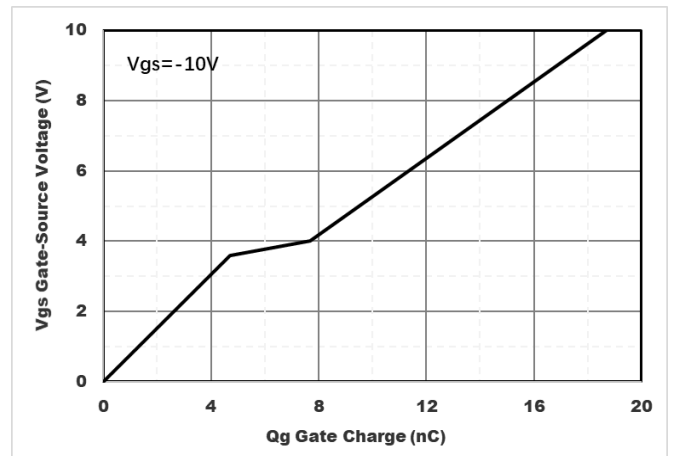


Figure4. Gate Charge

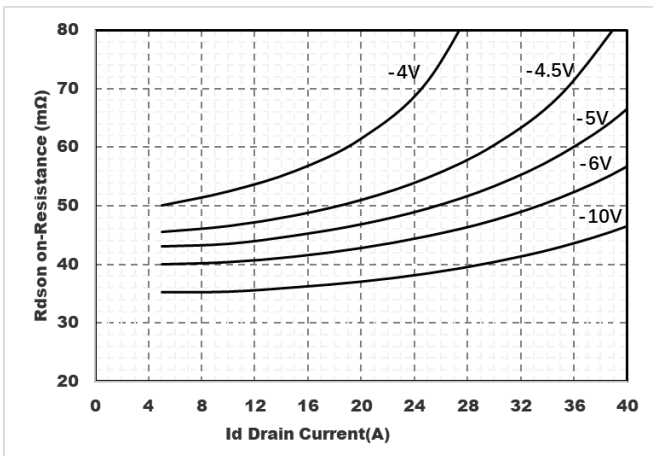


Figure5. : On-Resistance vs. Gate to Source Voltage

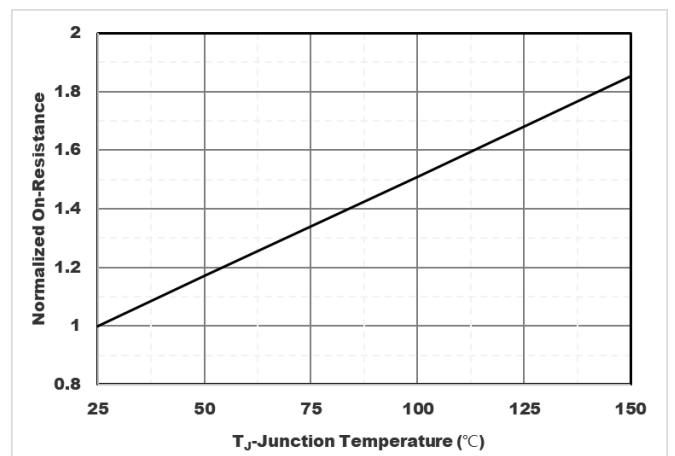


Figure6. Normalized On-Resistance



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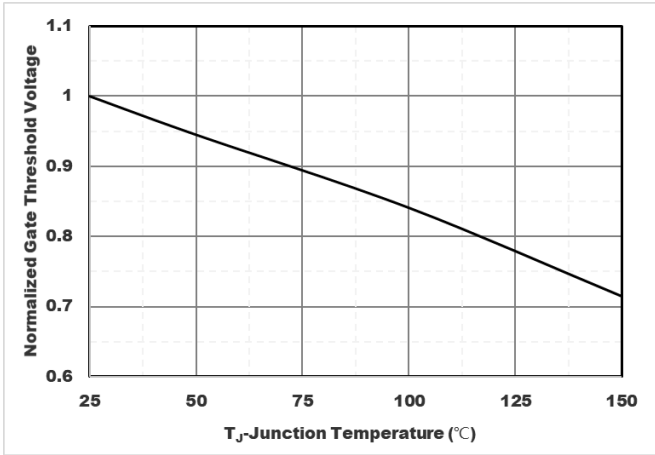


Figure 7. Normalized Gate Threshold Voltage

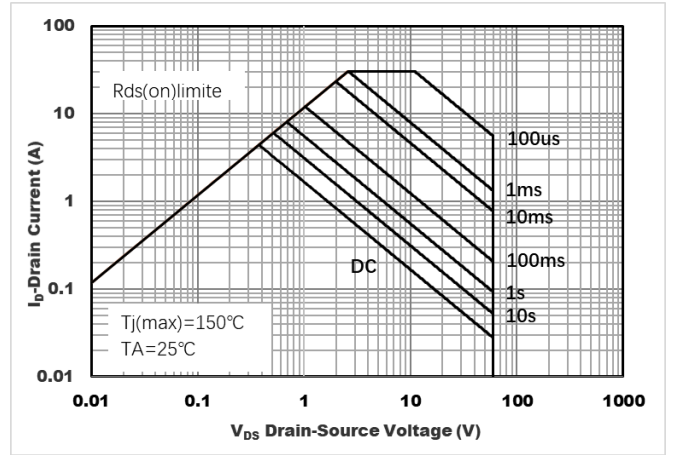


Figure 8. Safe Operation Area

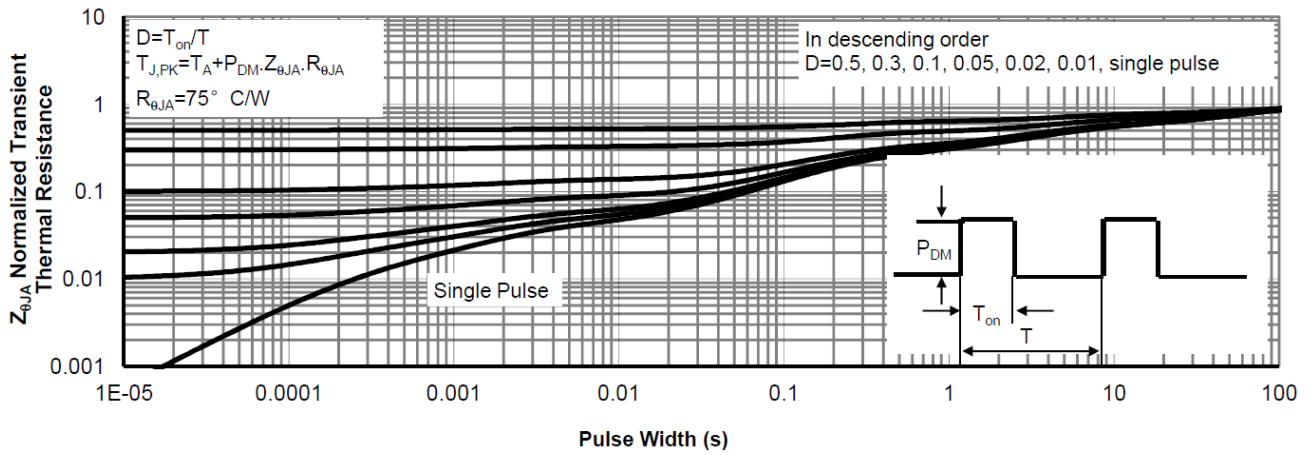


Figure 9. Normalized Maximum Transient Thermal Impedance

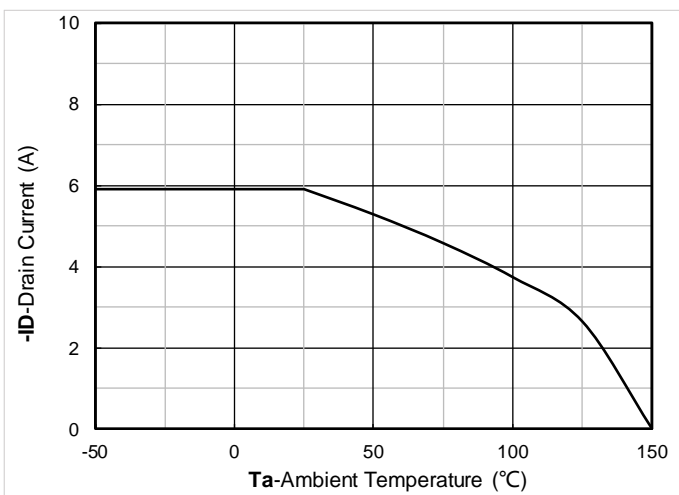
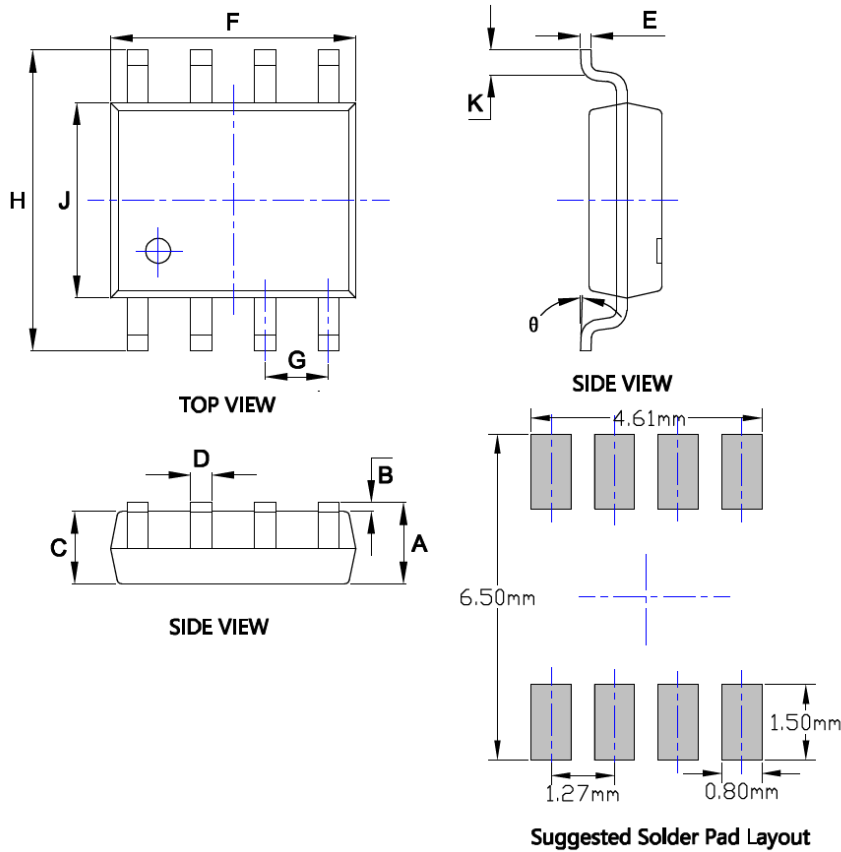


Figure 10. Current dissipation



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■ SOP-8 Package information



SYMBOL	DIMENSIONS			
	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
θ	0°	8°	0°	8°

Note:
 1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.



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