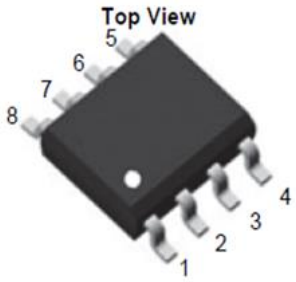
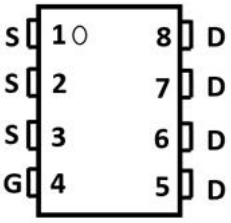
N-Channel Enhancement Mode Field Effect Transistor





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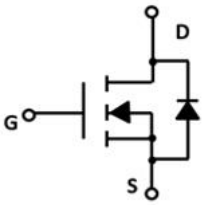


Product Summary

- V_{DS} 100V
- I_D 15A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜9.5 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜12.5 mohm
- 100% UIS Tested
- 100% ▽V_{DS} Tested

General Description

- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

Applications

- Consumer electronic power supply
- Motor control
- Synchronous-rectification
- Isolated DC/DC convertor

■ Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current [A]	T_C=25℃	I_D	15	A
Pulsed Drain Current [B]	T_C=25℃	I_{DM}	64	A
Avalanche energy [C]		E_{AS}	130	mJ
Total Power Dissipation [D]	Tc=25℃	P_D	4	W
	Tc=100℃		1.6	
Thermal Resistance, junction-ambient [E]		$R_{\theta JA}$	31	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJS15G10B	F2	Q15N10B	4000	8000	64000	13“ reel

■ 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	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,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	1.3	1.8	2.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=12A		7.7	9.5	mΩ
		V_{GS}= 4.5V, I_D=9A		9.2	12.5	
Diode Forward Voltage	V_{SD}	I_S=15A,V_{GS}=0V			1.3	V
Maximum Body-Diode Continuous Current	I_S				15	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=50V,V_{GS}=0V,f=1MHZ		3530		pF
Output Capacitance	C_{oss}			560		
Reverse Transfer Capacitance	C_{rss}			9.0		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=50V,I_D=10A		60.7		nC
Gate-Source Charge	Q_{gs}			7.2		
Gate-Drain Charge	Q_{gd}			14.6		
Reverse Recovery Chrage	Q_{rr}	I_F=10A, di/dt=100A/us		160		
Reverse Recovery Time	t_{rr}			67		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=50V,I_D=10A		22.5		
Turn-on Rise Time	t_r			8.6		
Turn-off Delay Time	$t_{D(off)}$			66.6		
Turn-off fall Time	t_f			42.1		

A. Calculated continuous current based on maximum allowable junction temperature.
B. Repetitive rating; pulse width limited by max. junction temperature.
C. V_{DD}=50V, R_G=50Ω, L=0.3mH, starting T_J=25℃.
D. P_D is based on max. junction temperature, using junction-case thermal resistance.
E. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

■ Typical Performance Characteristics

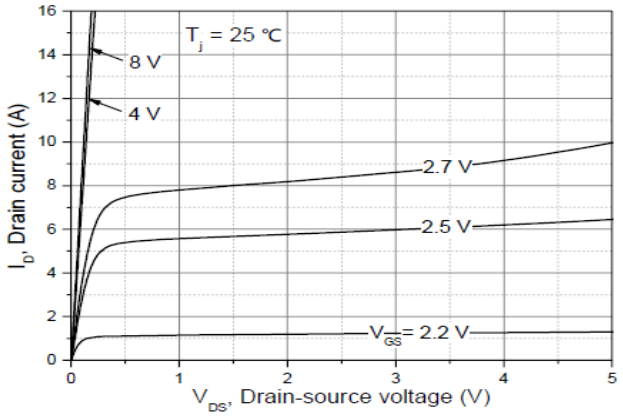


Figure1. Output Characteristics

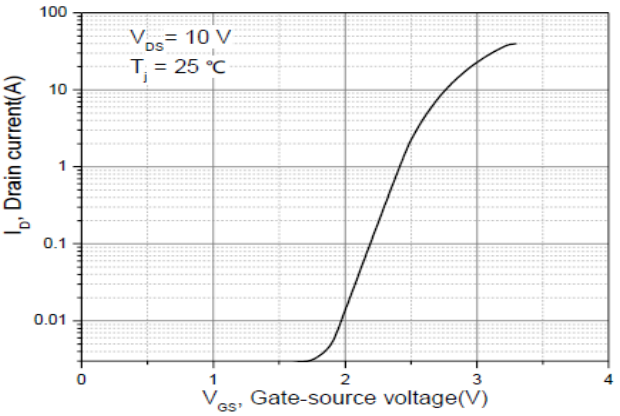


Figure2. Transfer Characteristics

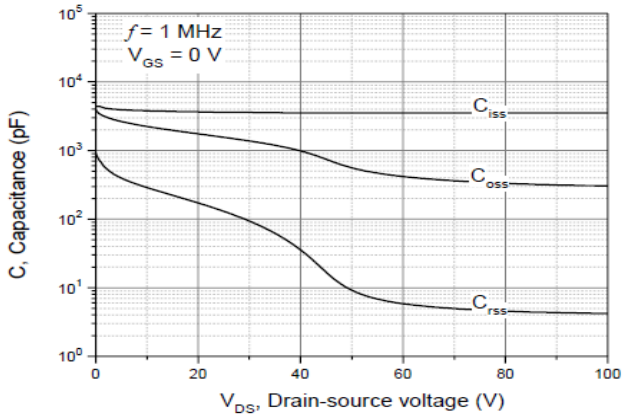


Figure3. Capacitance Characteristics

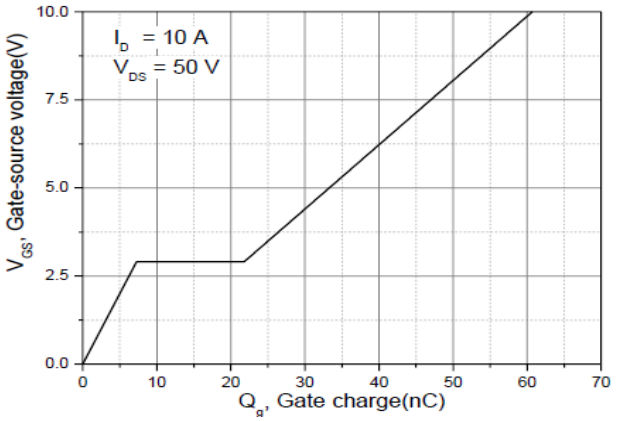


Figure4. Gate Charge

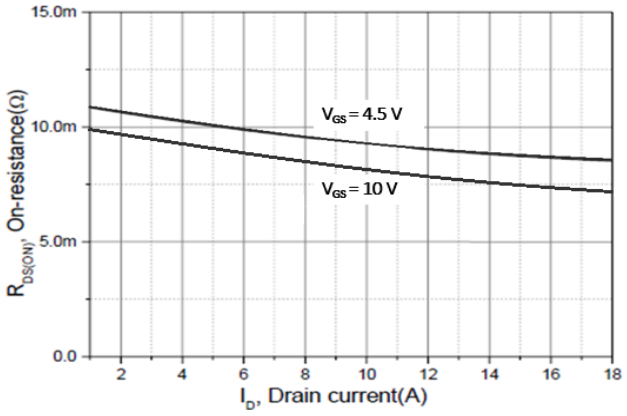


Figure5. Drain-Source on Resistance

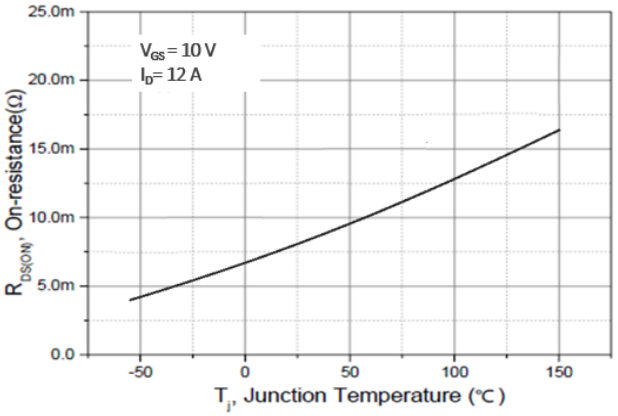


Figure6. Drain-Source on Resistance

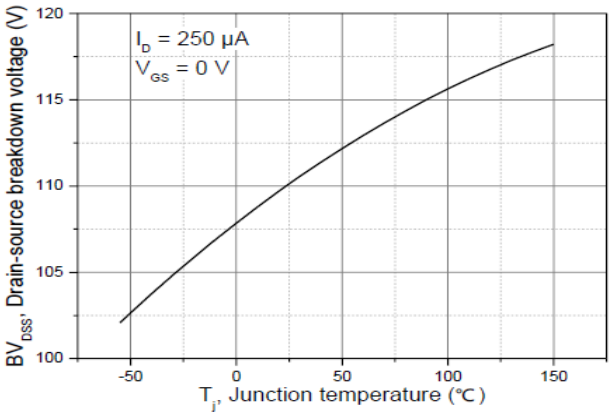


Figure7. Drain-source breakdown voltage

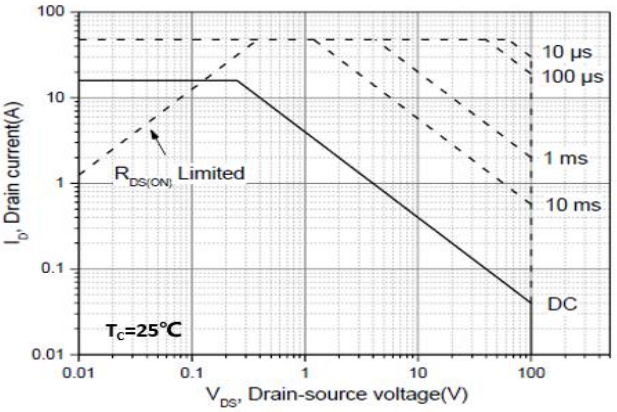
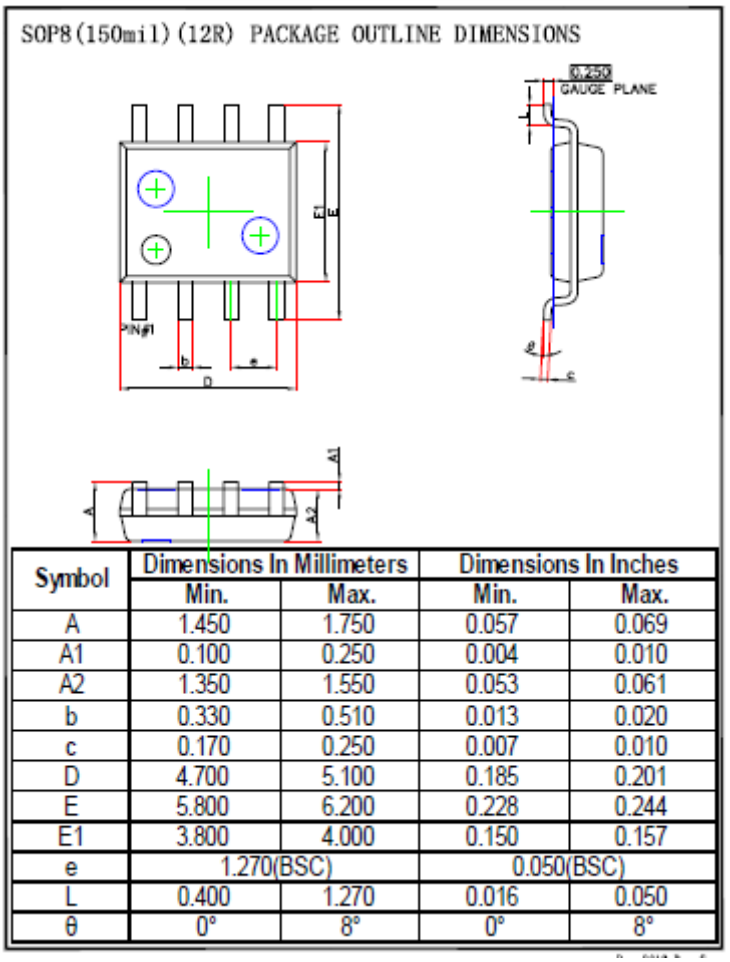


Figure8.Safe Operation Area

■ SOP-8 Package information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.450	1.750	0.057	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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