P-Channel Enhancement Mode Field Effect Transistor

Product Summary

V_{DS}	-30 V
I_D	-5.5 A
$R_{DS(ON)}$(at V_{GS}=-10V)	＜41 m
$R_{DS(ON)}$(at V_{GS}=-4.5V)	＜59 m

General Description

Trench Power LV MOSFET technology
High density cell design for Low RDS(ON)
High Speed switching

Epoxy Meets UL 94 V-0 Flammability Rating
Halogen Free

Applications

Battery protection
Load switch
Power management

Absolute Maximum Ratings (T_A=25℃ 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℃	I_D	-5.5	A
	T_A=100℃		-3.5	
Pulsed Drain Current [A]		I_{DM}	-30	A
Total Power Dissipation [B]	T_A=25℃	P_D	2.5	W
	T_A=100℃		1	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [C]	Steady-State	R	40	50	℃/W

Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJS9435B	F2	Q9435B	4000	8000	64000	

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=-	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V	-	-	-1	
		V_{DS}=-30V, V_{GS}=0V, Tj=150℃	-	-	-100	
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=-	-1.0	-1.5	-2.4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-5.5A	-	30	41	
		V_{GS}=-4.5V, I_D=-3.5A	-	46	59	
Diode Forward Voltage	V_{SD}	I_S=-5.5A, V_{GS}=0V	-	-0.9	-1.3	V
Gate resistance	R_G	f=1MHz	-	20	-	
Maximum Body-Diode Continuous Current	I_S		-	-	-5.5	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz	-	490	-	pF
Output Capacitance	C_{oss}		-	75	-	
Reverse Transfer Capacitance	C_{rss}		-	60	-	
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=-10V, V_{DS}=-15V, I_D=-5.5A	-	9	-	nC
Gate-Source Charge	Q_{gs}		-	1.7	-	
Gate-Drain Charge	Q_{gd}		-	2.3	-	
Reverse Recovery Charge	Q_{rr}	I_F=-5.5A, di/dt=100A/us	-	12	-	nC
Reverse Recovery Time	t_{rr}		-	32	-	ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V, V_{DD}=-15V, ID=-5.5A R_{GEN}=2.5	-	9	-	ns
Turn-on Rise Time	t_r		-	3	-	
Turn-off Delay Time	$t_{D(off)}$		-	29	-	
Turn-off fall Time	t_f		-	15	-	

A. Repetitive rating; pulse width limited by max. junction temperature.
B. P_d is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.
C. The value of R is measured with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in the still air environment with T_A =25℃. The maximum allowed junction temperature of 150℃. The value in any given application depends on the user's specific board design.

■Typical Electrical and Thermal Characteristics Diagrams

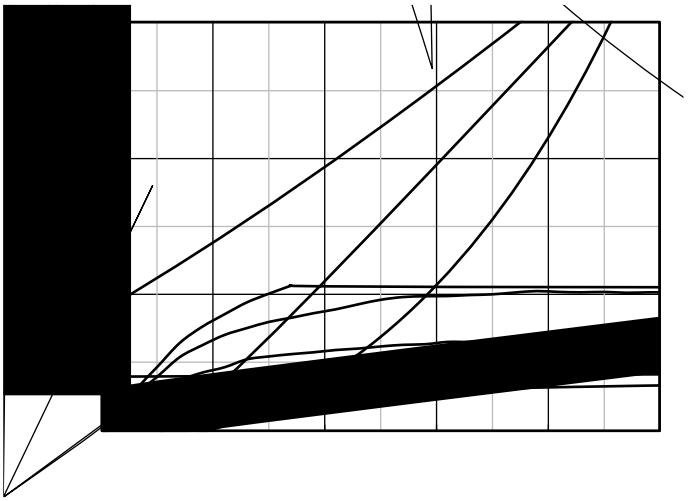


Figure 1. Output Characteristics

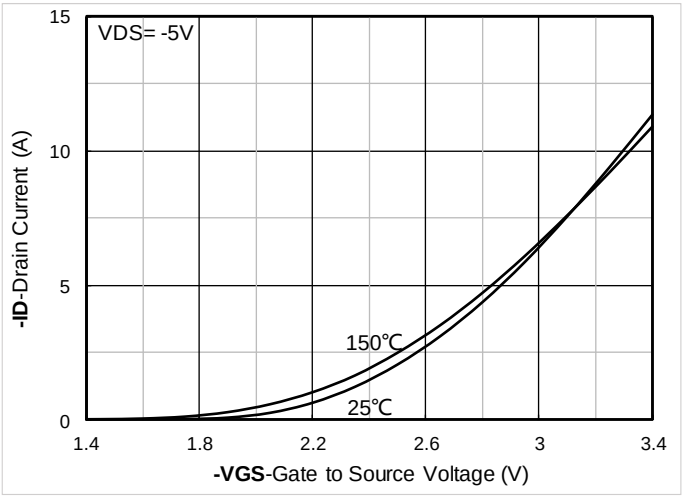


Figure 2. Transfer Characteristics

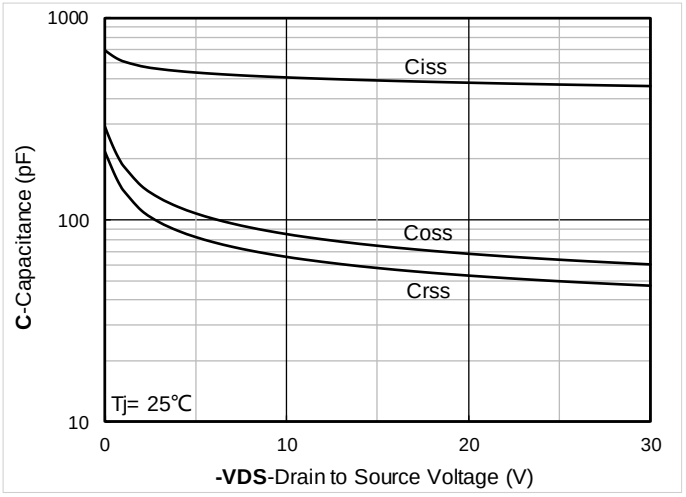


Figure 3. Capacitance Characteristics

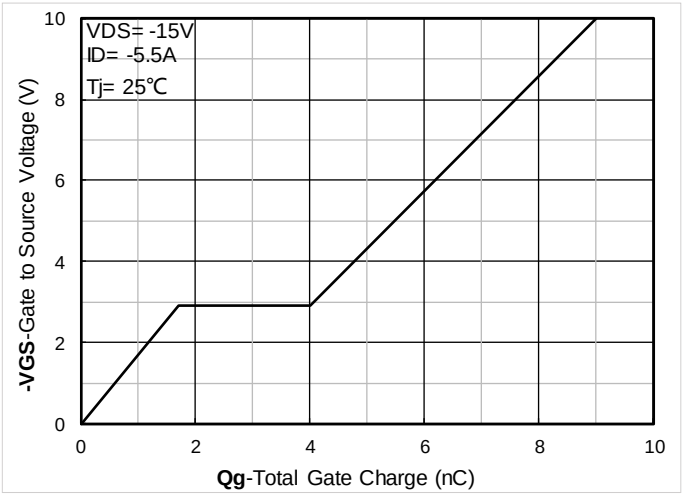


Figure 4. Gate Charge

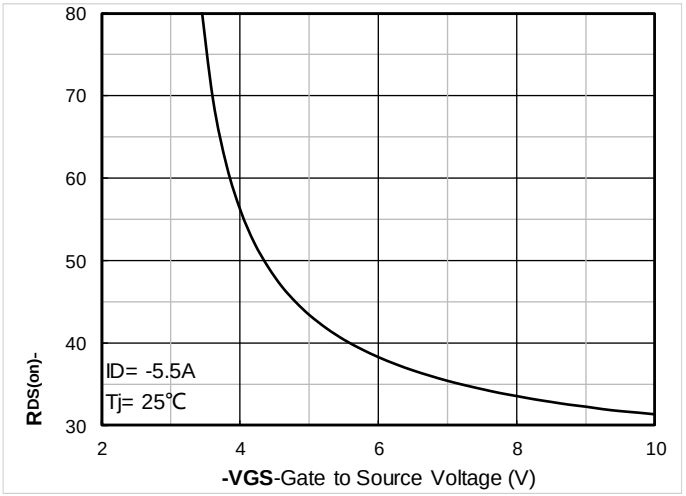


Figure 5. On-Resistance vs Gate to Source Voltage

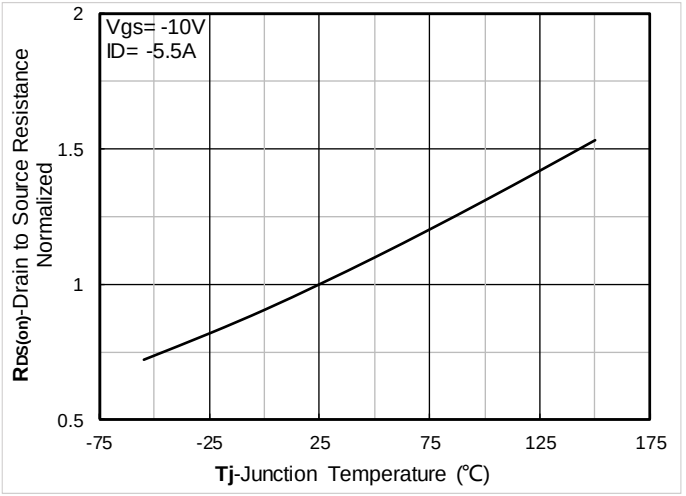


Figure 6. Normalized On-Resistance

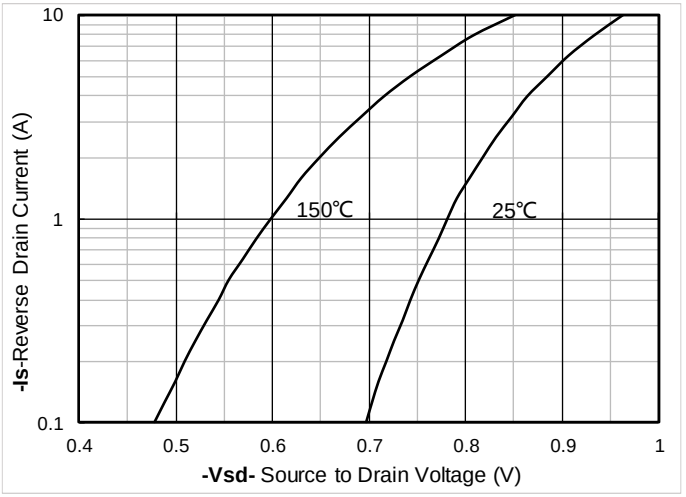
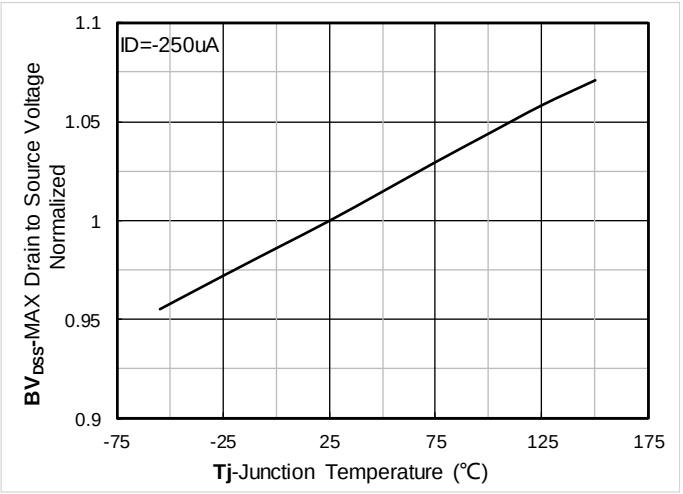


Figure 7. $R_{DS(on)}$ VS Drain Current

Figure 8. Forward characteristics of reverse diode



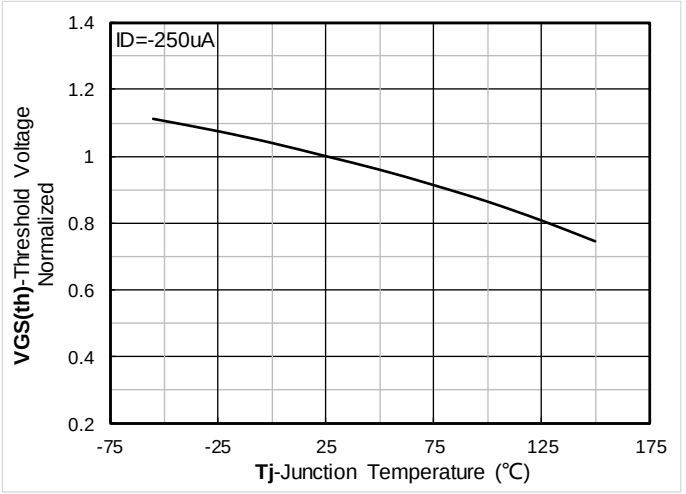
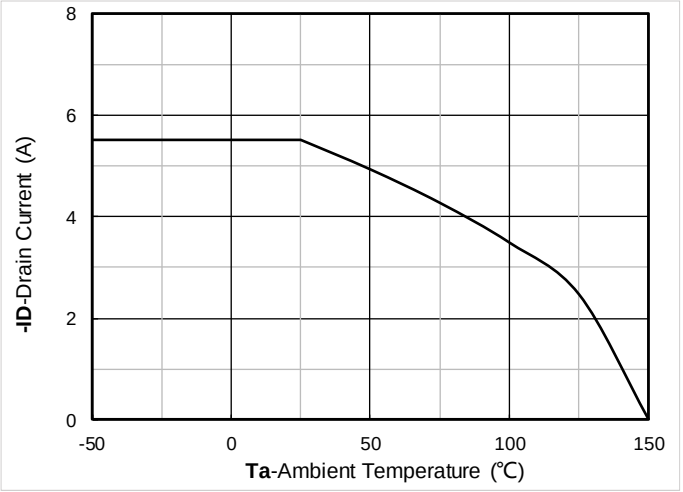


Figure 9. Normalized breakdown voltage

Figure 10. Normalized Threshold voltage



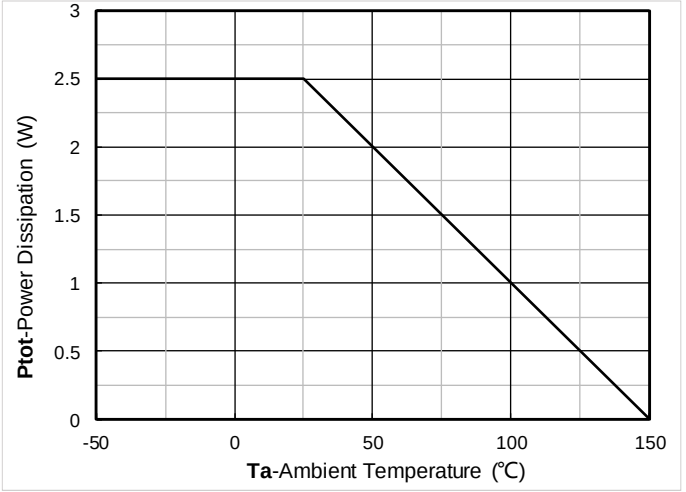


Figure 11. Current dissipation

Figure 12. Power dissipation

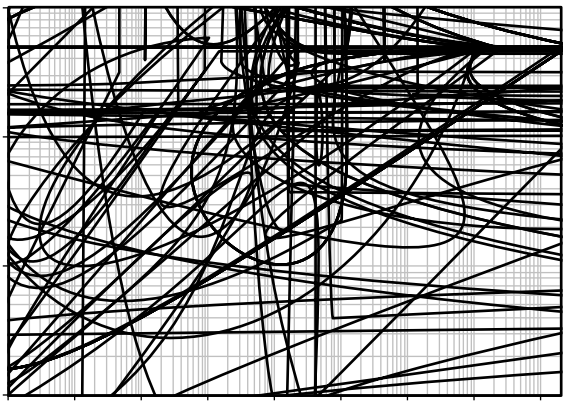


Figure 13. Maximum Transient Thermal Impedance

Figure 14. Safe Operation Area

SOP-8 Package information



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 with 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