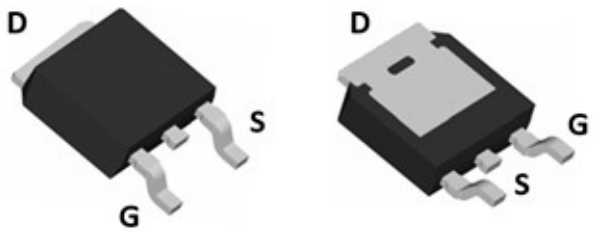
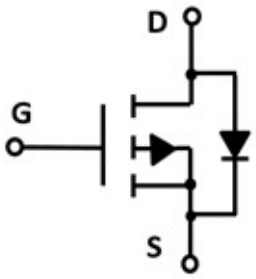
P-Channel Enhancement Mode Field Effect Transistor



TO-252



Product Summary

- V_{DS} -100V
- I_D -18A
- $R_{DS(ON)}$(at V_{GS}=-10V) ＜110 mohm
- $R_{DS(ON)}$(at V_{GS}=-4.5V) ＜120 mohm
- 100% UIS Tested
- 100% ▽V_{DS} Tested

General Description

- Split gate trench MOSFET technology
- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity

Applications

- Power management
- Portable equipment

■ 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	Tc=25℃	I_D	-18	A
	Tc=100℃		-12	
Pulsed Drain Current [A]		I_{DM}	-72	A
Avalanche energy [B]		E_{AS}	100	mJ
Total Power Dissipation	Tc=25℃	P_D	72	W
	Tc=100℃		28.8	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [D]	t≤10S	$R_{\theta JA}$	15	20	℃/W
Thermal Resistance Junction-to-Ambient [D]	Steady-State		40	50	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	1.35	1.7	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJD18GP10A	F1	YJD18GP10A	2500	2500	250000	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	T_j=25℃			-1	μA
			T_j=55℃			-5	
			T_j=125℃			-10	
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		-1.0	-1.8	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= -10V, I_D=-10A			83	110	mΩ
		V_{GS}= -4.5V, I_D=-5A			95	120	
Diode Forward Voltage	V_{SD}	I_S=-10A,V_{GS}=0V				-1.3	V
Maximum Body-Diode Continuous Current	I_S					-18	A
Dynamic Parameters							
Input Capacitance	C_{iss}	V_{DS}=-50V,V_{GS}=0V,f=1MHZ			1051		pF
Output Capacitance	C_{oss}				119		
Reverse Transfer Capacitance	C_{rss}				25		
Switching Parameters							
Total Gate Charge	$Q_{g(-10V)}$	V_{GS}=-10V,V_{DS}=-50V,I_D=-5A			20.1		nC
Total Gate Charge	$Q_{g(-4.5V)}$				9.7		
Gate-Source Charge	Q_{gs}				3.9		
Gate-Drain Charge	Q_{gd}				4.3		
Reverse Recovery Chrage	Q_{rr}	I_F=-5A, di/dt=100A/us			140		
Reverse Recovery Time	t_{rr}				70		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V,V_{DD}=-50V,R_L=2.5Ω R_{GEN}=6Ω			10		
Turn-on Rise Time	t_r				30		
Turn-off Delay Time	$t_{D(off)}$				77		
Turn-off fall Time	t_f				81		

A. Repetitive rating; pulse width limited by max. junction temperature.
B. V_{DD}=50V, R_G=25Ω, L=0.5mH.
C. Pd is based on max. junction temperature, using junction-case thermal resistance.
D. The value of RθJA is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25° C. The Power dissipation PDSM is based on RθJA t≤ 10s and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design.

■ Typical Performance Characteristics

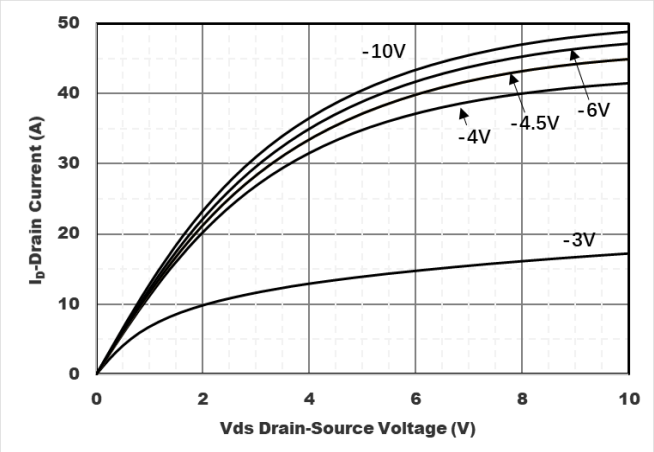


Figure1. Output Characteristics

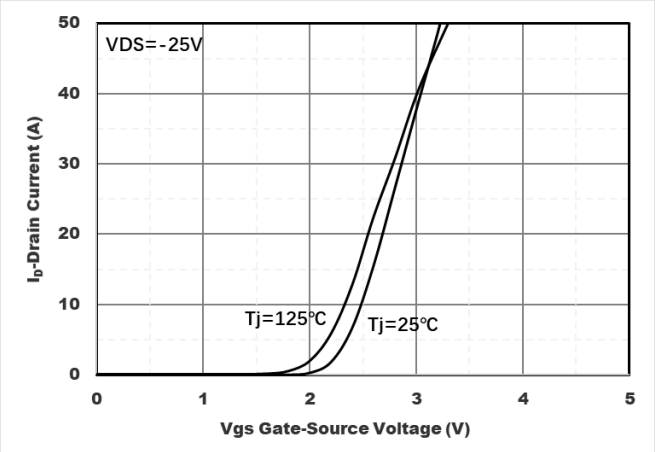


Figure2. Transfer Characteristics

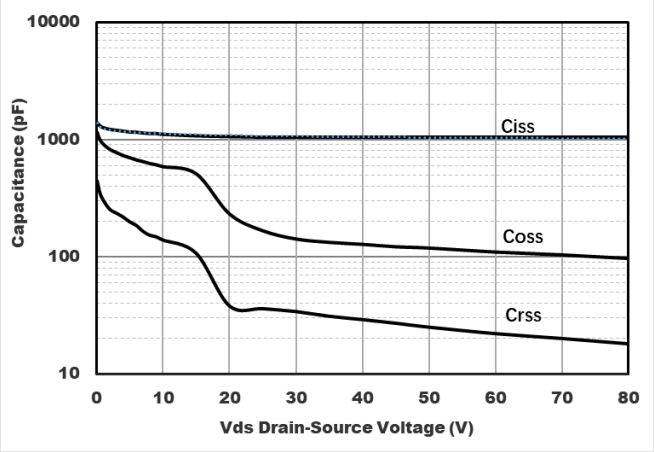


Figure3. Capacitance Characteristics

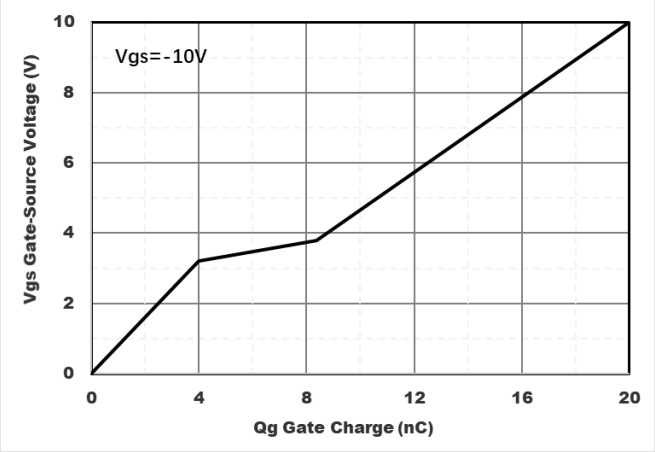


Figure4. Gate Charge

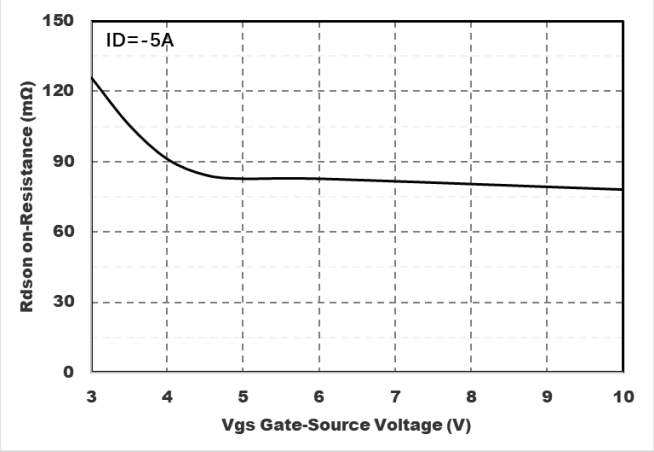


Figure5. : On-Resistance vs. Gate to Source Voltage

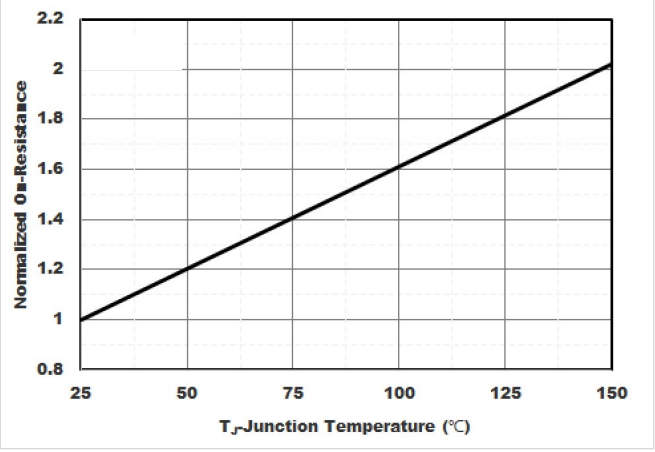


Figure6.Normalized On-Resistance

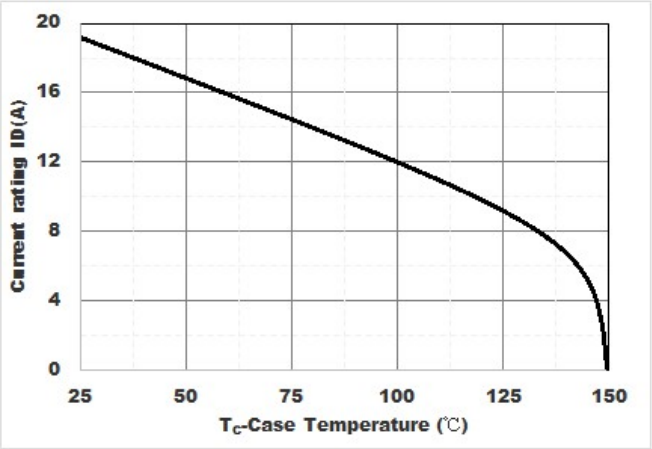


Figure7. Drain current

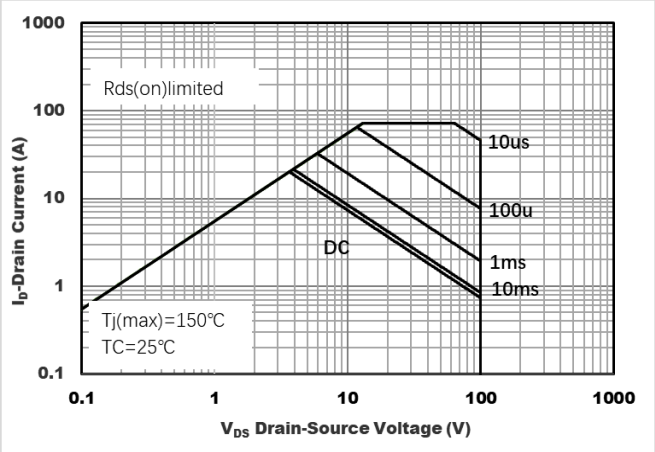


Figure8.Safe Operation Area

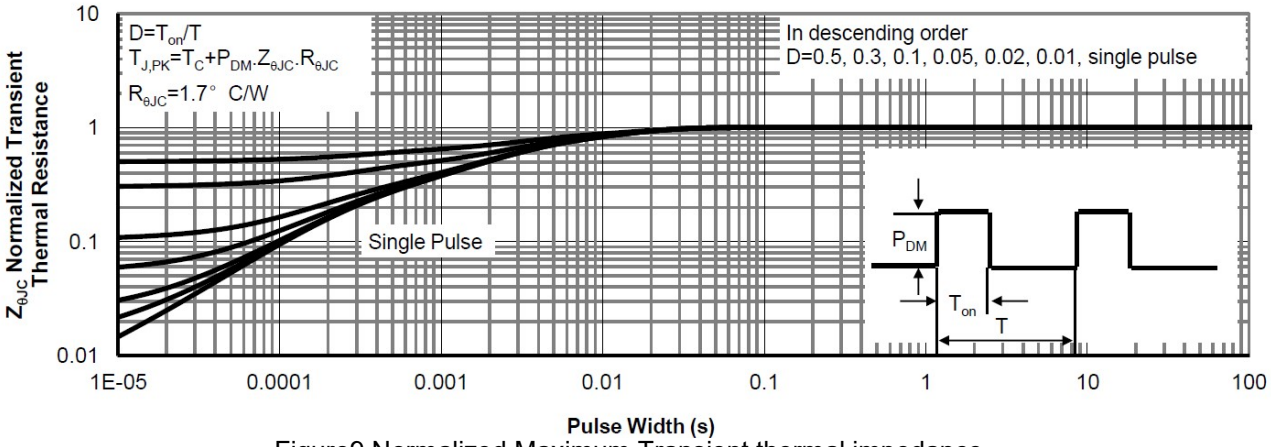
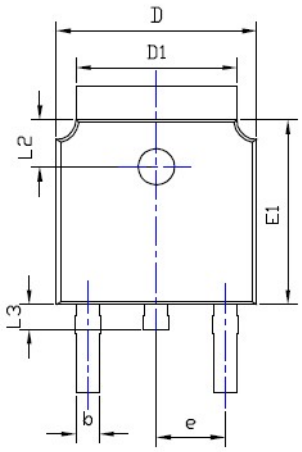
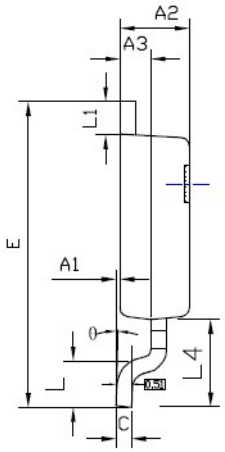


Figure9.Normalized Maximum Transient thermal impedance

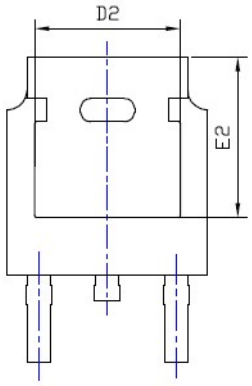
■ TO-252 Package information



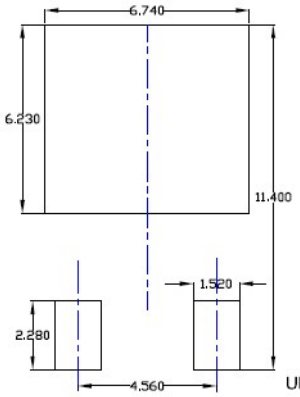
TOP VIEW



SIDE VIEW



BOTTOM VIEW



UNIT: mm

SUGGESTED SOLDER PAD LAYOUT

SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.008	0.000	---	0.200
A2	0.087	0.091	0.094	2.200	2.300	2.400
A3	0.035	0.039	0.043	0.900	1.000	1.100
b	0.026	0.030	0.034	0.660	0.760	0.860
c	0.018	0.020	0.023	0.460	0.520	0.580
D	0.256	0.260	0.264	6.500	6.600	6.700
D1	0.203	0.209	0.215	5.150	5.300	5.450
D2	0.181	0.189	0.195	4.600	4.800	4.950
E	0.390	0.398	0.406	9.900	10.100	10.300
E1	0.236	0.240	0.244	6.000	6.100	6.200
E2	0.203	0.209	0.215	5.150	5.300	5.450
e	0.090BSC			2.286BSC		
L	0.049	0.059	0.069	1.250	1.500	1.750
L1	0.035	---	0.050	0.900	---	1.270
L2	0.055	---	0.075	1.400	---	1.900
L3	0.240	0.310	0.039	0.600	0.800	1.000
L4	0.114REF			2.900REF		
θ	0°	---	10°	0°	---	10°

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 , or consult your nearest Yangjie's sales office for further assistance.