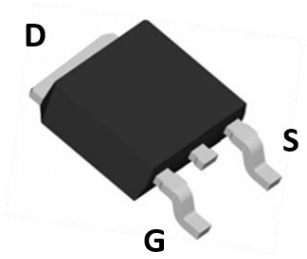
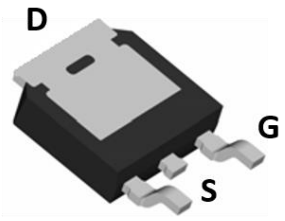
N-Channel Enhancement Mode Field Effect Transistor

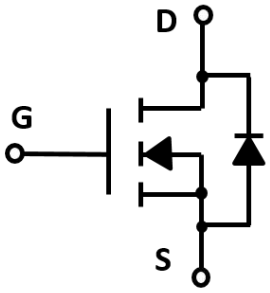




Product Summary

- V_{DS} 30V
- I_D 50A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜9.0mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜11.0mohm
- 100% UIS Tested
- 100% ▽V_{DS} Tested

TO-252



General Description

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- High current load applications
- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

■ 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_C=25℃	I_D	50	A
	T_C=100℃		35	
Pulsed Drain Current [A]		I_{DM}	150	A
Total Power Dissipation	T_C=25℃	P_D	34	W
	T_C=100℃		17	W
Single Pulse Avalanche Energy [B]		E_{AS}	80	mJ
Thermal Resistance Junction-to-Case [C]		$R_{\theta JC}$	4.4	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+175	℃

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJD50N03A	F2	YJD50N03A	2500	2500	25000	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		30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V	T_J=25℃			1	μA
			T_J=55℃			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		1.0	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=15A			6.5	9.0	mΩ
		V_{GS}= 4.5V, I_D=15A			8.6	11.0	
Diode Forward Voltage	V_{SD}	I_S=15A,V_{GS}=0V			0.85	1.2	V
Maximum Body-Diode Continuous Current	I_S					50	A
Dynamic Parameters							
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V,f=1MHZ			920		pF
Output Capacitance	C_{oss}				198		
Reverse Transfer Capacitance	C_{rss}				114		
Switching Parameters							
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=15V,I_D=50A			28		nC
Gate-Source Charge	Q_{gs}				7		
Gate-Drain Charge	Q_{gd}				5		
Reverse Recovery Charge	Q_{rr}	I_F=20A, di/dt=100A/us			25		
Reverse Recovery Time	t_{rr}				26		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=20V, I_D=2A,R_L=1Ω R_{GEN}=3Ω			8		
Turn-on Rise Time	t_r				15		
Turn-off Delay Time	$t_{D(off)}$				27		
Turn-off fall Time	t_f				7		

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

B. T_j=25℃, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25Ω

C. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

■ Typical Performance Characteristics

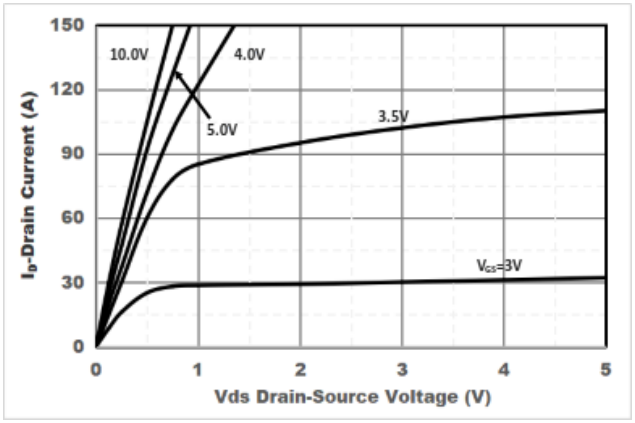


Figure1. Output Characteristics

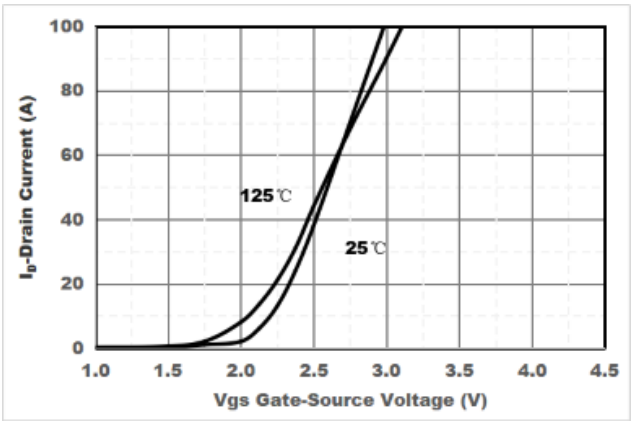


Figure2. Transfer Characteristics

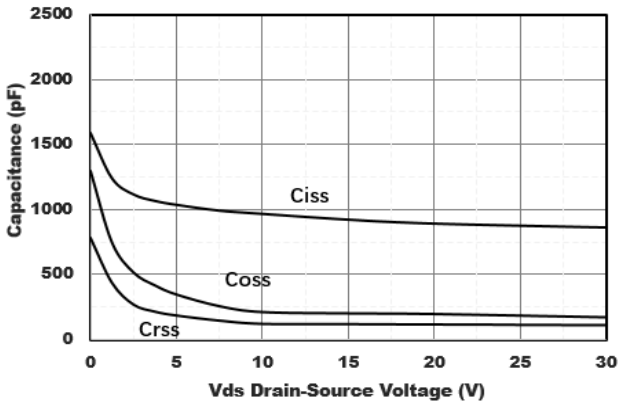


Figure3. Capacitance Characteristics

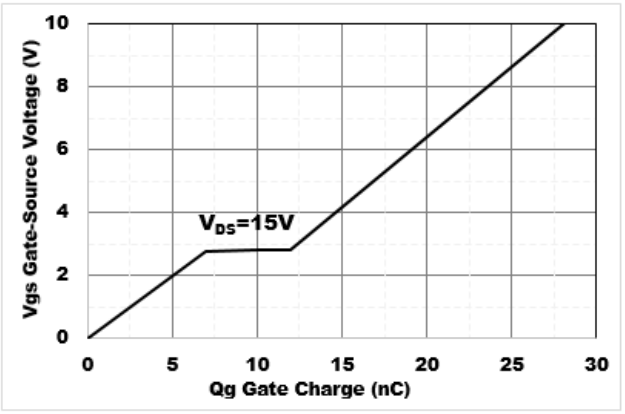


Figure4. Gate Charge

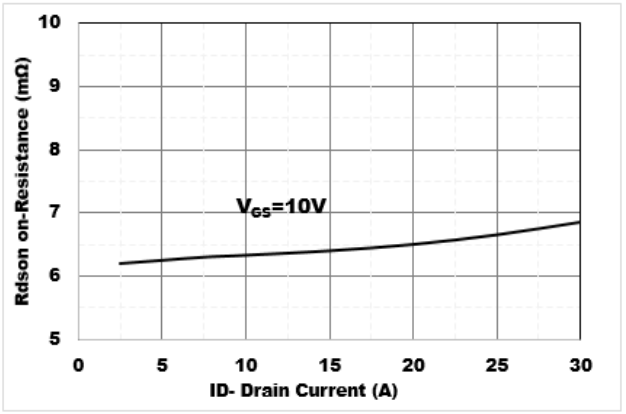


Figure5. Drain-Source on Resistance

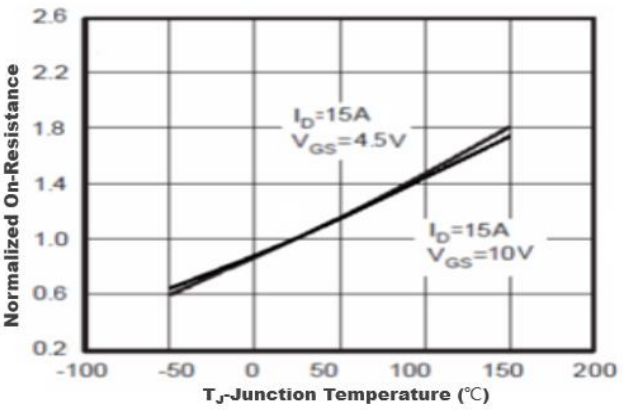


Figure6. Drain-Source on Resistance

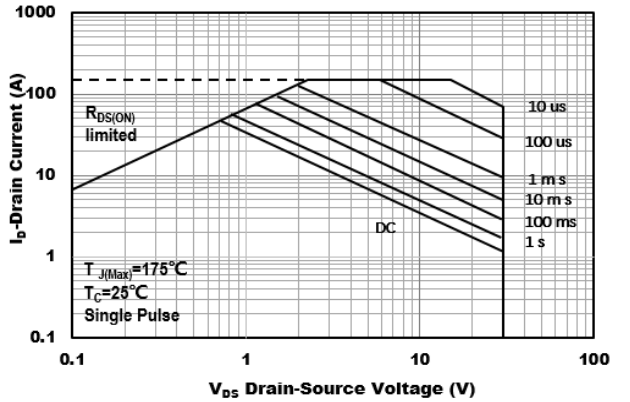


Figure7. Safe Operation Area

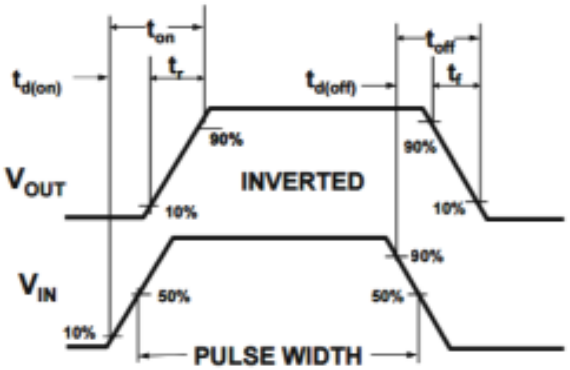
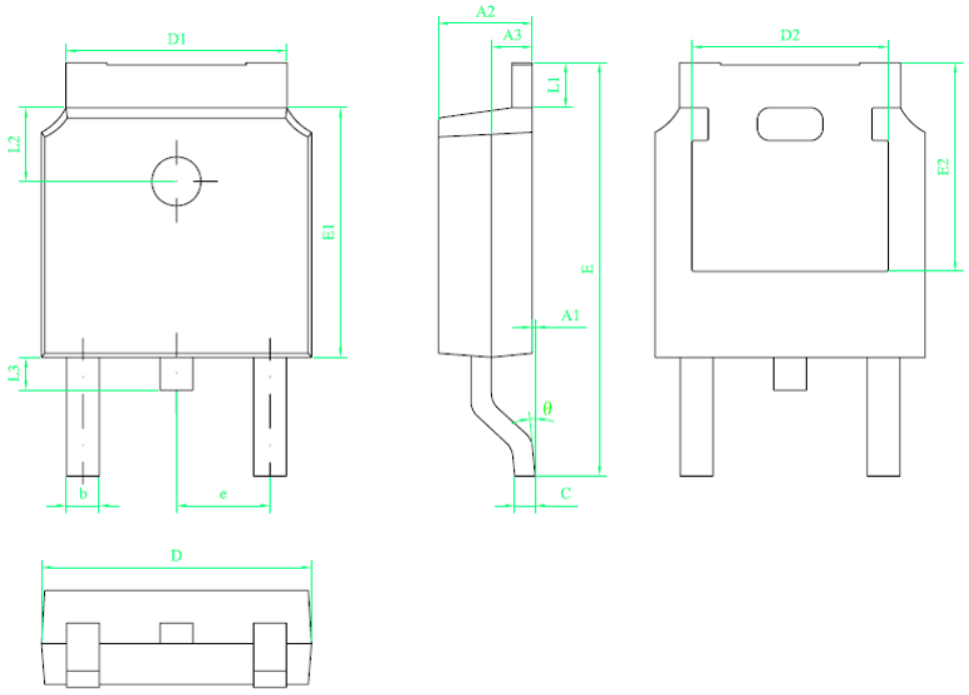


Figure8. Switching wave

■ TO-252 Package information



符 号	尺 寸		
	min	nom	max
A1	0	----	0.10
A2	2.20	2.30	2.40
A3	0.90	1.00	1.10
b	0.75	----	0.85
c	0.50	----	0.60
D	6.50	6.60	6.70
D1	5.30	5.40	5.50
D2	4.70	4.80	4.90
E	9.90	10.10	10.30
E1	6.00	6.10	6.20
E2	5.20	5.30	5.40
e	2.20	2.286	2.40
L1	0.90	----	1.25
L2	1.70	1.80	1.90
L3	0.60	0.80	1.00
θ	0°	----	8°

技术要求：
1. 树脂体不应有崩裂、缺损等缺陷；
2. 树脂上下部X、Y方向偏差不超过0.20；
3. 胶体两端留废胶总和宽度不超过0.50；
4. 所有单位为mm；

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.