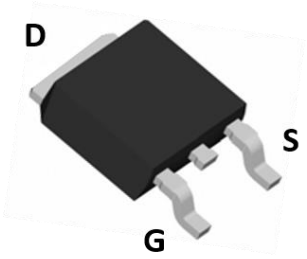
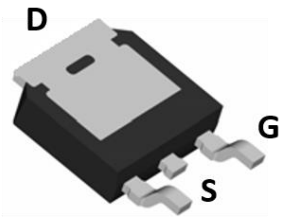
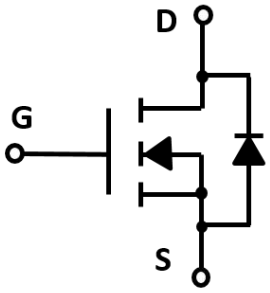
N-Channel Enhancement Mode Field Effect Transistor





TO-252



Product Summary

- V_{DS} 20V
- I_D 30A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜8.0 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜9.0 mohm
- $R_{DS(ON)}$(at V_{GS}=1.8V) ＜14 mohm
- 100% UIS Tested
- 100% ▽V_{DS} Tested

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}	20	V
Gate-source Voltage		V_{GS}	±10	V
Drain Current	T_C=25℃	I_D	30	A
	T_C=100℃		21	
Pulsed Drain Current [A]		I_{DM}	125	A
Total Power Dissipation	T_C=25℃	P_D	30	W
	T_C=100℃		15	W
Single Pulse Avalanche Energy [B]		E_{AS}	100	mJ
Thermal Resistance Junction-to-Case [C]		$R_{\theta JC}$	5	℃/ 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
YJD30N02A	F2	YJD30N02A	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	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±10V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	0.45	0.62	1.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 4.5V, I_D=15A		5.6	8.0	mΩ
		V_{GS}= 2.5V, I_D=7A		7.1	9.0	
		V_{GS}= 1.8V, I_D=3A		10	14	
Diode Forward Voltage	V_{SD}	I_S=15A,V_{GS}=0V		0.9	1.2	V
Maximum Body-Diode Continuous Current	I_S				30	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V,f=1MHZ		1700		pF
Output Capacitance	C_{oss}			305		
Reverse Transfer Capacitance	C_{rss}			145		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=4.5V,V_{DS}=10V,I_D=15A		29		nC
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			7		
Reverse Recovery Charge	Q_{rr}	I_F=15A, di/dt=100A/us		23		
Reverse Recovery Time	t_{rr}			39		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=4.5V,V_{DD}=10V, I_D=10A,R_L=1Ω R_{GEN}=3Ω		7		
Turn-on Rise Time	t_r			35		
Turn-off Delay Time	$t_{D(off)}$			30		
Turn-off fall Time	t_f			6		

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

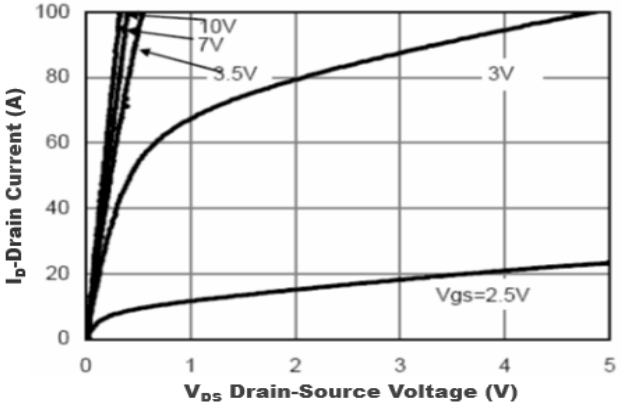


Figure1. Output Characteristics

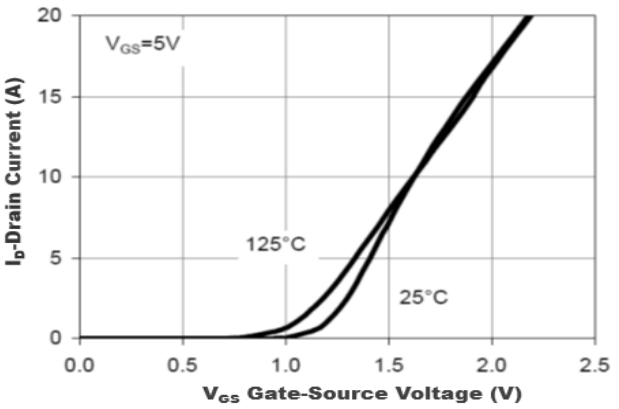


Figure2. Transfer Characteristics

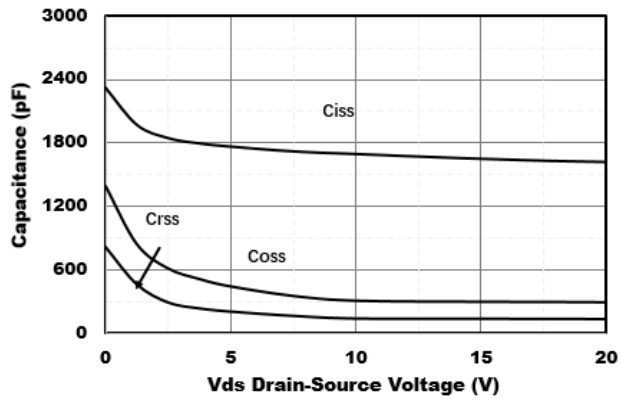


Figure3. Capacitance Characteristics

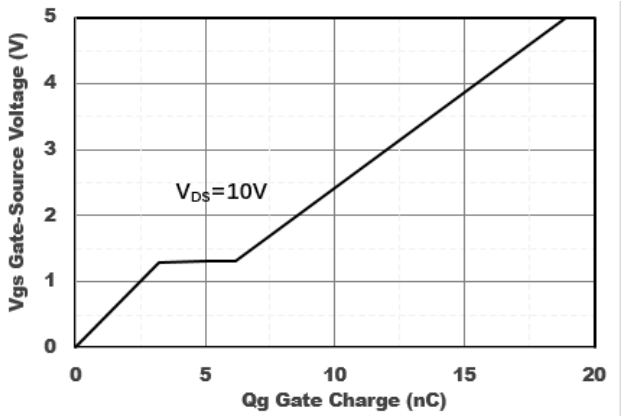


Figure4. Gate Charge

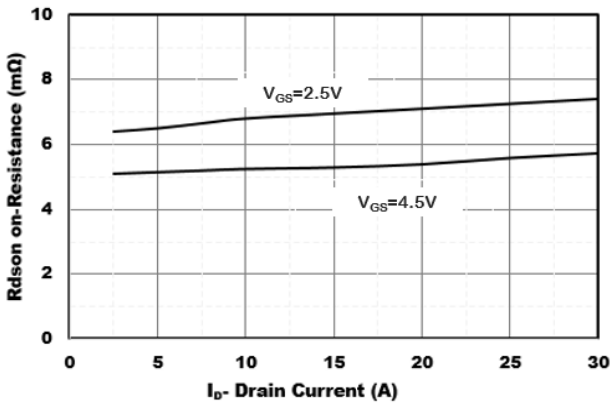


Figure5. Drain-Source on Resistance

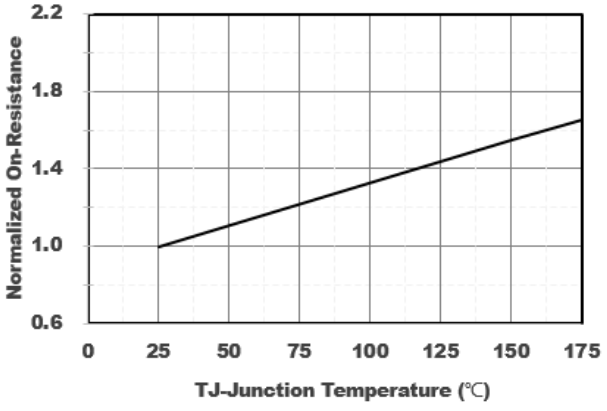


Figure6. Drain-Source on Resistance

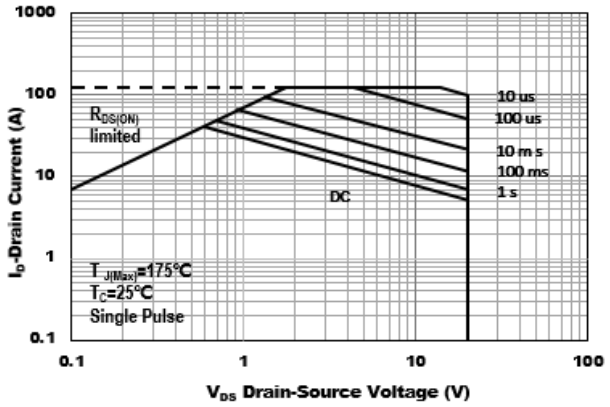


Figure7. Safe Operation Area

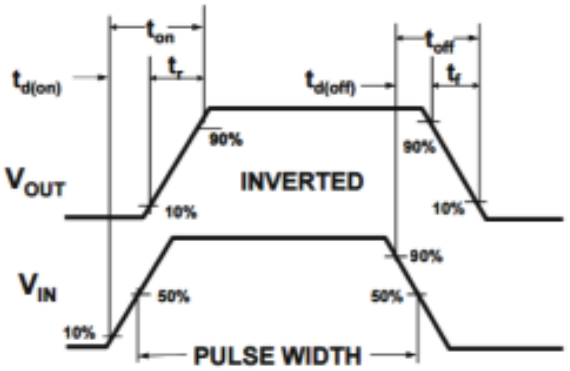
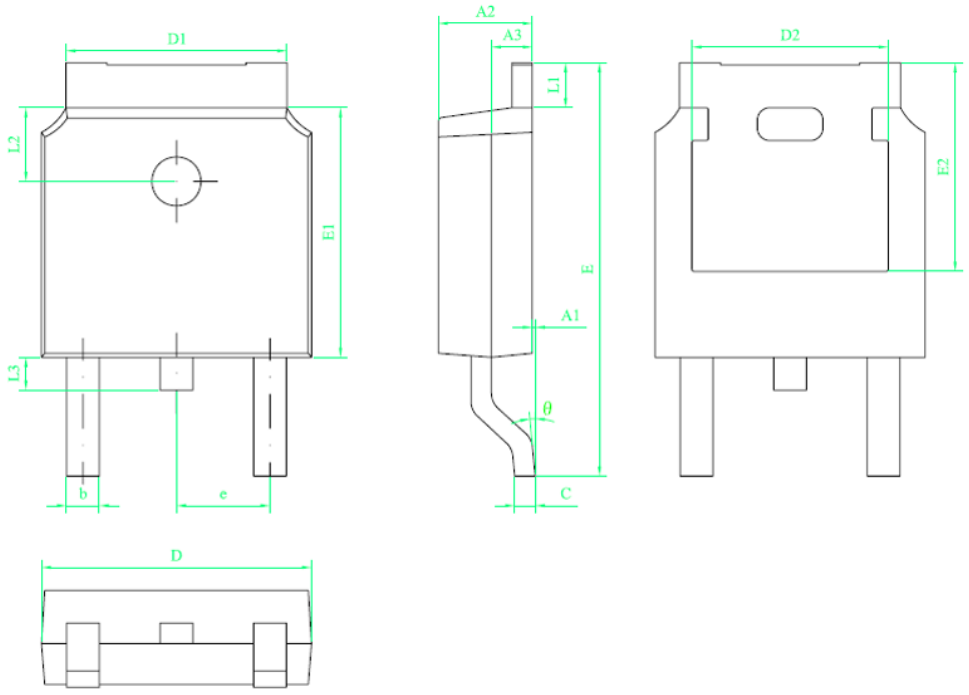


Figure8. Switching wave

■ 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；

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