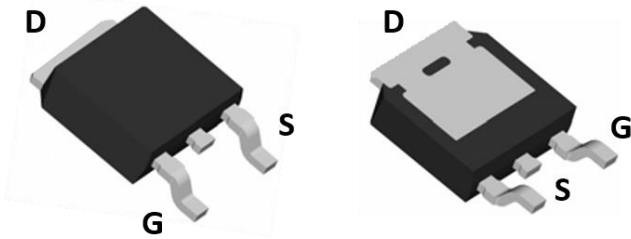
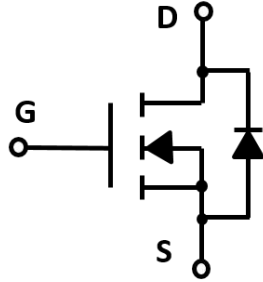


N-Channel Enhancement Mode Field Effect Transistor



TO-252



Product Summary

- V_{DS} 60V
- I_D 20A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) < 35 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) < 45 mohm
- 100% UIS Tested
- 100% ∇V_{DS} Tested

General Description

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

Applications

- DC-DC Converters
- Power management functions
- Backlighting

■ Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	60	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_C=25^\circ C$	I_D	20	A
	$T_C=100^\circ C$		14	
Pulsed Drain Current ^A		I_{DM}	60	A
Total Power Dissipation	$T_C=25^\circ C$	P_D	45	W
	$T_C=100^\circ C$		22.5	W
Single Pulse Avalanche Energy ^B		E_{AS}	20	mJ
Thermal Resistance Junction-to-Case ^C		$R_{\theta JC}$	3.3	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+175	$^\circ C$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJD20N06A	F1	YJD20N06A	2500	2500	25000	13" reel



YJD20N06A

■ Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	$T_J=25^\circ\text{C}$		1	μA
			$T_J=55^\circ\text{C}$		5	
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.7	1.3	2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		32	35	m Ω
		$V_{GS}=4.5V, I_D=10A$		35	45	
Diode Forward Voltage	V_{SD}	$I_S=10A, V_{GS}=0V$		0.8	1.2	V
Maximum Body-Diode Continuous Current	I_S				20	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, f=1\text{MHZ}$		800		pF
Output Capacitance	C_{oss}			68		
Reverse Transfer Capacitance	C_{rss}			36		
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=30V, I_D=10A$		15		nC
Gate-Source Charge	Q_{gs}			2.4		
Gate-Drain Charge	Q_{gd}			2.5		
Reverse Recovery Charge	Q_{rr}	$I_f=20A, di/dt=500A/us$		23		ns
Reverse Recovery Time	t_{rr}			45		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=30V, I_D=2A, R_L=1\Omega$ $R_{GEN}=3\Omega$		5		ns
Turn-on Rise Time	t_r			39		
Turn-off Delay Time	$t_{D(off)}$			19		
Turn-off fall Time	t_f			7		

A. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

B. $T_J=25^\circ\text{C}$, $V_{DD}=30V$, $V_G=10V$, $L=0.5\text{mH}$, $R_g=25\Omega$.

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

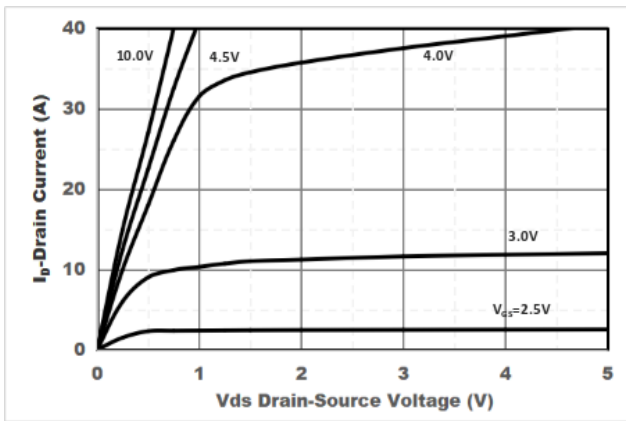


Figure1. Output Characteristics

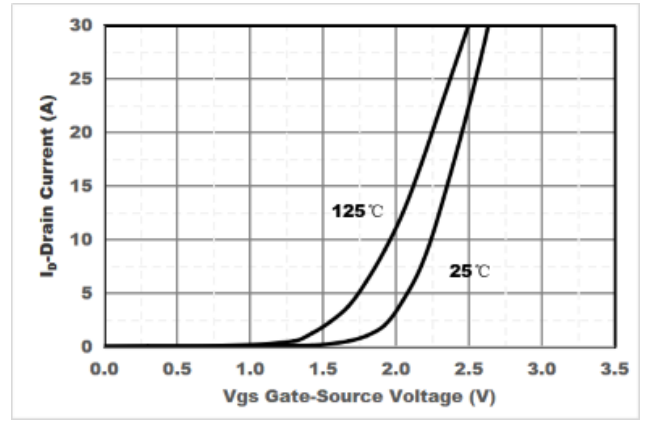


Figure2. Transfer Characteristics

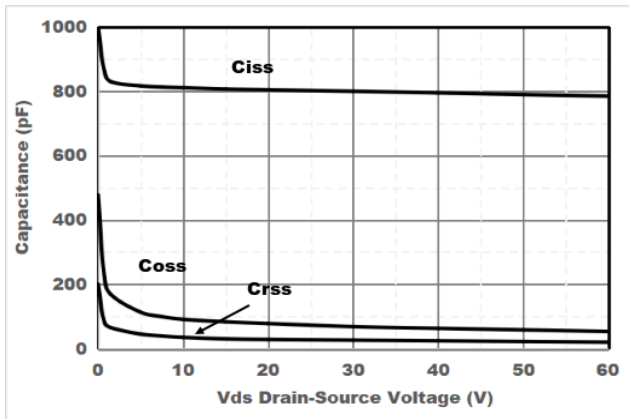


Figure3. Capacitance Characteristics

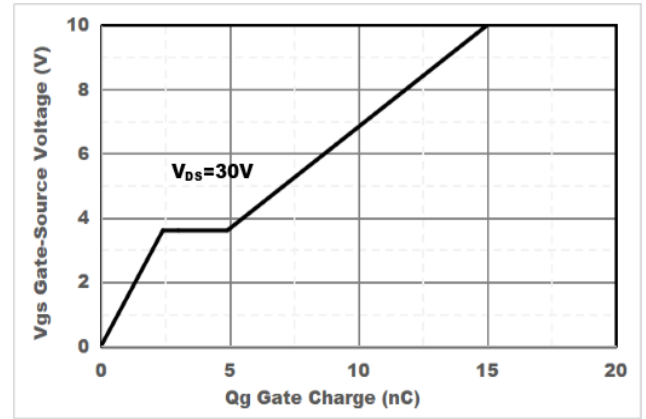


Figure4. Gate Charge

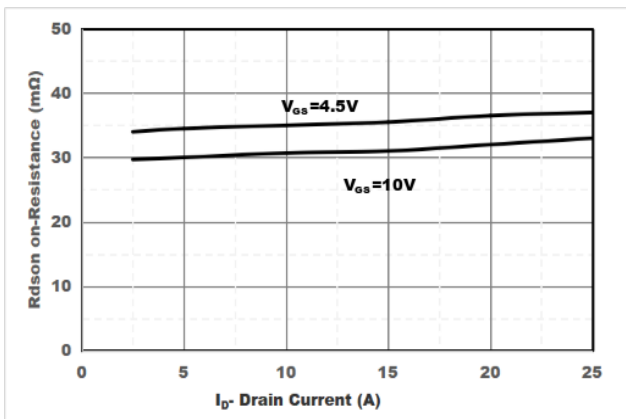


Figure5. Drain-Source on Resistance

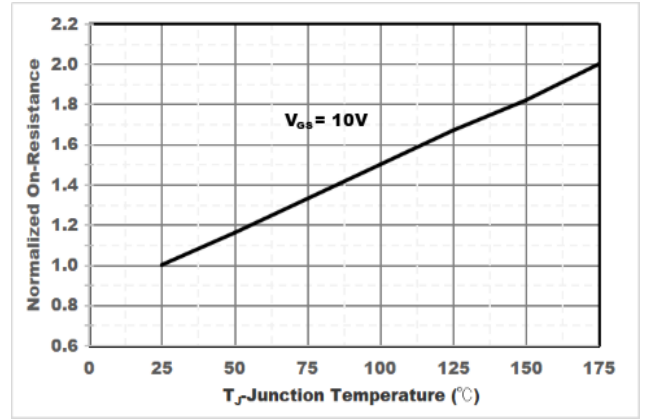


Figure6. Drain-Source on Resistance

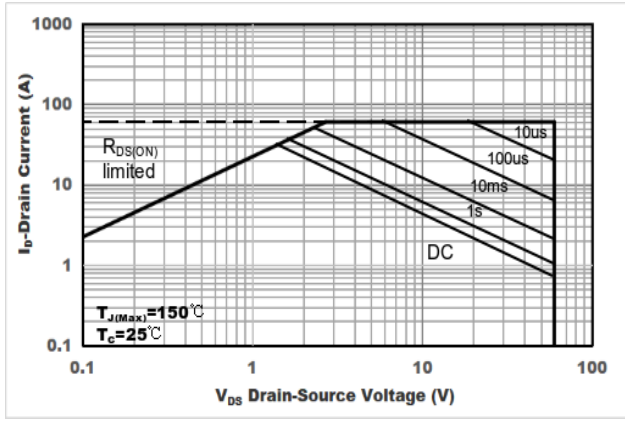


Figure7. Safe Operation Area

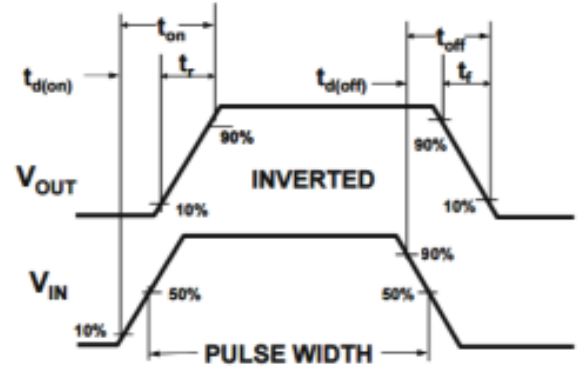
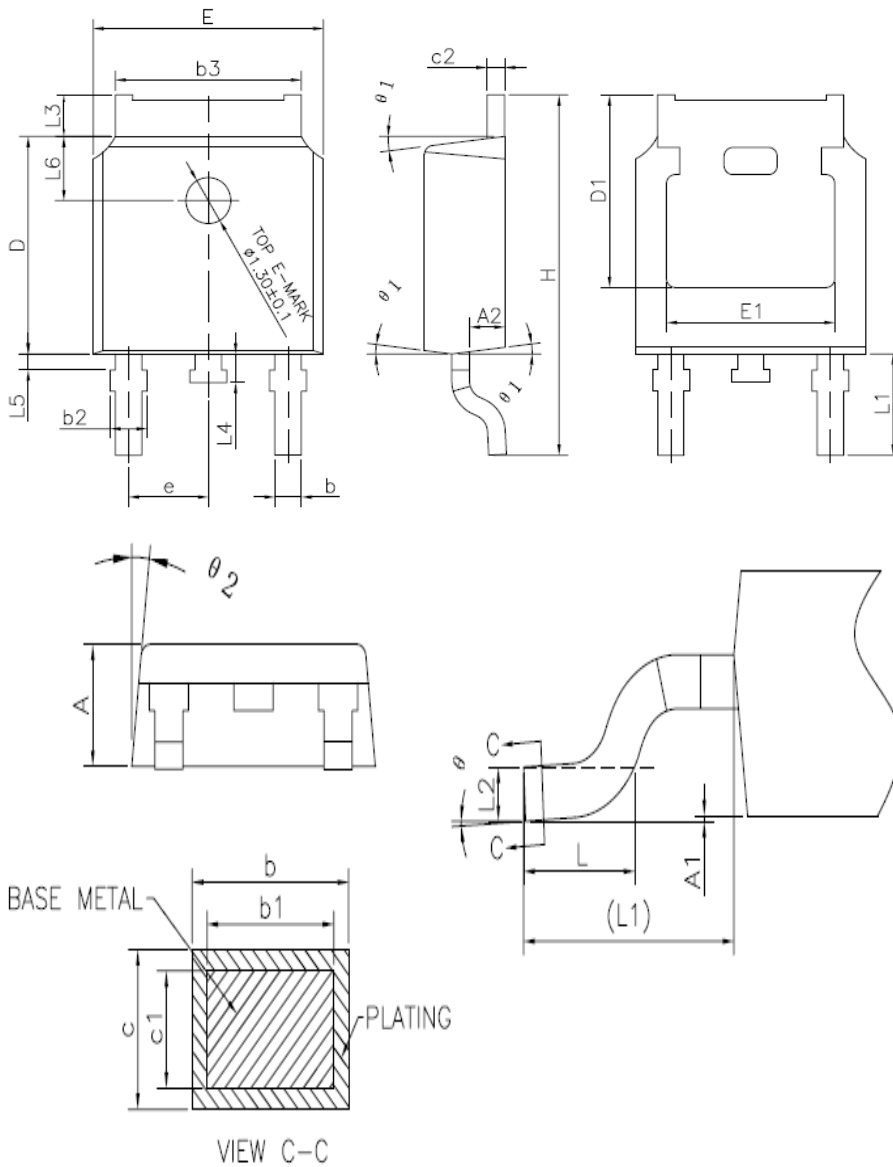


Figure8. Switching wave



YJD20N06A

■ TO-252 Package information



COMMON DIMENSIONS
(UNITS OF MEASURE =MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	2.20	2.30	2.38
A1	0	—	0.10
A2	0.90	1.01	1.10
b	0.72	—	0.85
b1	0.71	0.76	0.81
b2	0.72	—	0.90
b3	5.13	5.33	5.46
c	0.47	—	0.60
c1	0.46	0.51	0.56
c2	0.47	—	0.60
D	6.00	6.10	6.20
D1	5.25	—	—
E	6.50	6.60	6.70
E1	4.70	—	—
e	2.186	2.286	2.386
H	9.80	10.10	10.40
L	1.40	1.50	1.70
L1	2.90 REF		
L2	0.508 BSC		
L3	0.90	—	1.25
L4	0.60	0.80	1.00
L5	0.15	—	0.75
L6	1.80 REF		
θ	0°	—	8°
θ_1	5°	7°	9°
θ_2	5°	7°	9°

NOTES:
ALL DIMENSIONS REFER TO JEDEC STANDARD TO-252 AA DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS



YJD20N06A

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