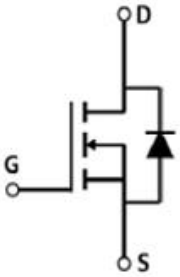
N-Channel Enhancement Mode Field Effect Transistor



TO-220

Product Summary

- V_{DS} 60V
- I_D 150A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜5.5mohm
- 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
- Industrial and Motor Drive applications

■ Absolute Maximum Ratings (T_A=25℃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℃	I_D	150	A
	T_C=100℃		105	
Pulsed Drain Current [A]		I_{DM}	500	A
Total Power Dissipation	T_C=25℃	P_D	225	W
	T_C=100℃		112	W
Single Pulse Avalanche Energy		E_{AS}	550	mJ
Thermal Resistance Junction-to-Case [B]		$R_{\theta JC}$	0.67	℃/ 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
YJP150N06AQ	B1	YJP150N06AQ	50	/	5000	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	60			V
Zero Gate Voltage Drain Current	T_J=25℃	I_{DSS}	V_{DS}=60V,V_{GS}=0V			1	μA
	T_J=55℃					5	uA
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	2.0	3.0	4.0	V
Static Drain-Source On-Resistance		$R_{DS(ON)}$	V_{GS}= 10V, I_D=75A		4.6	5.5	mΩ
Diode Forward Voltage		V_{SD}	I_S=40A,V_{GS}=0V		0.8	1.2	V
Maximum Body-Diode Continuous Current		I_S				150	A
Dynamic Parameters							
Input Capacitance		C_{iss}	V_{DS}=30V,V_{GS}=0V,f=1MHZ		4200		pF
Output Capacitance		C_{oss}			475		
Reverse Transfer Capacitance		C_{rss}			207		
Switching Parameters							
Total Gate Charge		Q_g	V_{GS}=10V,V_{DS}=30V,I_D=50A		69		nC
Gate-Source Charge		Q_{gs}			33		
Gate-Drain Charge		Q_{gd}			15		
Reverse Recovery Charge		Q_{rr}	I_F=40A, di/dt=100A/us		98		
Reverse Recovery Time		t_{rr}			53		ns
Turn-on Delay Time		$t_{D(on)}$	V_{GS}=10V,V_{DD}=30V, I_D=2A,R_L=15Ω R_{GEN}=3Ω		18		
Turn-on Rise Time		t_r			35		
Turn-off Delay Time		$t_{D(off)}$			44		
Turn-off fall Time		t_f			23		

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

B. $R_{\theta JA}$ 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

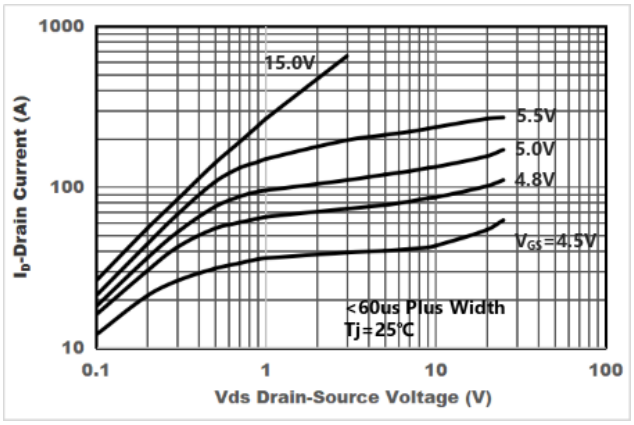


Figure1. Output Characteristics

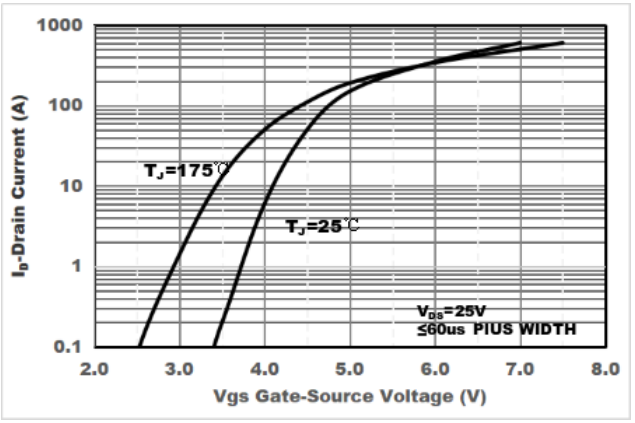


Figure2. Transfer Characteristics

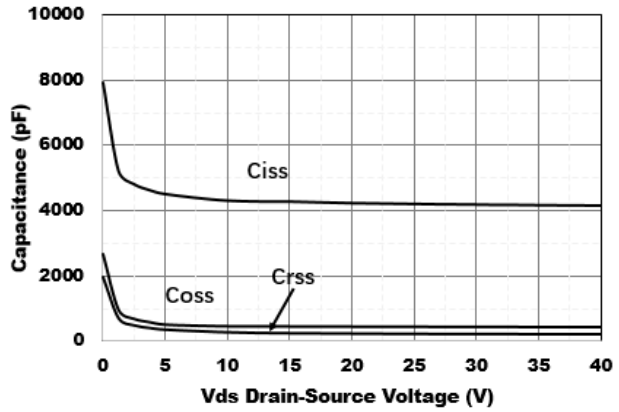


Figure3. Capacitance Characteristics

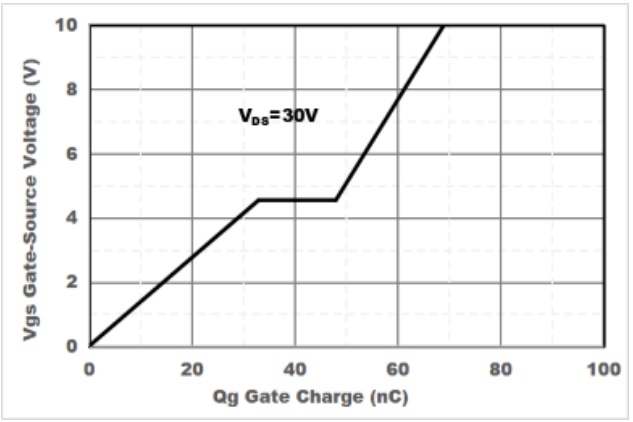


Figure4. Gate Charge

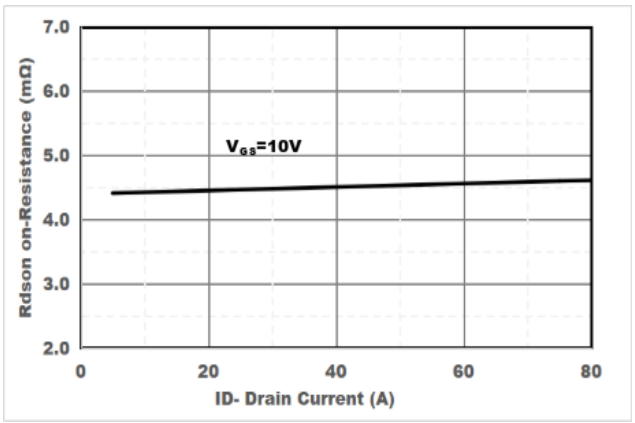


Figure5. Drain-Source on Resistance

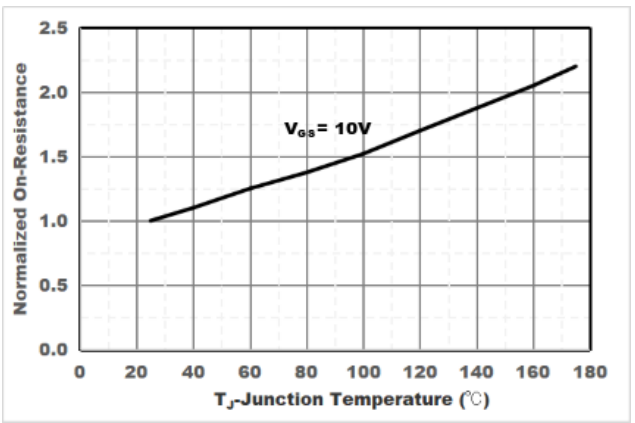


Figure6. Drain-Source on Resistance

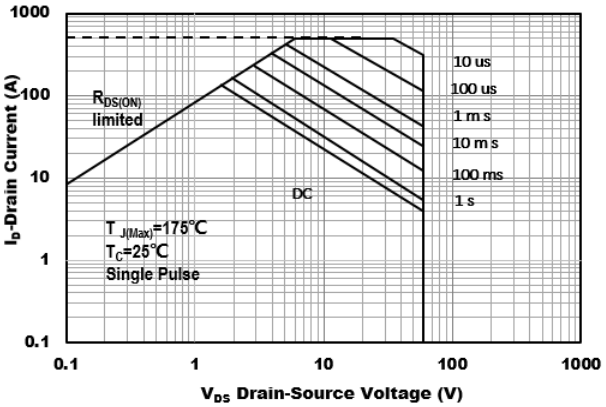


Figure7. Safe Operation Area

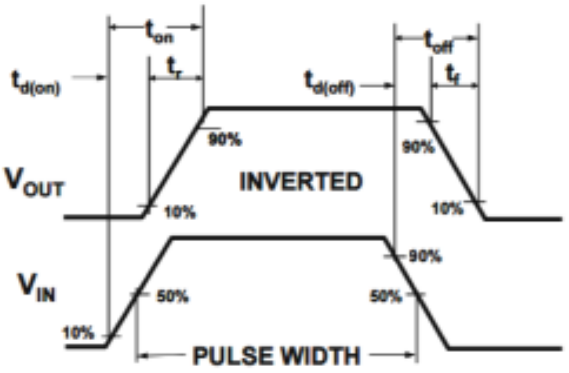
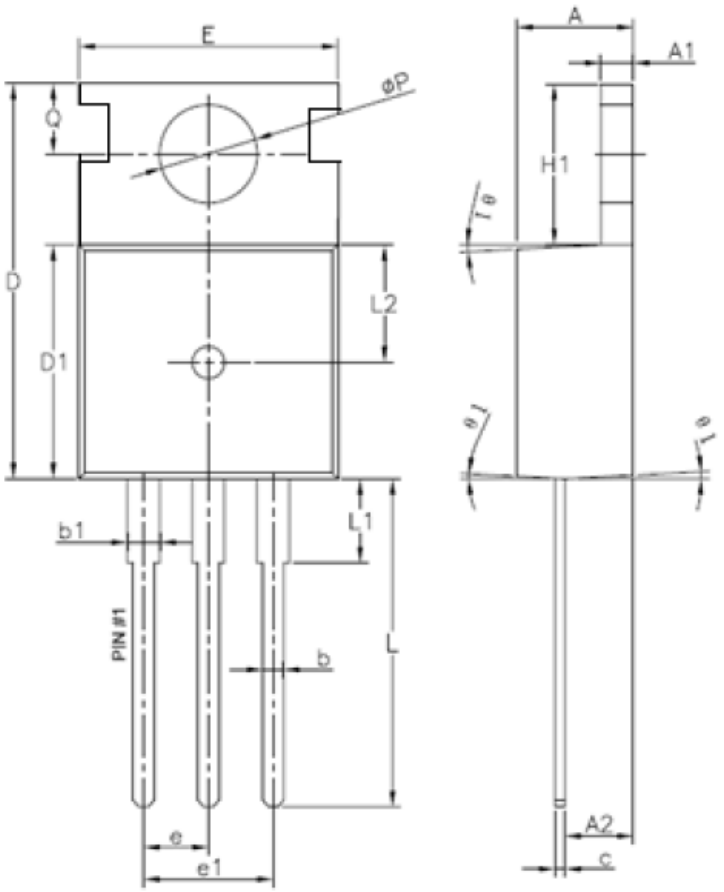


Figure8. Switching wave

■ TO-220 Package information



Symbol	Min	Normal	Max	Symbol	Min	Normal	Max
A	4.4	4.5	4.6	e		2.54	
A1	1.27	1.3	1.33	e1		5.08	
A2	2.3	2.4	2.5	H1	6.3	6.5	6.7
b	0.7	/	0.9	L	13.0	13.38	13.5
b1	1.25	/	1.42	L1	/	/	3.5
c	0.45	0.5	0.6	L2		4.6	
D	15.3	15.7	16.1	ΦP	3.55	3.6	3.65
D1	9.1	9.2	9.3	Q	2.73	/	2.87
E	9.7	9.9	10.2	θ1(°)	1	3	5

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