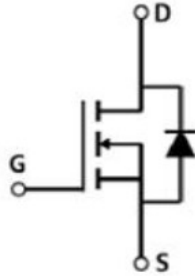


N-Channel Enhancement Mode Field Effect Transistor



TO-220

Product Summary

- V_{DS} 60V
- I_D 200A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <2.9 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <3.6 mohm
- 100% UIS Tested
- 100% ∇V_{DS} Tested

General Description

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

Applications

- Consumer electronic power supply
- Isolated DC-DC Converters
- Motor control
- Invertors

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	60	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current ^A	$T_C=25^\circ\text{C}$	I_D	200	A
	$T_C=100^\circ\text{C}$		125	
Pulsed Drain Current ^B		I_{DM}	600	A
Avalanche energy ^C		E_{AS}	500	mJ
Total Power Dissipation ^D		P_D	260	W
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	0.48	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-to-Ambient ^E		$R_{\theta JA}$	28	
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJP200G06A	B1	YJP200G06A	50	/	5000	Tube



YJP200G06A

■ Electrical Characteristics (T_J=25°C 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	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
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	1.2	1.6	2.2	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =20A		2.35	2.9	mΩ
		V _{GS} = 4.5V, I _D =15A		2.9	3.6	
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V			1.2	V
Maximum Body-Diode Continuous Current	I _S				200	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=100KHZ		5950		pF
Output Capacitance	C _{oss}			1250		
Reverse Transfer Capacitance	C _{rss}			85		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =50V, I _D =50A		93		nC
Gate-Source Charge	Q _{gs}			17		
Gate-Drain Charge	Q _{gd}			14		
Reverse Recovery Charge	Q _{rr}	I _F =25A, di/dt=100A/us		73		
Reverse Recovery Time	t _{rr}			68		
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DD} =30V, I _D =25A R _{GEN} =2Ω		22.5		ns
Turn-on Rise Time	t _r			6.7		
Turn-off Delay Time	t _{d(off)}			80.3		
Turn-off fall Time	t _f			26.9		

Note:

- The maximum current rating is package limited.
- Repetitive rating; pulse width limited by max. junction temperature.
- V_{DD}=50 V, R_G=25 Ω, L=0.5mH, starting T_J=25 °C.
- P_D is based on max. junction temperature, using junction-case thermal resistance.
- The value of R_{θJA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 °C.



■ Typical Performance Characteristics

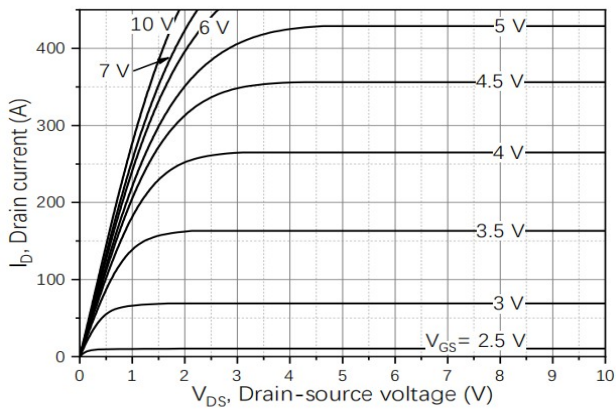


Figure1. Output Characteristics

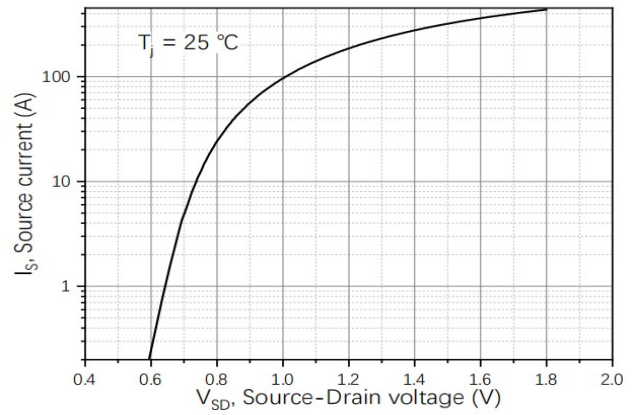


Figure2. Transfer Characteristics

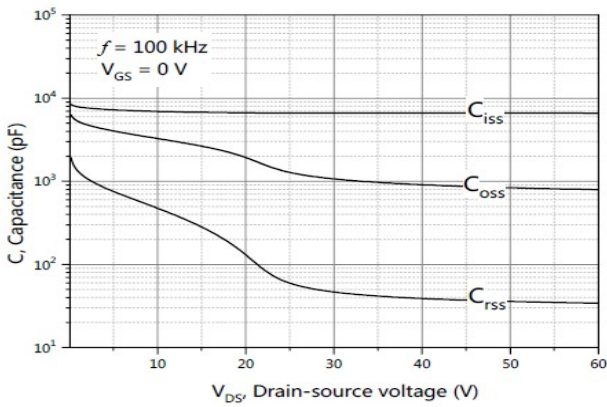


Figure3. Capacitance Characteristics

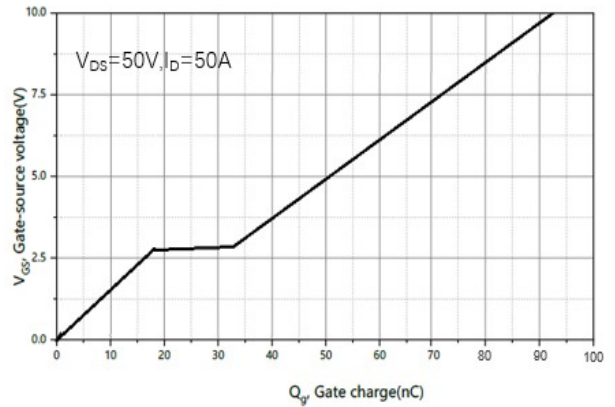


Figure4. Gate Charge

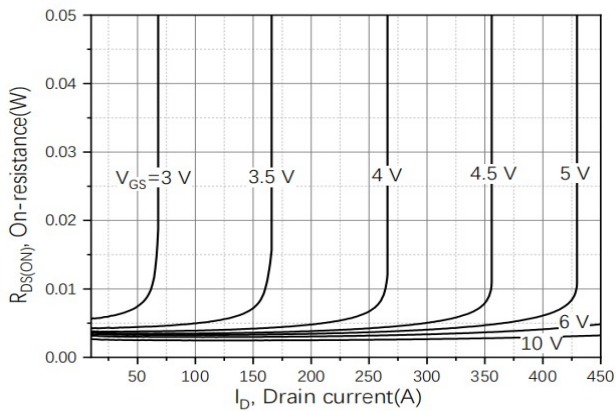


Figure5. Drain-Source on Resistance

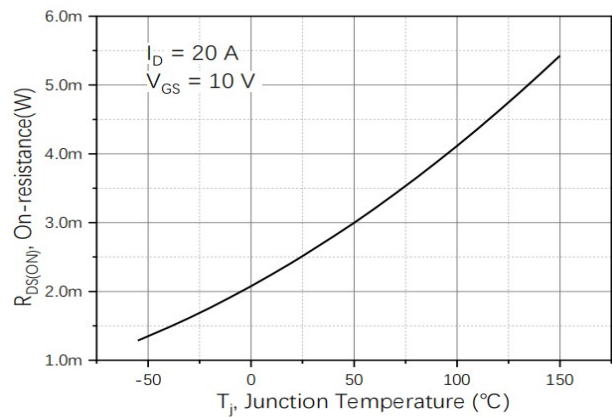


Figure6. Drain-Source on Resistance



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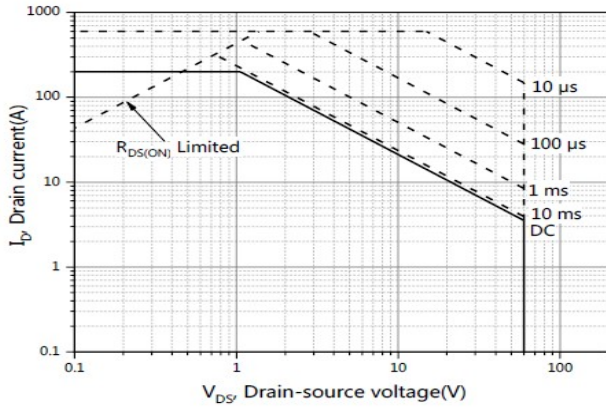


Figure7. Safe Operation Area

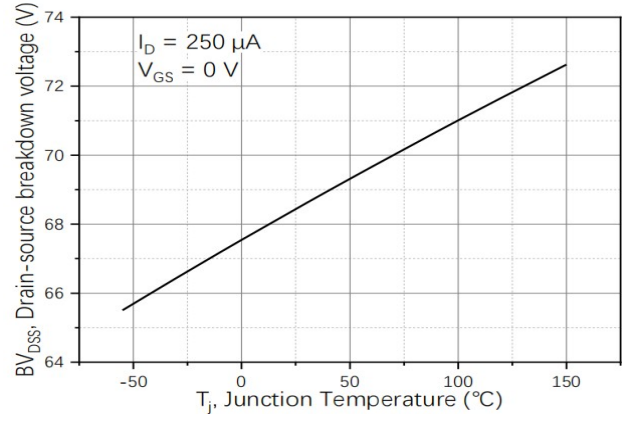


Figure8. Drain-source breakdown voltage

■ Test circuits and waveforms

Figure A: Gate Charge Test Circuit & Waveforms

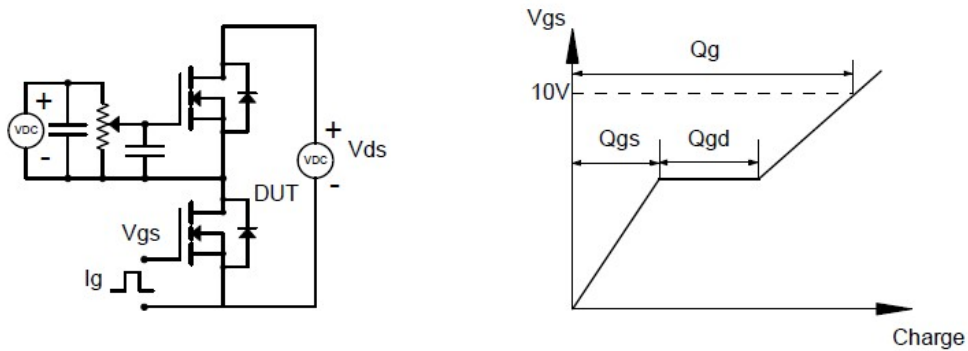


Figure B: Resistive Switching Test Circuit & Waveforms

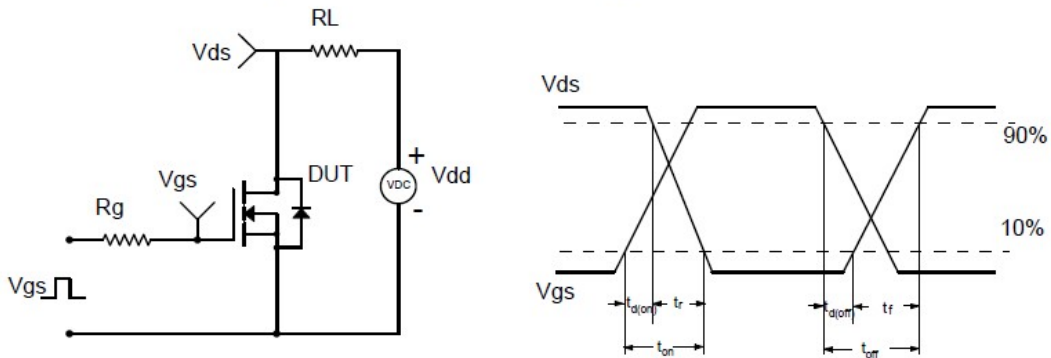


Figure C: Unclamped Inductive Switching (UIS) Test

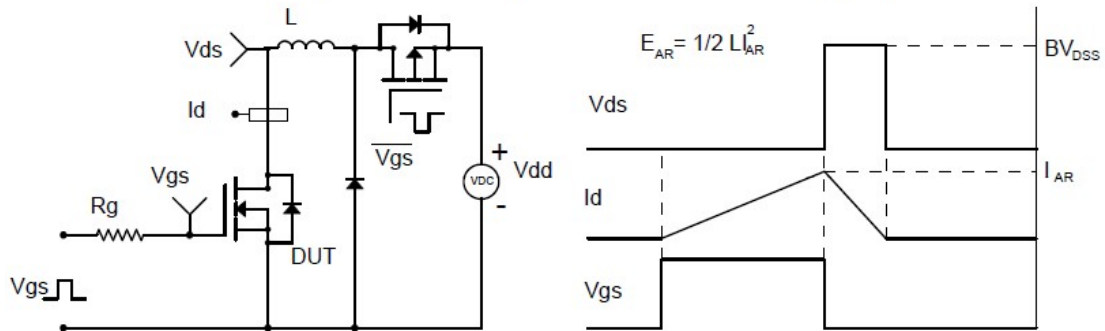
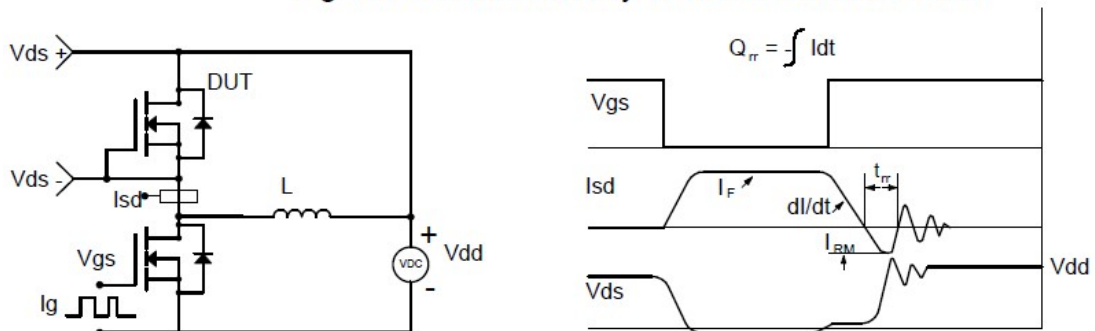


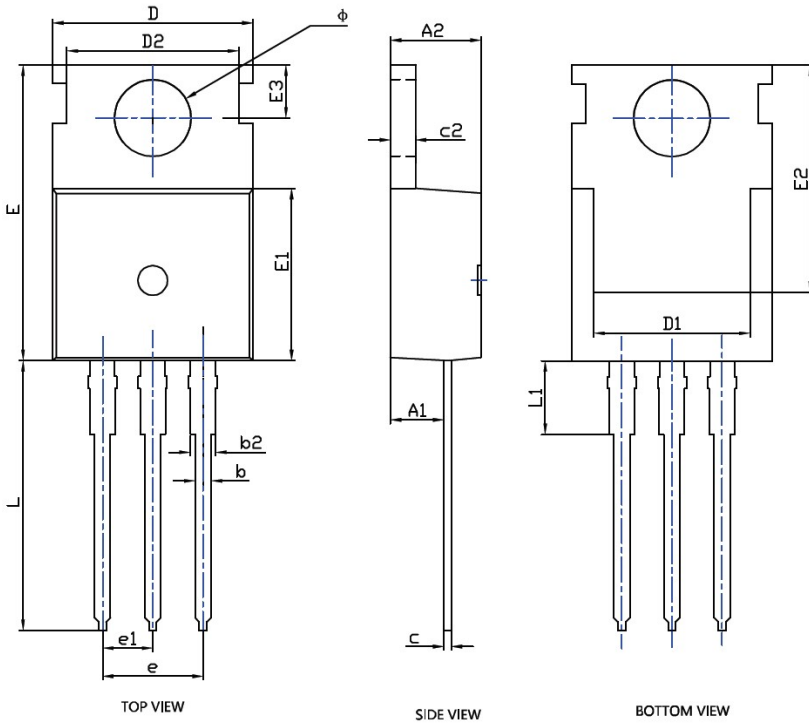
Figure D: Diode Recovery Test Circuit & Waveforms





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TO-220 Package Information



SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NDM.	MAX.	MIN.	NDM.	MAX.
A1	0.091	0.094	0.098	2.300	2.400	2.500
A2	0.173	0.177	0.181	4.400	4.500	4.600
b	0.028	0.031	0.035	0.700	0.800	0.900
b2	0.049	0.052	0.056	1.250	1.330	1.420
c	0.018	0.020	0.022	0.450	0.500	0.550
c2	0.050	0.051	0.052	1.270	1.300	1.330
D	0.382	---	0.402	9.700	---	10.200
D1	0.299	0.315	0.331	7.600	8.000	8.400
D2	0.335	0.343	0.350	8.500	8.700	8.900
E	0.602	0.618	0.634	15.300	15.700	16.100
E1	0.358	0.362	0.366	9.100	9.200	9.300
E2	0.497	0.505	0.513	12.630	12.830	13.030
E3	0.108BSC			2.750BSC		
e	0.200BSC			5.080BSC		
e1	0.100BSC			2.540BSC		
L	0.512	---	0.531	13.000	---	13.500
L1	---	---	0.138	---	---	3.500
ϕ	0.140	0.144	0.148	3.550	3.650	3.750

NOTE:
 1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
 2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.



YJP200G06A

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