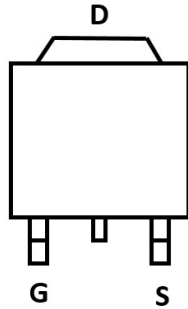
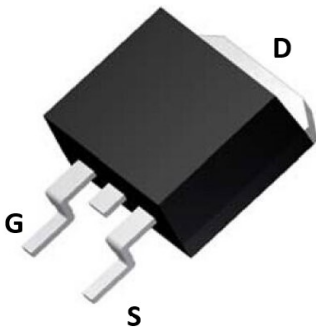
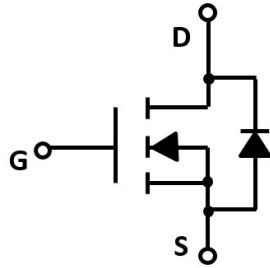


## N-Channel Enhancement Mode Field Effect Transistor



**TO-263**



### Product Summary

- $V_{DS}$  60V
- $I_D$  200A
- $R_{DS(ON)}$ ( at  $V_{GS}=10V$ ) <2.6 mohm
- $R_{DS(ON)}$ ( at  $V_{GS}=4.5V$ ) <3.6 mohm
- 100% UIS Tested
- 100%  $\nabla V_{DS}$  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		$V_{GS}$	$\pm 20$	V
Drain Current <sup>A</sup>	$T_C=25^\circ\text{C}$	$I_D$	200	A
	$T_C=100^\circ\text{C}$		125	
Pulsed Drain Current <sup>B</sup>		$I_{DM}$	600	A
Avalanche energy <sup>C</sup>		$E_{AS}$	500	mJ
Total Power Dissipation <sup>D</sup>		$P_D$	260	W
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	0.48	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-to-Ambient <sup>E</sup>		$R_{\theta JA}$	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
YJB200G06A	F2	YJB200G06A	800	/	8000	13" reel



# YJB200G06A

## ■ Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	60			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V			1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	1.6	2.2	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> =20A		2.35	2.6	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> =15A		2.9	3.6	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =20A, V <sub>GS</sub> =0V			1.2	V
Maximum Body-Diode Continuous Current	I <sub>S</sub>				200	A
<b>Dynamic Parameters</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=100KHZ		5950		pF
Output Capacitance	C <sub>oss</sub>			1250		
Reverse Transfer Capacitance	C <sub>rss</sub>			85		
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =50A		93		nC
Gate-Source Charge	Q <sub>gs</sub>			17		
Gate-Drain Charge	Q <sub>gd</sub>			14		
Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =25A, di/dt=100A/us		73		
Reverse Recovery Time	t <sub>rr</sub>			68		
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =30V, I <sub>D</sub> =25A R <sub>GEN</sub> =2Ω		22.5		ns
Turn-on Rise Time	t <sub>r</sub>			6.7		
Turn-off Delay Time	t <sub>d(off)</sub>			80.3		
Turn-off fall Time	t <sub>f</sub>			26.9		

### Note:

- The maximum current rating is package limited.
- Repetitive rating; pulse width limited by max. junction temperature.
- V<sub>DD</sub>=50 V, R<sub>G</sub>=25 Ω, L=0.5mH, starting T<sub>J</sub>=25 °C.
- P<sub>D</sub> is based on max. junction temperature, using junction-case thermal resistance.
- The value of R<sub>θJA</sub> is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T<sub>a</sub>=25 °C.



## ■ Typical Performance Characteristics

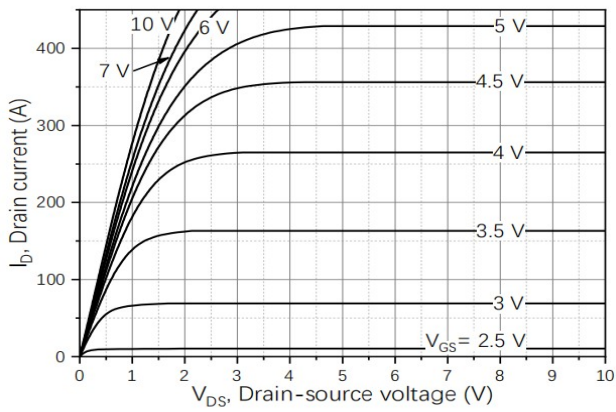


Figure1. Output Characteristics

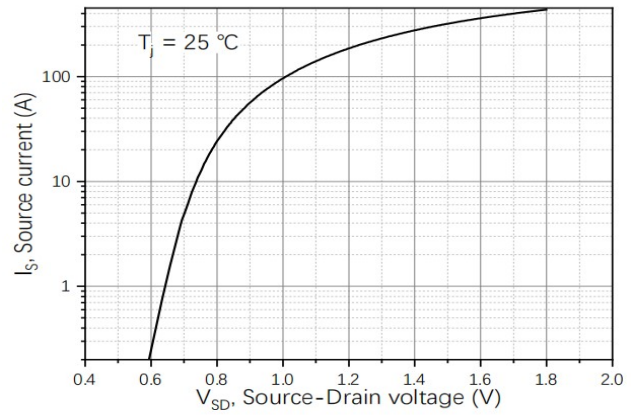


Figure2. Transfer Characteristics

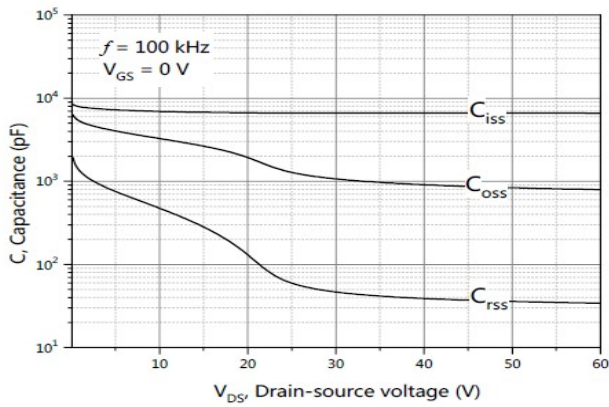


Figure3. Capacitance Characteristics

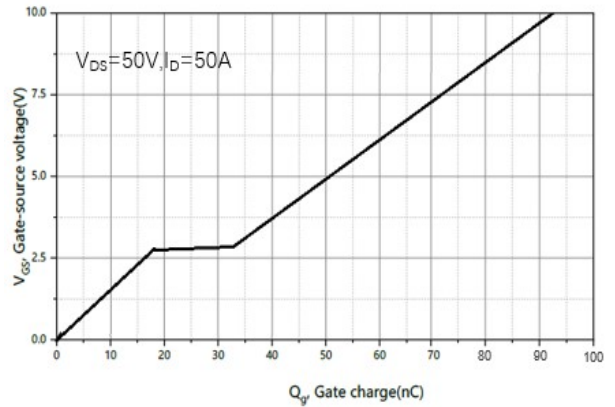


Figure4. Gate Charge

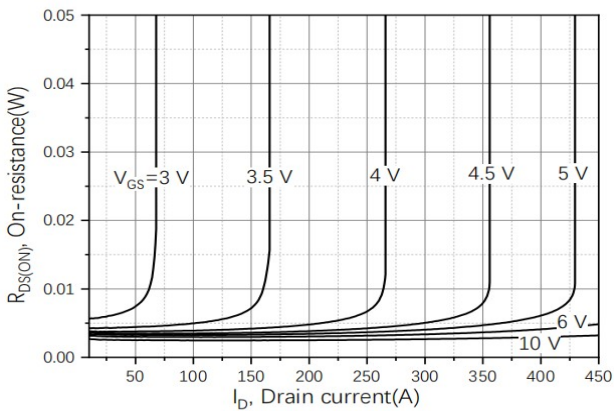


Figure5. Drain-Source on Resistance

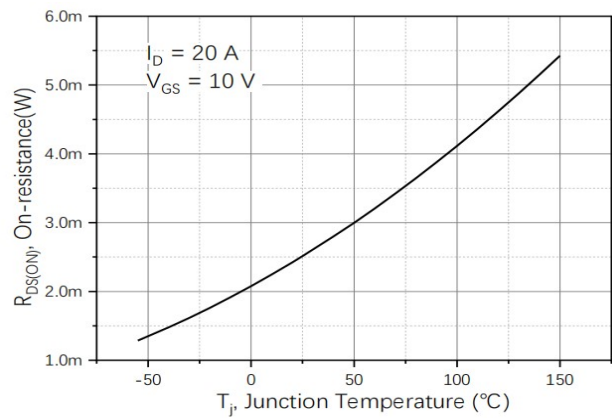


Figure6. Drain-Source on Resistance



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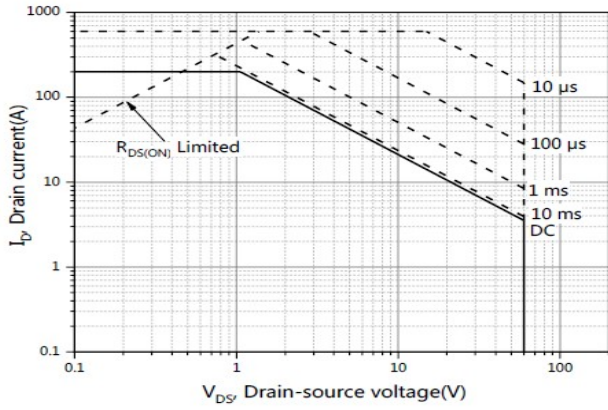


Figure7. Safe Operation Area

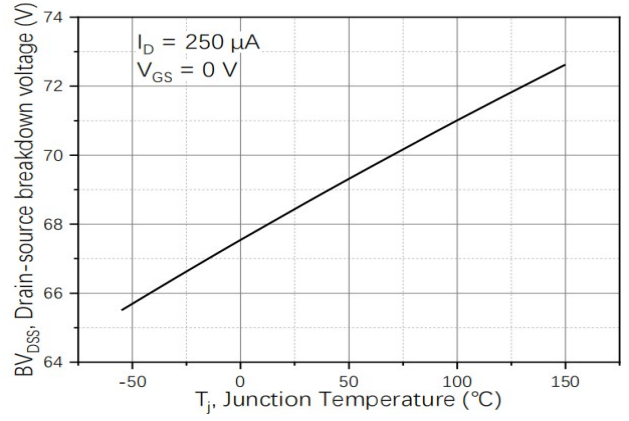


Figure8. Drain-source breakdown voltage

## ■ Test circuits and waveforms

Figure A: Gate Charge Test Circuit & Waveforms

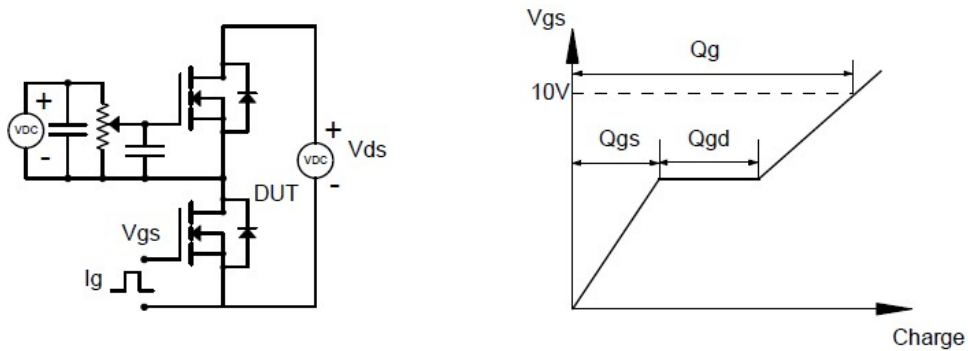


Figure B: Resistive Switching Test Circuit & Waveforms

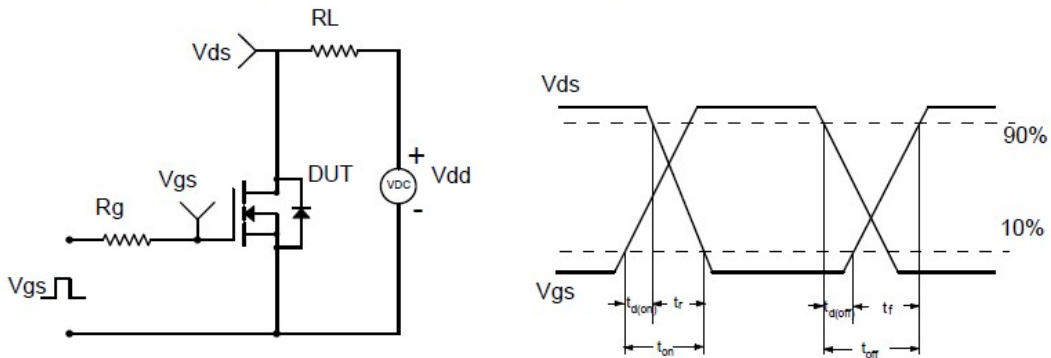


Figure C: Unclamped Inductive Switching (UIS) Test

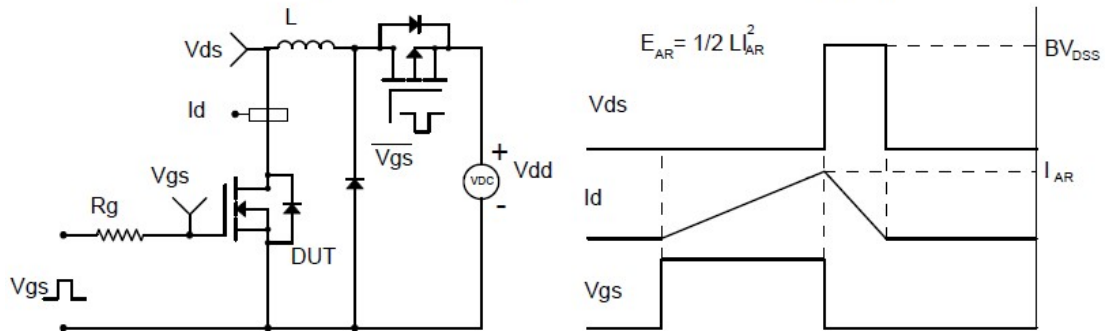
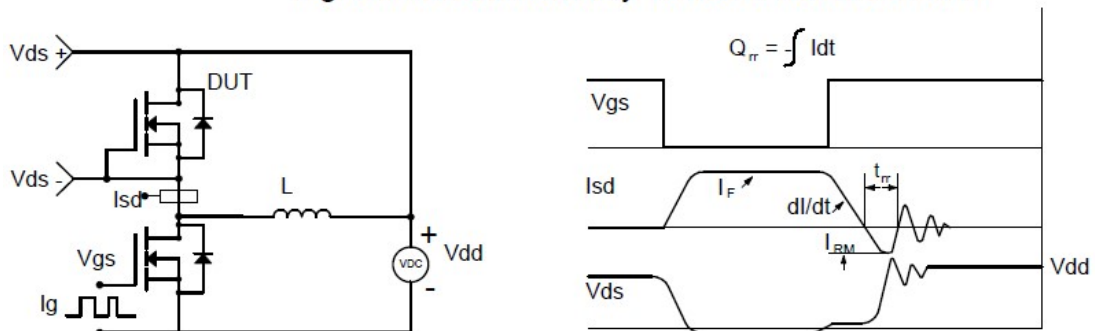


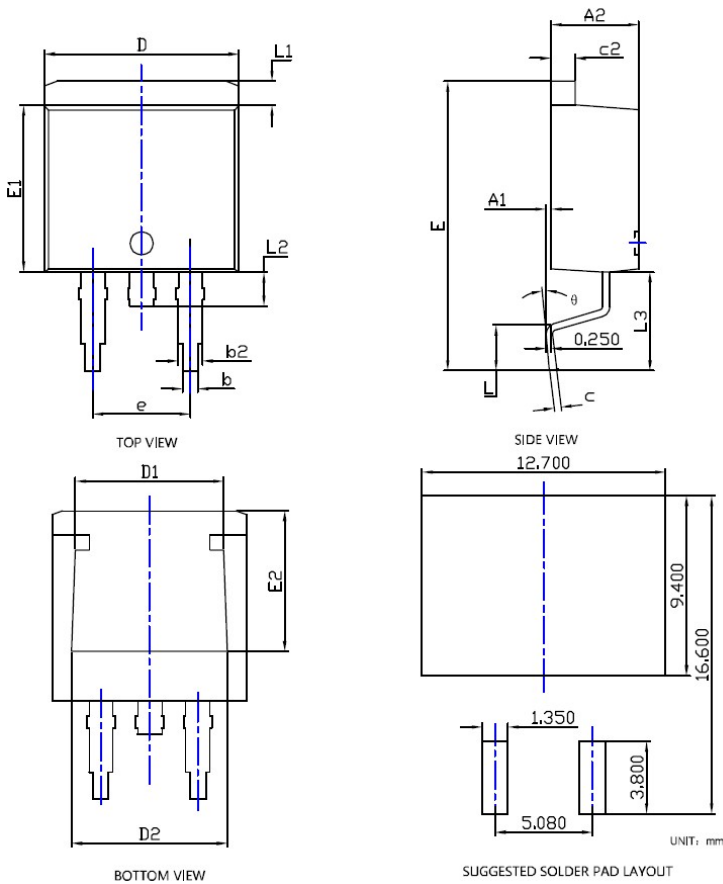
Figure D: Diode Recovery Test Circuit & Waveforms





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## ■ TO-263 Package information



SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0,000	---	0,010	0,000	---	0,250
A2	0,174	0,180	0,186	4,430	4,580	4,730
b	0,028	0,032	0,036	0,720	0,820	0,920
b2	0,046	0,050	0,054	1,180	1,280	1,380
c	0,013	0,015	0,018	0,330	0,390	0,450
c2	0,048	0,050	0,053	1,220	1,280	1,34
D	0,394	0,400	0,406	10,000	10,150	10,300
D1	0,295	0,307	0,319	7,500	7,800	8,100
D2	0,303	0,315	0,327	7,700	8,000	8,300
E	0,571	0,591	0,610	14,500	15,000	15,500
E1	0,337	0,341	0,348	8,550	8,700	8,850
E2	0,276	0,287	0,299	7,000	7,300	7,600
e	0,200BSC			5,080BSC		
L	0,070	---	0,110	1,790	---	2,790
L1	0,044	---	0,056	1,120	---	1,420
L2	0,030	---	0,070	0,770	---	1,770
L3	0,197REF			5,000REF		
θ	0°	---	8°	0°	---	8°

### NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
- 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



## YJB200G06A

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