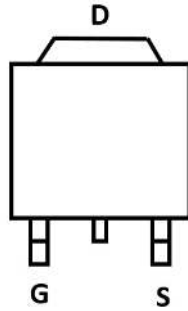
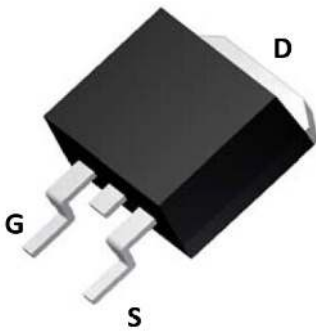
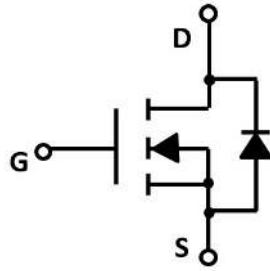


N-Channel Enhancement Mode Field Effect Transistor



TO-263



Product Summary

- V_{DS} 60V
- I_D 200A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <2.9 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 | I_D | $T_C=25^\circ\text{C}$ | 200 |
| | | $T_C=100^\circ\text{C}$ | 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 | $^\circ\text{C/W}$ |
| 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 |
|---------------|--------------|------------|----------------------|-------------------------|----------------------------|---------------|
| YJB200G06B | F2 | YJB200G06B | 800 | / | 8000 | 13" reel |



YJB200G06B

■ 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 | 2.0 | 2.8 | 4.0 | V |
| Static Drain-Source On-Resistance | R _{DS(ON)} | V _{GS} = 10V, I _D =20A | | 2.3 | 2.9 | mΩ |
| 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 | | 4165 | | pF |
| Output Capacitance | C _{oss} | | | 900 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 59 | | |
| Switching Parameters | | | | | | |
| Total Gate Charge | Q _g | V _{GS} =10V, V _{DS} =50V, I _D =50A | | 65 | | nC |
| Gate-Source Charge | Q _{gs} | | | 11.9 | | |
| Gate-Drain Charge | Q _{gd} | | | 9.8 | | |
| Reverse Recovery Chrage | Q _{rr} | I _F =25A, di/dt=100A/us | | 63 | | |
| Reverse Recovery Time | t _{rr} | | | 58 | | |
| 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 Ta=25 °C.



■ Typical Performance Characteristics

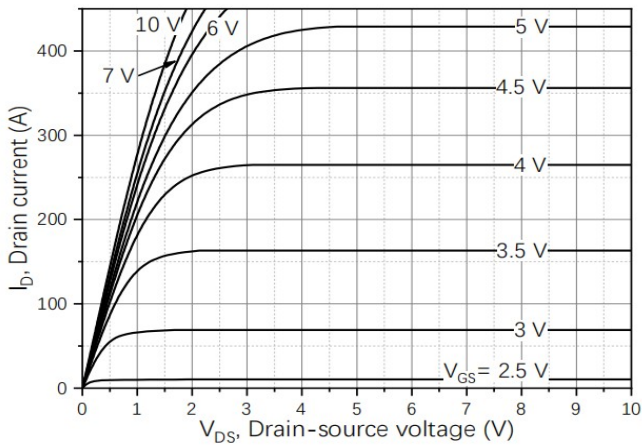


Figure1. Output Characteristics

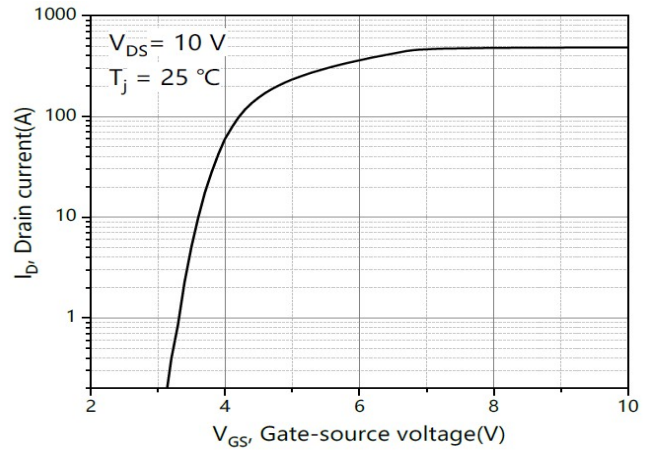


Figure2. Transfer Characteristics

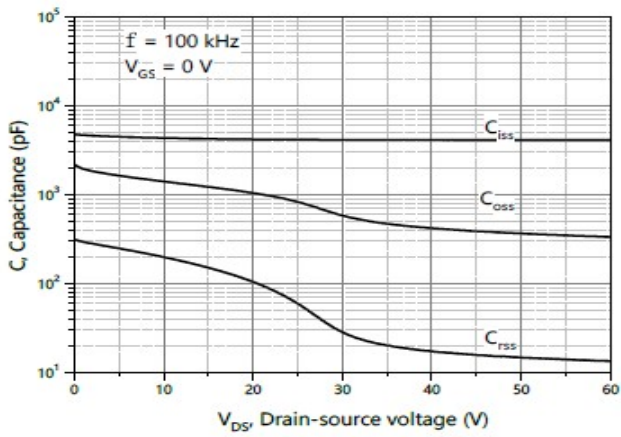


Figure3. Capacitance Characteristics

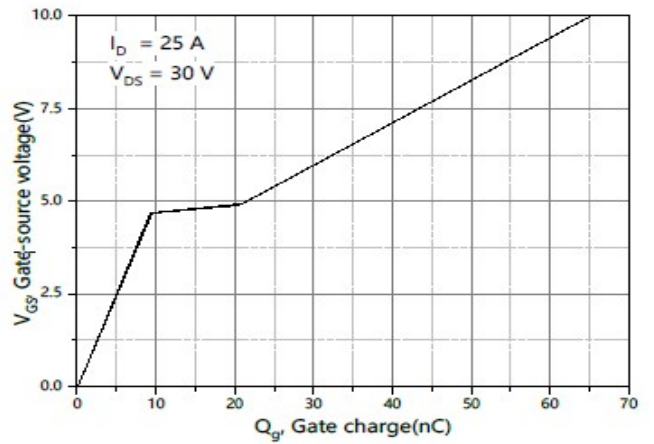


Figure4. Gate Charge

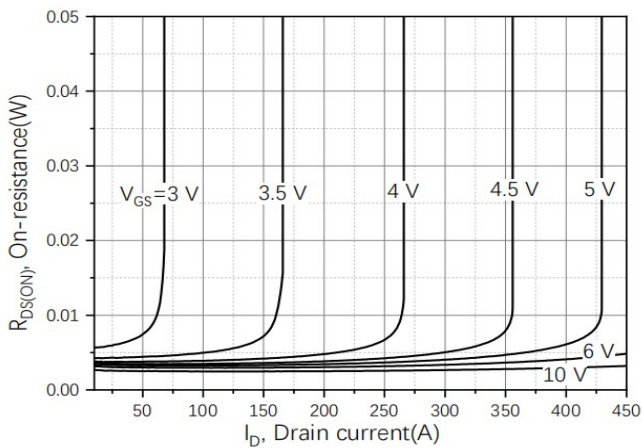


Figure5. Drain-Source on Resistance

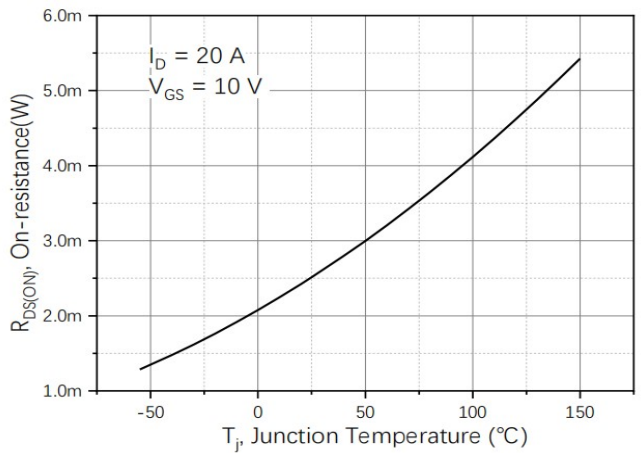


Figure6. Drain-Source on Resistance



YJB200G06B

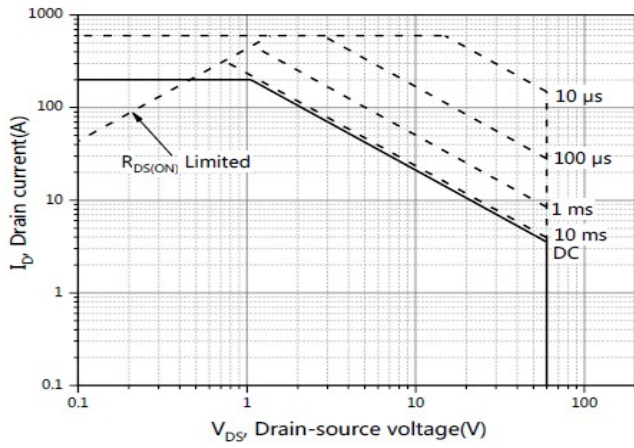


Figure7. Safe Operation Area

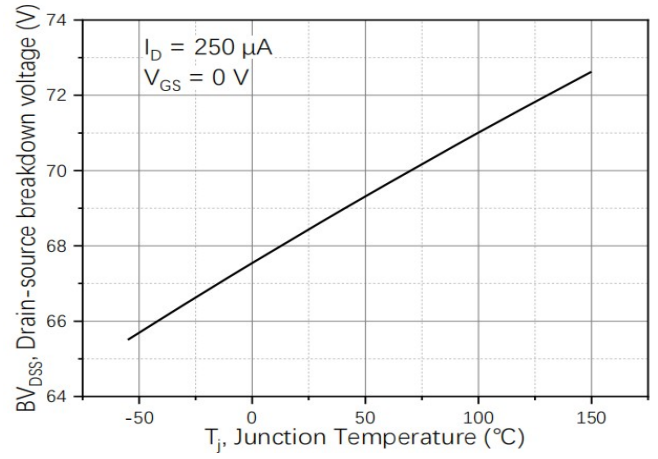


Figure8. Drain-source breakdown voltage

■ Test circuits and waveforms

Figure A: Gate Charge Test Circuit & Waveforms

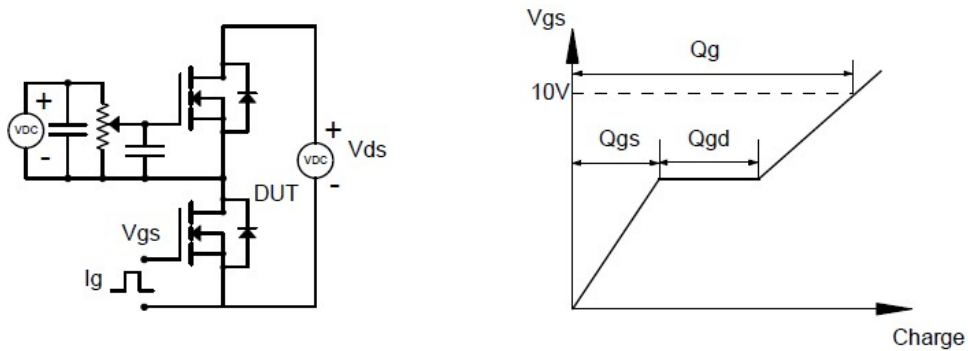


Figure B: Resistive Switching Test Circuit & Waveforms

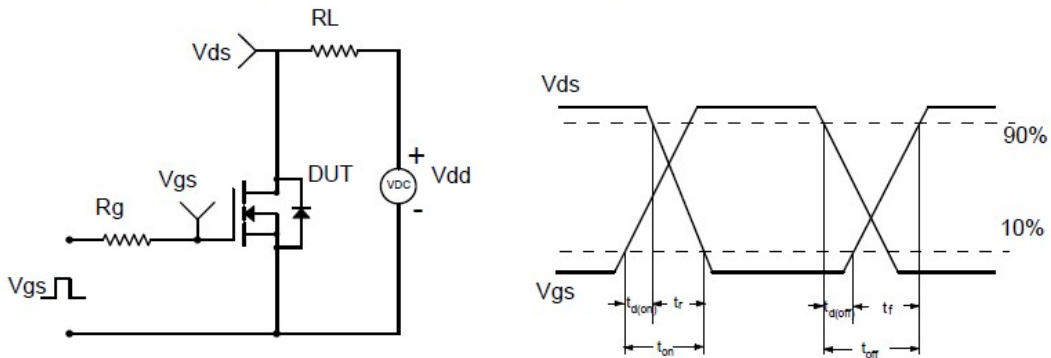


Figure C: Unclamped Inductive Switching (UIS) Test

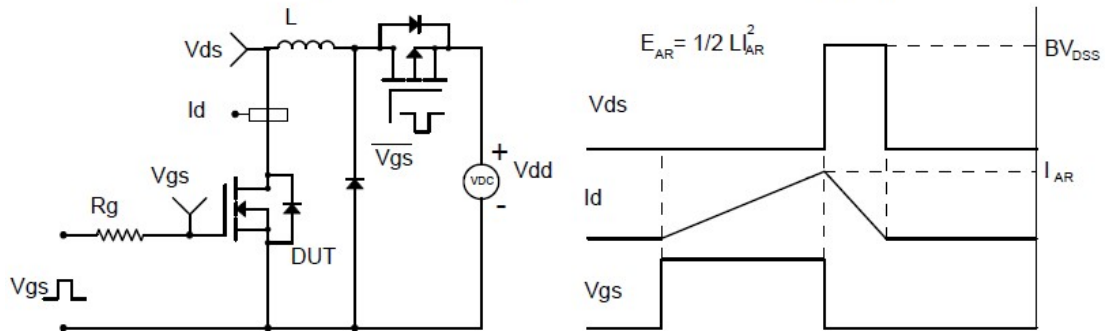
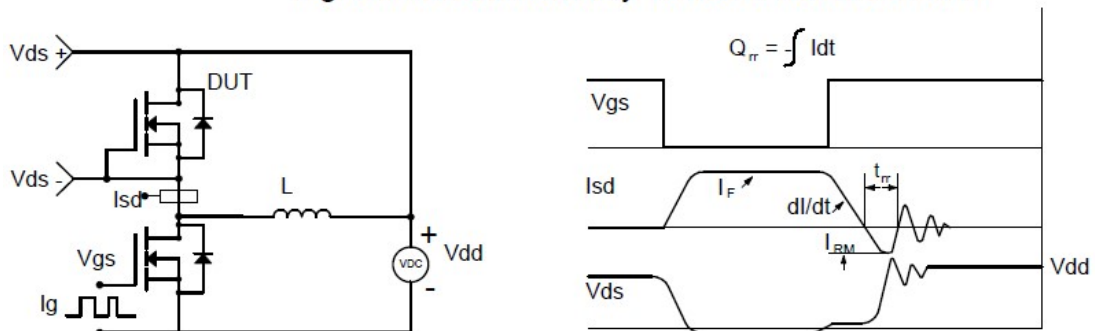


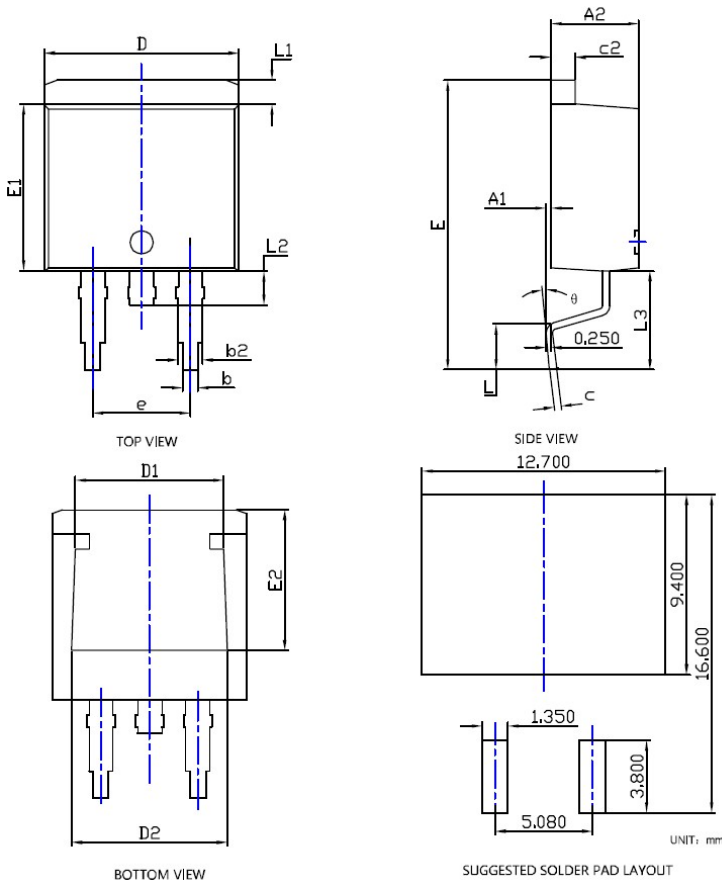
Figure D: Diode Recovery Test Circuit & Waveforms





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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.



YJB200G06B

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