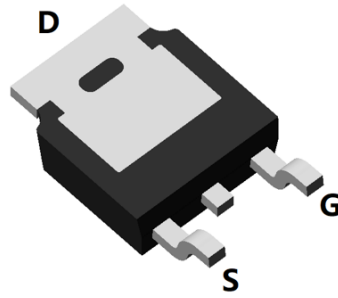
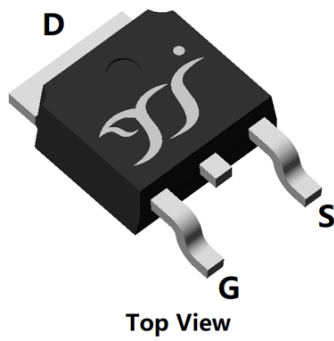
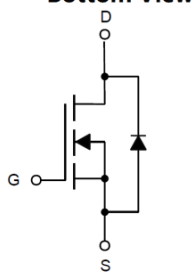


N-Channel Enhancement Mode Field Effect Transistor



TO-252



Product Summary

- V_{DS} 100V
- I_D 65A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) < 8.6 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) < 11.5 mohm
- 100% EAS Tested
- 100% ∇V_{DS} Tested

General Description

- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Consumer electronic power supply
- Motor control
- Synchronous-rectification
- Isolated DC/DC convertor
- Invertors

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

| Parameter | Symbol | Limit | Unit |
|--|----------------|-------------------|------------|
| Drain-source Voltage | V_{DS} | 100 | V |
| Gate-source Voltage | V_{GS} | ± 20 | V |
| Drain Current | I_D | $T_C=25^\circ C$ | 65 |
| | | $T_C=100^\circ C$ | 41 |
| Pulsed Drain Current ^A | I_{DM} | 260 | A |
| Avalanche energy ^B | EAS | 169 | mJ |
| Total Power Dissipation ^C | P_D | $T_C=25^\circ C$ | 96 |
| | | $T_C=100^\circ C$ | 38.4 |
| Junction and Storage Temperature Range | T_J, T_{STG} | -55~+150 | $^\circ C$ |

■ Thermal resistance

| Parameter | Symbol | Typ | Max | Units |
|---|-----------------|--------------|-----|--------------|
| Thermal Resistance Junction-to-Ambient ^D | $R_{\theta JA}$ | 15 | 20 | $^\circ C/W$ |
| Thermal Resistance Junction-to-Ambient ^D | | Steady-State | 45 | |
| Thermal Resistance Junction-to-Case | $R_{\theta JC}$ | 1.0 | 1.3 | |

■ Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | Marking | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|-----------|----------------------|-------------------------|----------------------------|---------------|
| YJD65G10A | F1 | YJD65G10A | 2500 | / | 25000 | 13"Reel |



YJD65G10A

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■ 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 | 100 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =100V, 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 | 1.3 | 1.8 | 2.5 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} = 10V, I _D =20A | | 7.5 | 8.6 | mΩ |
| | | V _{GS} = 4.5V, I _D =20A | | 9.0 | 11.5 | mΩ |
| Diode Forward Voltage | V _{SD} | I _S =20A, V _{GS} =0V | | | 1.3 | V |
| Maximum Body-Diode Continuous Current | I _S | | | | 65 | A |
| Gate resistance | R _G | f= 1 MHz, Open drain | | 0.68 | | Ω |
| Dynamic Parameters | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =50V, V _{GS} =0V, f=1MHz | | 2270 | | pF |
| Output Capacitance | C _{oss} | | | 797 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 36 | | |
| Switching Parameters | | | | | | |
| Total Gate Charge | Q _g | V _{GS} =10V, V _{DS} =50V, I _D =25A | | 32 | | nC |
| Gate-Source Charge | Q _{gs} | | | 11.1 | | |
| Gate-Drain Charge | Q _{gd} | | | 4.78 | | |
| Reverse Recovery Charge | Q _{rr} | I _r =20A, di/dt=100A/us | | 64 | | ns |
| Reverse Recovery Time | t _{rr} | | | 51.5 | | |
| Turn-on Delay Time | t _{D(on)} | V _{GS} =10V, V _{DD} =50V, I _D =25A R _{GEN} =2.2Ω | | 9.3 | | ns |
| Turn-on Rise Time | t _r | | | 34.8 | | |
| Turn-off Delay Time | t _{D(off)} | | | 24.6 | | |
| Turn-off fall Time | t _f | | | 71 | | |

A. Repetitive rating; pulse width limited by max. junction temperature.

B. V_{DD}=50V, R_G=25Ω, L=0.5mH, I_{AS}=26A.

C. Pd is based on max. junction temperature, using junction-case thermal resistance.

D. The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The Power dissipation P_{DSM} is based on R_{θJA} t_s ≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.



■ Typical Performance Characteristics

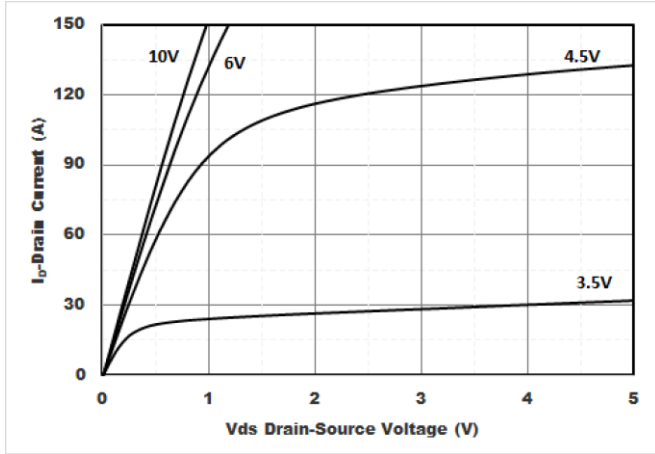


Figure1. Output Characteristics

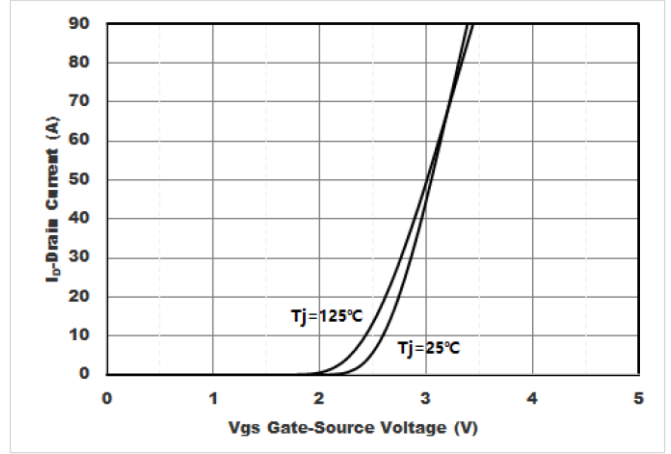


Figure2. Transfer Characteristics

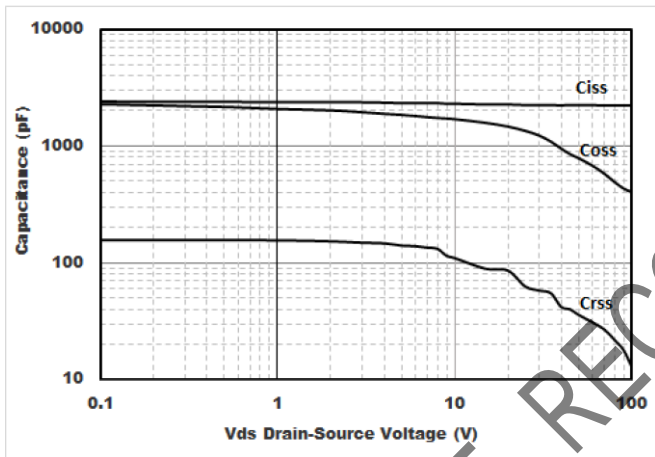


Figure3. Capacitance Characteristics

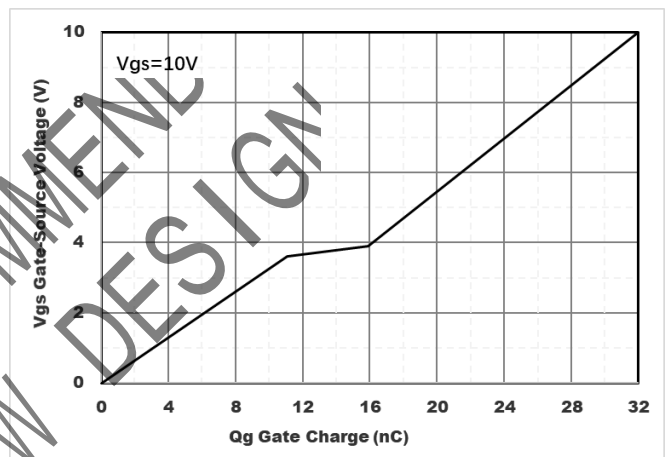


Figure4. Gate Charge

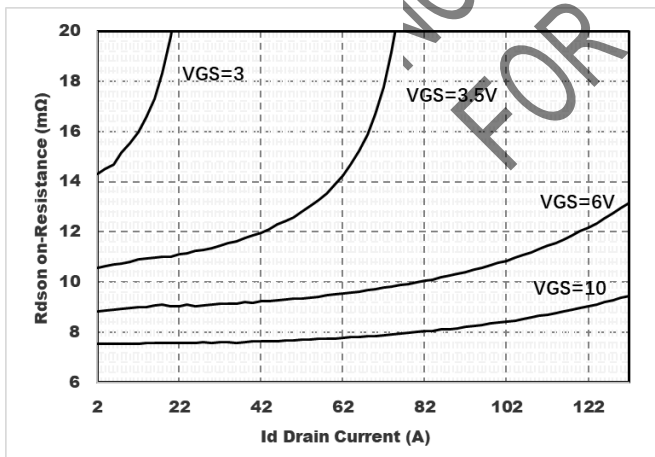


Figure5. : On-Resistance vs. Drain Current and Gate Voltage

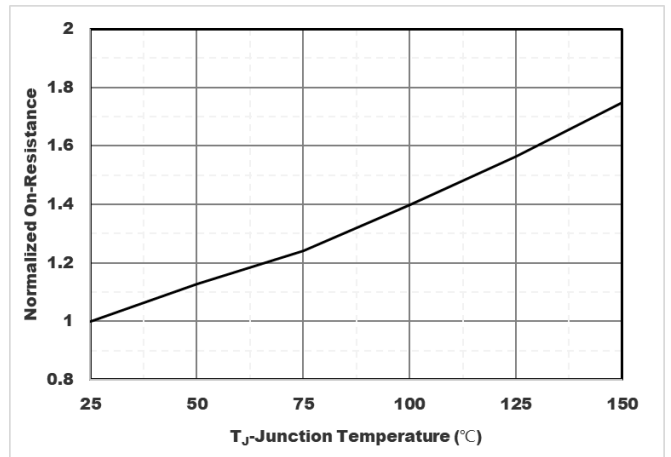


Figure6. Normalized On-Resistance

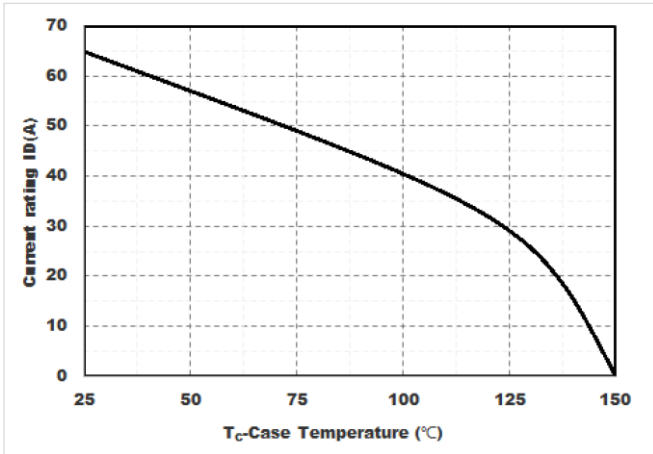


Figure7. Drain current

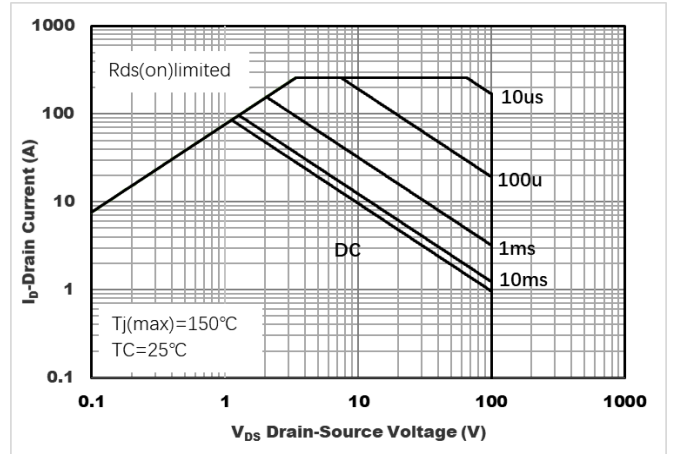


Figure8.Safe Operation Area

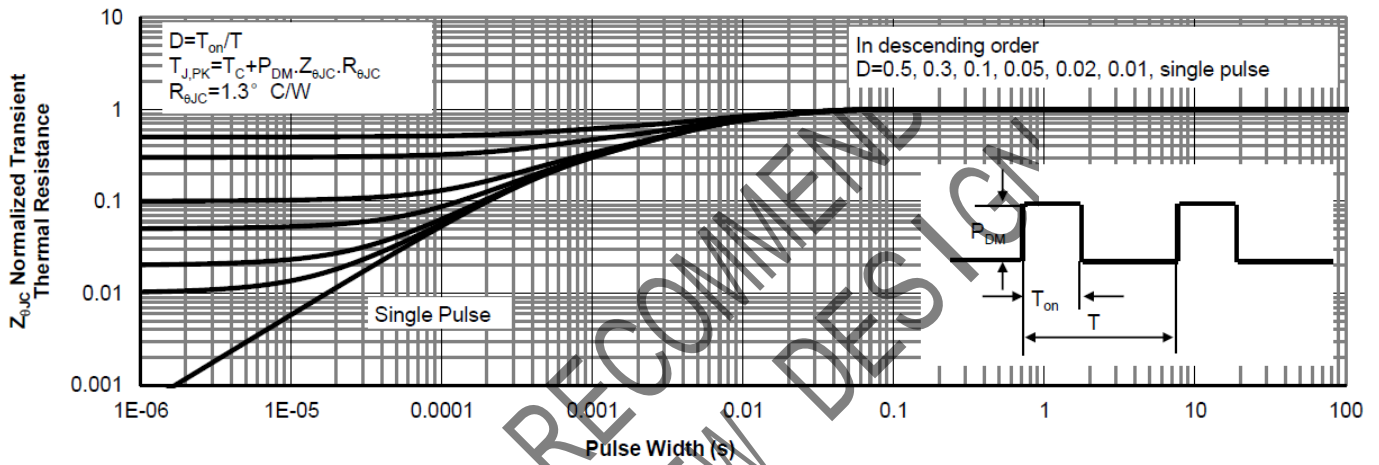


Figure9.Normalized Maximum Transient thermal impedance

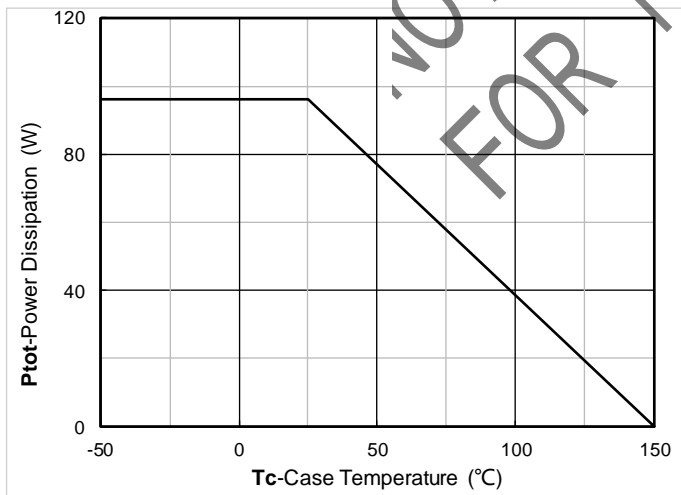


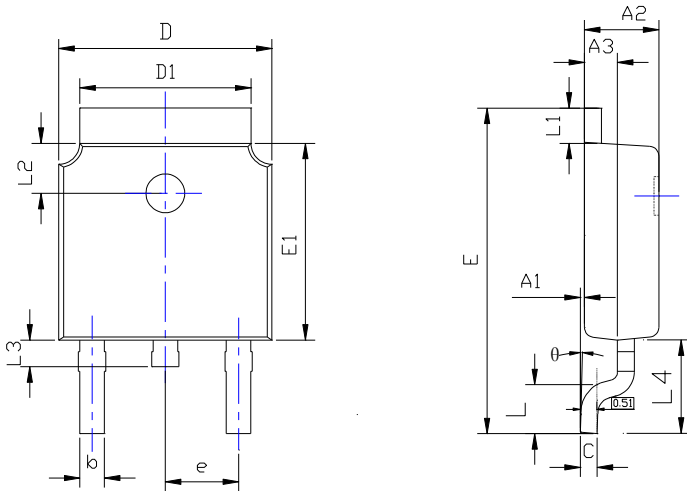
Figure 10. Power dissipation



YJD65G10A

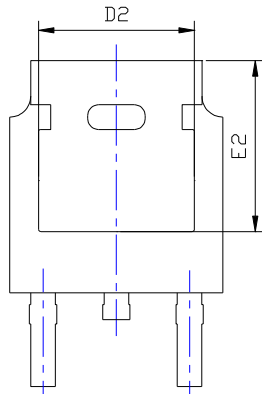
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■ TO-252-B Package information

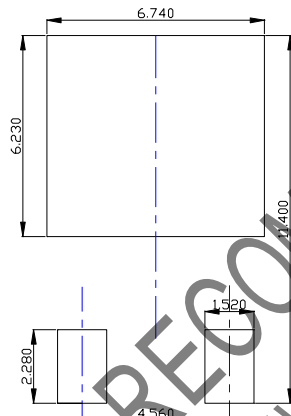


TOP VIEW

SIDE VIEW



BOTTOM VIEW



SUGGESTED SOLDER PAD LAYOUT

| SYMBOL | DIMENSIONS | | | | | |
|--------|------------|-------|-------|------------|--------|--------|
| | INCHES | | | Millimeter | | |
| | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. |
| A1 | 0.000 | --- | 0.008 | 0.000 | --- | 0.200 |
| A2 | 0.087 | 0.091 | 0.094 | 2.200 | 2.300 | 2.400 |
| A3 | 0.035 | 0.039 | 0.043 | 0.900 | 1.000 | 1.100 |
| b | 0.026 | 0.030 | 0.034 | 0.660 | 0.760 | 0.860 |
| c | 0.018 | 0.020 | 0.023 | 0.460 | 0.520 | 0.580 |
| D | 0.256 | 0.260 | 0.264 | 6.500 | 6.600 | 6.700 |
| D1 | 0.203 | 0.209 | 0.215 | 5.150 | 5.300 | 5.450 |
| D2 | 0.181 | 0.189 | 0.195 | 4.600 | 4.800 | 4.950 |
| E | 0.390 | 0.398 | 0.406 | 9.900 | 10.100 | 10.300 |
| E1 | 0.236 | 0.240 | 0.244 | 6.000 | 6.100 | 6.200 |
| E2 | 0.203 | 0.209 | 0.215 | 5.150 | 5.300 | 5.450 |
| e | 0.090BSC | | | 2.286BSC | | |
| L | 0.049 | 0.059 | 0.069 | 1.250 | 1.500 | 1.750 |
| L1 | 0.035 | --- | 0.050 | 0.900 | --- | 1.270 |
| L2 | 0.055 | --- | 0.075 | 1.400 | --- | 1.900 |
| L3 | 0.240 | 0.310 | 0.039 | 0.600 | 0.800 | 1.000 |
| L4 | 0.114REF | | | 2.900REF | | |
| θ | 0° | --- | 10° | 0° | --- | 10° |

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.



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