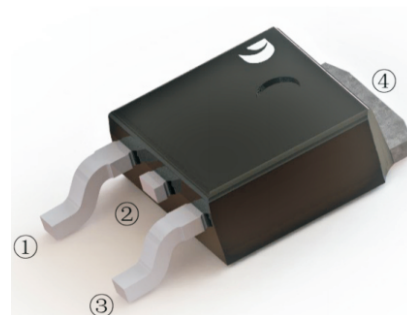


**80A, 30V N-CHANNEL
POWER MOSFET**

TO-252W

DESCRIPTION

D3R6N30 is an N-channel enhanced MOS field effect transistor. Advanced technology and cell structure make the product. It has low on resistance, excellent switching performance and High avalanche breakdown withstand voltage. The product can be widely used in uninterruptible power supply and Power management field of inverter system.



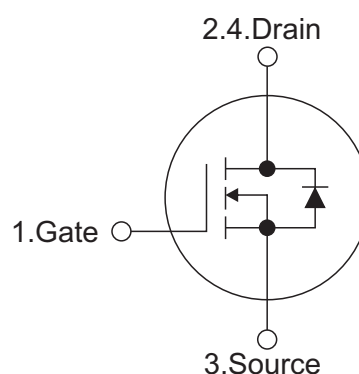
Features

- $R_{DS(ON)(TYP)} 3.6m \Omega @ V_{GS}=10V, I_D=20A$
- Fast switching capability
- Avalanche energy tested
- Improved dv/dt capability, high ruggedness
- Low gate drive voltage

Mechanical data

- Case: TO-252W
- Approx. Weight: 0.315g (0.011oz)
- Lead free finish, RoHS compliant
- Case Material: "Green" molding compound, UL flammability classification 94V-0, "Halogen-free".

SYMBOL



ABSOLUTE MAXIMUM RATINGS (TA=25°C, unless otherwise specified)

| PARAMETER | Symbols | RATINGS | Units | |
|--|----------------|-------------------|------------|---|
| Drain-Source Voltage | V_{DSS} | 30 | V | |
| Gate-Source Voltage | V_{GSS} | ± 20 | V | |
| Continuous Drain Current | I_D | $T_c=25^\circ C$ | 80 | A |
| | | $T_c=100^\circ C$ | 57 | A |
| Pulsed Drain Current (Note 2) | I_{DM} | 320 | A | |
| Avalanche Energy Single Pulsed (Note 3) | E_{AS} | 144 | mJ | |
| Peak Diode Recovery dv/dt (Note 4) | dv/dt | 2.1 | V/ns | |
| Power Dissipation | P_D | 82 | W | |
| Operation Junction Temperature and Storage Temperature | T_j, T_{stg} | -55 ~ +150 | $^\circ C$ | |

- Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
 2. Repetitive Rating: Pulse width limited by maximum junction temperature.
 3. $L = 0.5mH, I_{AS} = 24A, V_{DD} = 50V, R_G = 25 \Omega, \text{Starting } T_J = 25^\circ C$
 4. $ISD \leq 80A, di/dt \leq 200A/\mu s, V_{DD} \leq BVDSS, \text{Starting } T_J = 25^\circ C$

THERMAL DATA

| PARAMETER | Symbols | RATINGS | Units |
|---------------------|------------|---------|--------------|
| Junction to Ambient | R_{thJA} | 63 | $^\circ C/W$ |
| Junction to Case | R_{thJC} | 1.52 | $^\circ C/W$ |



ELECTRICAL CHARACTERISTICS (TA=25°C, unless otherwise specified)

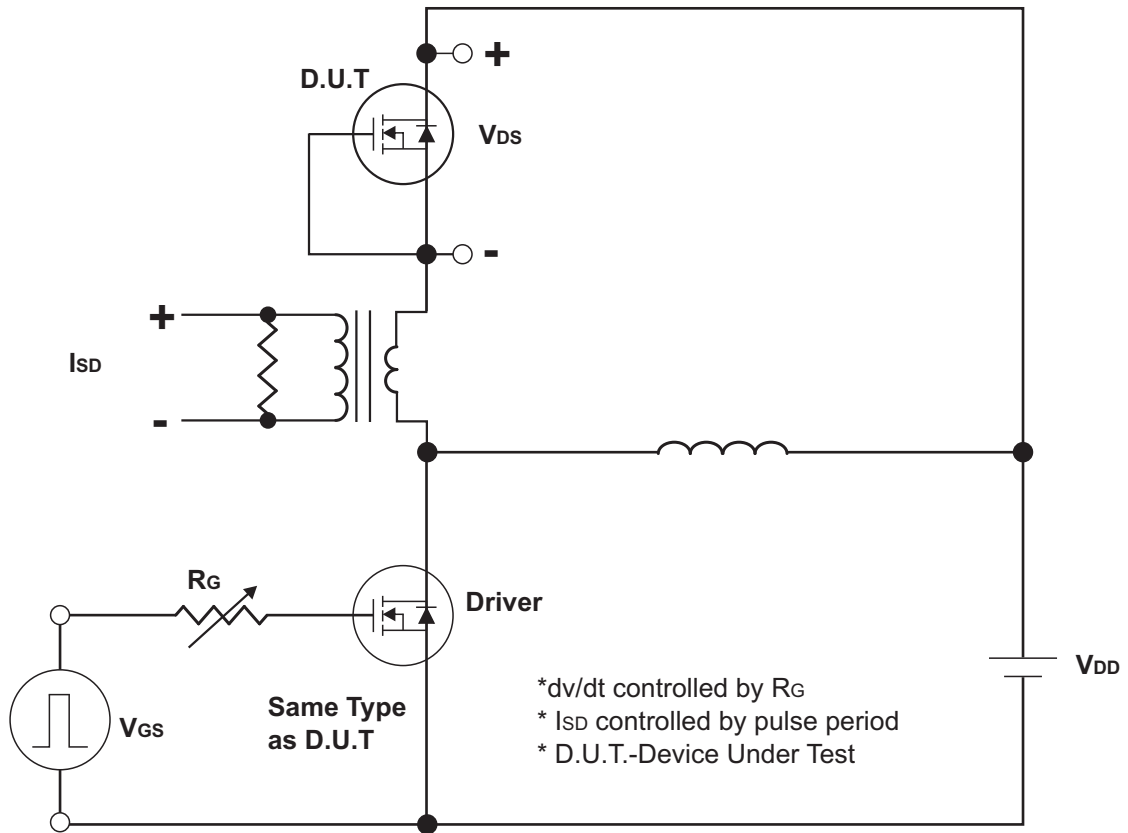
| PARAMETER | | Symbols | TEST CONDITIONS | Min | Typ | Max | Units | |
|---|---------|--------------|---|-----|------|------|------------|----|
| OFF CHARACTERISTICS | | | | | | | | |
| Drain-Source Breakdown Voltage | | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 30 | | | V | |
| Drain-Source Leakage Current | | I_{DSS} | $V_{DS}=30V, V_{GS}=0V$ | | | 1 | μA | |
| Gate- Source Leakage Current | Forward | I_{GSS} | $V_{GS}=20V, V_{DS}=0V$ | | | 100 | nA | |
| | Reverse | | $V_{GS}=-20V, V_{DS}=0V$ | | | -100 | | |
| ON CHARACTERISTICS | | | | | | | | |
| Gate Threshold Voltage | | $V_{GS(TH)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.2 | 1.5 | 2.5 | V | |
| Static Drain-Source On-State Resistance | | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=20A$ | | 3.6 | | m Ω | |
| DYNAMIC CHARACTERISTICS | | | | | | | | |
| Input Capacitance | | C_{ISS} | $V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$ | | 2414 | | pF | |
| Output Capacitance | | C_{OSS} | | | | 268 | | pF |
| Reverse Transfer Capacitance | | C_{RSS} | | | | 206 | | pF |
| SWITCHING CHARACTERISTICS | | | | | | | | |
| Total Gate Charge (Note 1) | | Q_G | $V_{DS}=24V, V_{GS}=10V,$ $I_D=80A, I_G=1mA$ (NOTE1,2) | | 13 | | nC | |
| Gate-Source Charge | | Q_{GS} | | | | 4 | | nC |
| Gate-Drain Charge | | Q_{GD} | | | | 2.2 | | nC |
| Turn-On Delay Time (Note 1) | | $t_{D(ON)}$ | $V_{DS}=15V, V_{GS}=10V,$ $I_D=80A, R_G=25\Omega$ (NOTE1,2) | | 7 | | ns | |
| Turn-On Rise Time | | t_R | | | | 16 | | ns |
| Turn-Off Delay Time | | $t_{D(OFF)}$ | | | | 36 | | ns |
| Turn-Off Fall Time | | t_F | | | | 22 | | ns |
| DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS | | | | | | | | |
| Maximum Body-Diode Continuous Current | | I_S | | | | 80 | A | |
| Maximum Body-Diode Pulsed Current | | I_{SM} | | | | 320 | A | |
| Drain-Source Diode Forward Voltage (Note 1) | | V_{SD} | $I_S=40A, V_{GS}=0V$ | | | 1.4 | V | |
| Reverse Recovery Time (Note 1) | | t_{rr} | $I_S=40A, V_{GS}=0V,$ | | 250 | | ns | |
| Reverse Recovery Charge | | Q_{rr} | $di/dt=100A/\mu s$ | | 4.5 | | μC | |

Notes:

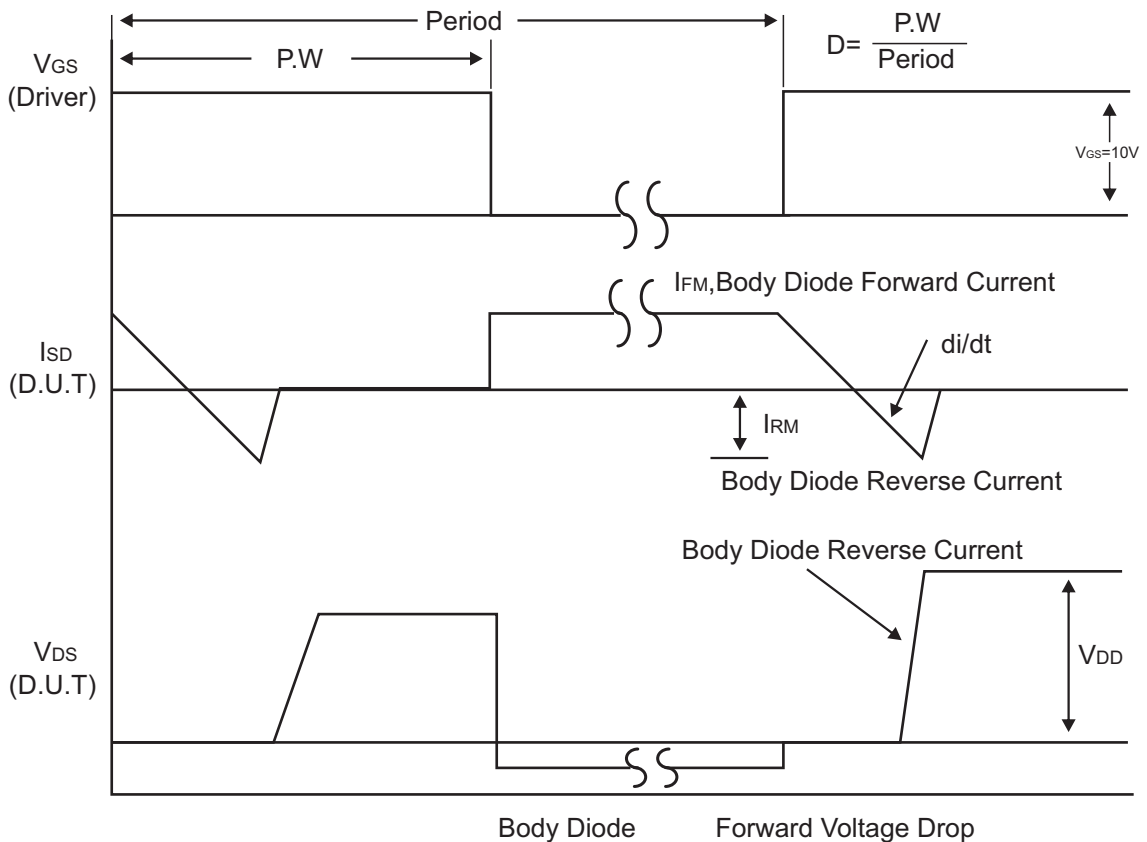
1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.
2. Essentially independent of operating temperature.



Test Circuits and waveforms



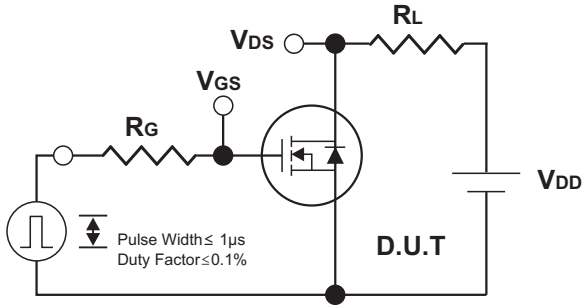
Peak Diode Recovery dv/dt Test Circuit



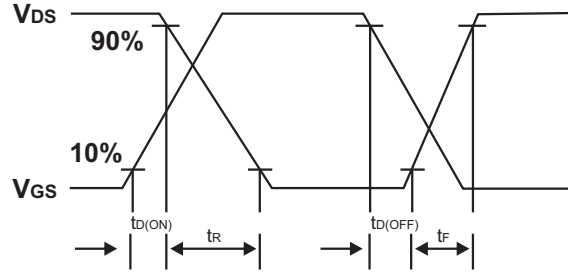
Peak Diode Recovery dv/dt Waveforms



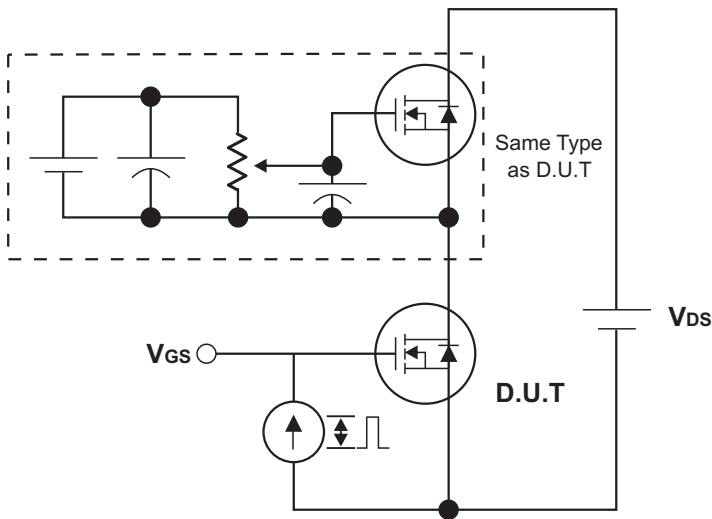
Test Circuits and waveforms



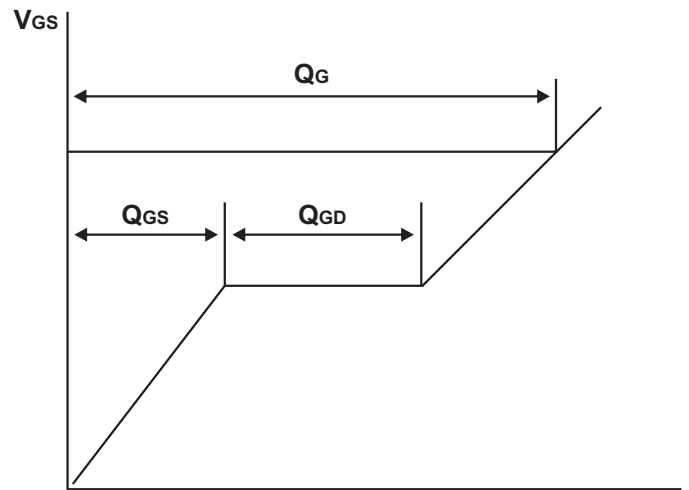
Switching Test Circuit



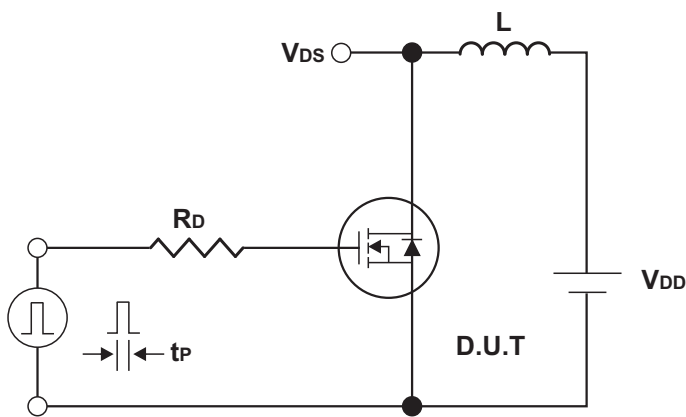
Switching Waveforms



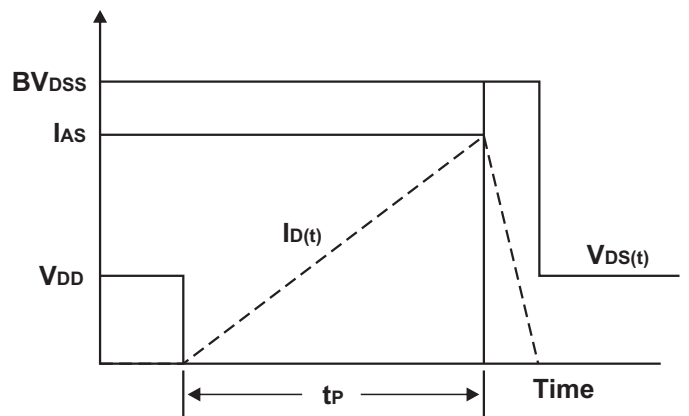
Gate Charge Test Circuit



Charge
Gate Charge Waveform



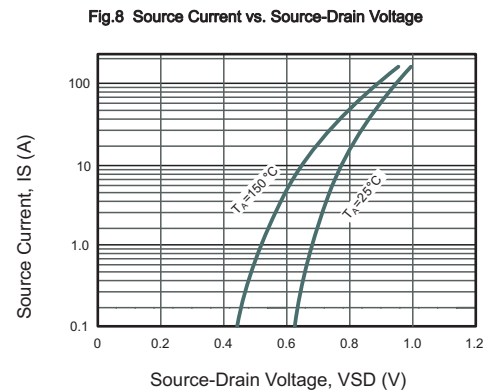
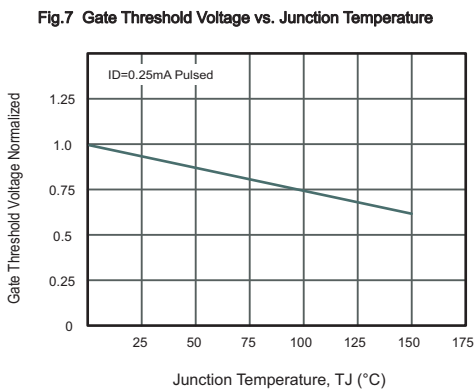
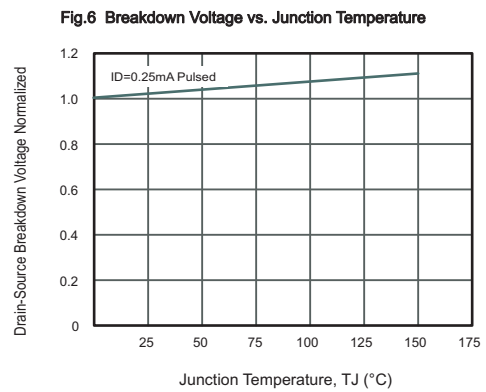
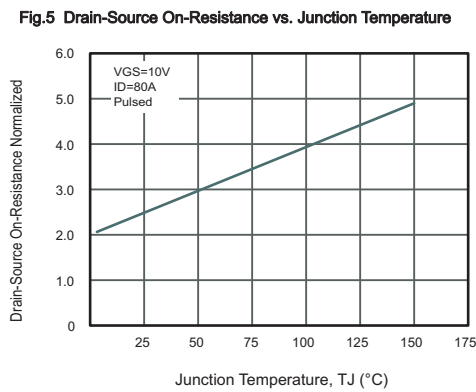
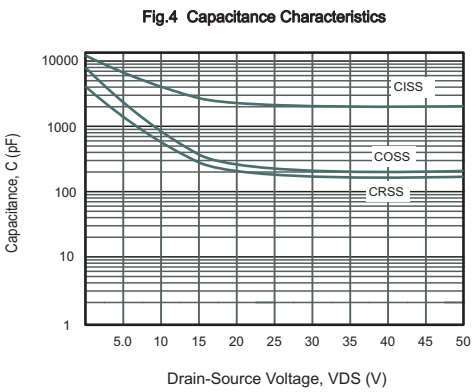
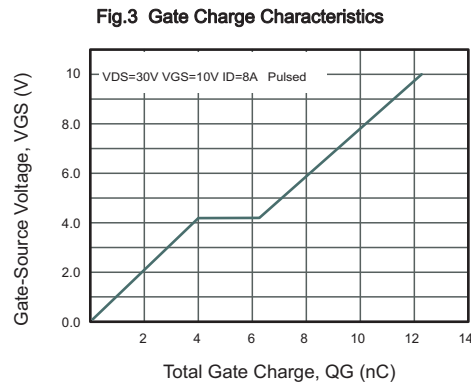
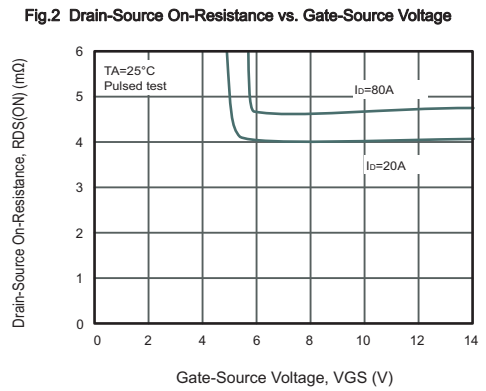
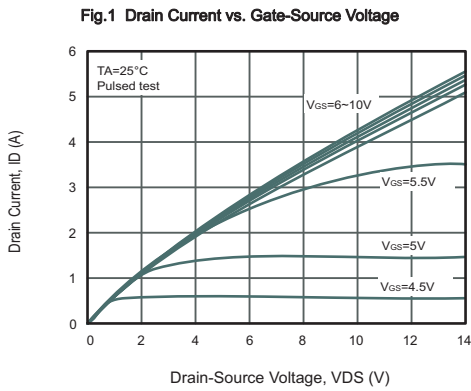
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms



Typical Characteristics





Typical Characteristics

Fig.9 Drain Current vs. Gate-Source Voltage

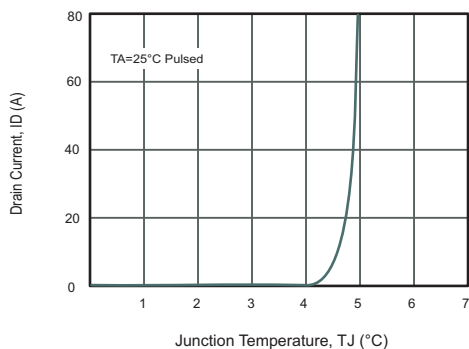


Fig.10 Drain-Source On-Resistance vs. Drain Current

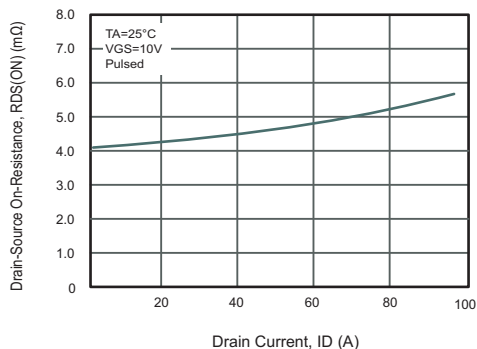


Fig.11 Drain Current vs. Junction Temperature

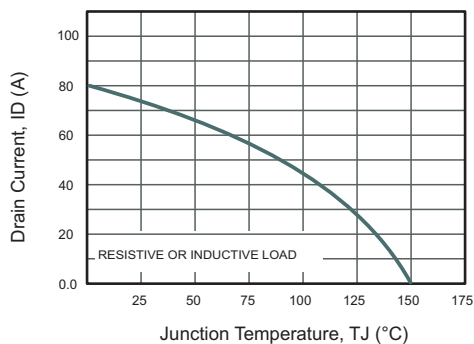


Fig.12 Power Dissipation vs. Junction Temperature

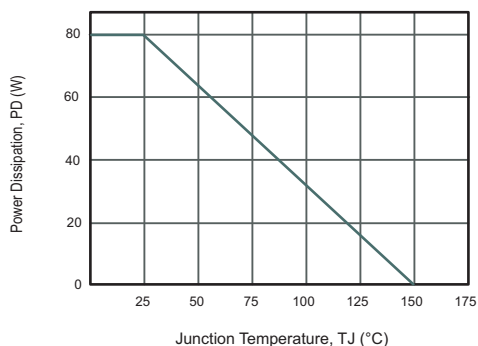
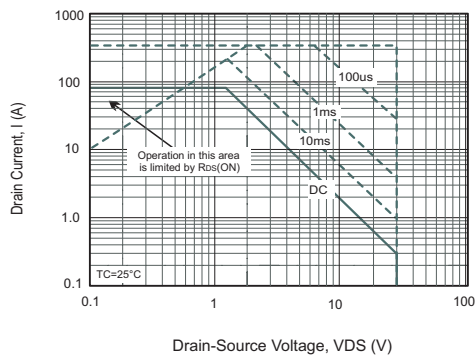
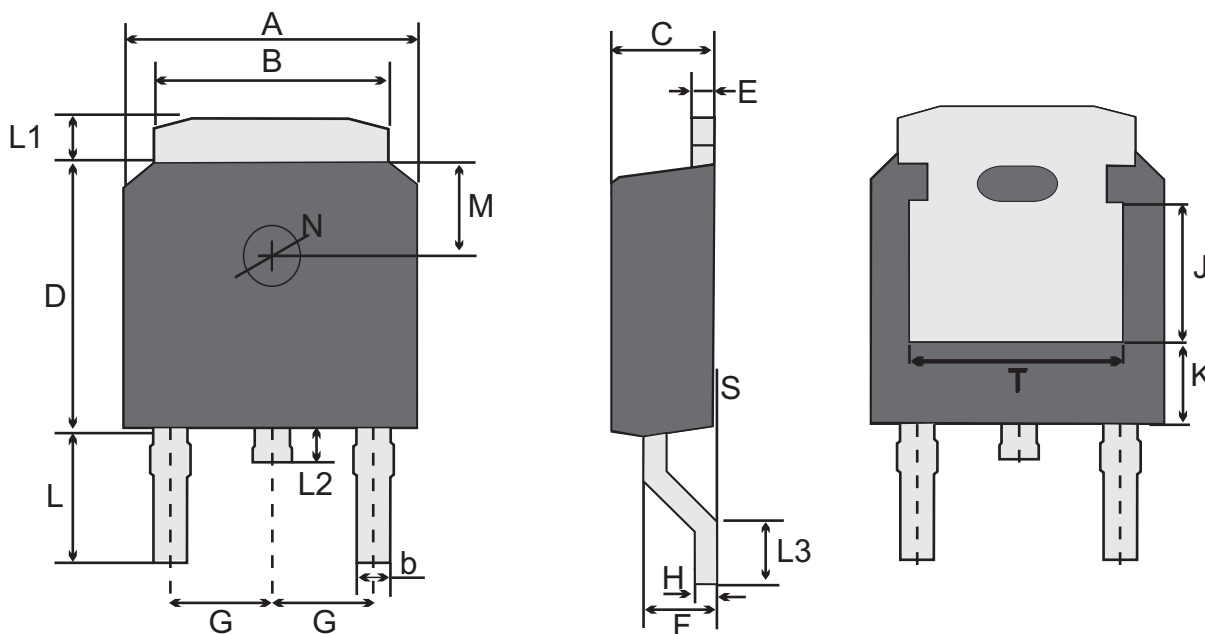


Fig.13 Safe Operating Area





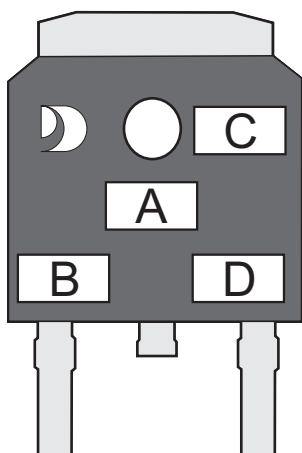
TO-252W(D-PAK) Package Outline Dimensions



TO-252W(D-PAK) mechanical data

| UNIT | A | B | b | C | D | E | F | G | H | L | L1 | L2 | L3 | S | M | N | J | K | T | |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|------|-----|-----|-----|------|------|----------------|----------------|--------------|--------------|--------------|
| mm | max | 6.7 | 5.5 | 0.8 | 2.5 | 6.3 | 0.6 | 1.8 | 2.29 TYPICAL | 0.55 | 3.1 | 1.2 | 1.0 | 1.75 | 0.23 | 1.8 TYPICAL | 1.3 TYPICAL | 3.16 ref. | 1.80 ref. | 4.83 ref. |
| | typ | 6.6 | 5.3 | 0.7 | 2.3 | 6.1 | 0.5 | 1.5 | | 0.50 | 2.5 | 1.0 | 0.6 | 1.30 | 0.15 | | | | | |
| | min | 6.3 | 5.1 | 0.3 | 2.1 | 5.9 | 0.4 | 1.3 | | 0.45 | 2.7 | 0.8 | 0.6 | 1.00 | 0.0 | | | | | |
| mil | max | 264 | 217 | 31 | 98 | 248 | 24 | 71 | 90 TYPICAL | 22 | 122 | 47 | 39 | 69 | 9 | 71 TYPICAL | 51 TYPICAL | 124 ref. | 71 ref. | 190 ref. |
| | typ | 260 | 209 | 28 | 90 | 240 | 20 | 59 | | 20 | 98 | 39 | 24 | 51 | 6 | | | | | |
| | min | 248 | 201 | 12 | 83 | 232 | 16 | 51 | | 18 | 106 | 31 | 24 | 55 | 0 | | | | | |

MARKING DIAGRAM



- Unmarkable Surfacea
- Marking Composition Field
- A: Marking Area
- B: Lot Code
- C: Additional Information
- D: Date Code (YWW)
- Y: Years(0~9)
- WW: Week



Important Notice and Disclaimer

Jingdao Microelectronics reserves the right to make changes to this document and its products and specifications at any time without notice. Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

Jingdao Microelectronics makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Jingdao Microelectronics assume any liability for application assistance or customer product design.

Jingdao Microelectronics does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

No license is granted by implication or otherwise under any intellectual property rights of Jingdao Microelectronics.

Jingdao Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of Jingdao Microelectronics.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [MOSFET](#) category:

Click to view products by [Jingdao](#) manufacturer:

Other Similar products are found below :

[IRFD120](#) [JANTX2N5237](#) [2SK2267\(Q\)](#) [BUK455-60A/B](#) [TK100A10N1,S4X\(S](#) [MIC4420CM-TR](#) [VN1206L](#) [NDP4060](#) [SI4482DY](#)
[IRS2092STRPBF-EL](#) [IPS70R2K0CEAKMA1](#) [TK31J60W5,S1VQ\(O](#) [TK31J60W,S1VQ\(O](#) [TK16J60W,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#)
[DMN1017UCP3-7](#) [EFC2J004NUZTDG](#) [P85W28HP2F-7071](#) [NTE2384](#) [DMC2700UDMQ-7](#) [DMN2080UCB4-7](#) [DMN61D9UWQ-13](#)
[US6M2GTR](#) [DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#) [IPS60R3K4CEAKMA1](#) [DMN1006UCA6-7](#) [DMN16M9UCA6-7](#) [STF5N65M6](#)
[IRF40H233XTMA1](#) [STU5N65M6](#) [DMN6022SSD-13](#) [DMN13M9UCA6-7](#) [DMTH10H4M6SPS-13](#) [IPS60R360PFD7SAKMA1](#)
[DMN2990UFB-7B](#) [SSM3K35CT,L3F](#) [IPLK60R1K0PFD7ATMA1](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [IPWS65R035CFD7AXKSA1](#)
[MCQ7328-TP](#) [SSM3J143TU,LXHF](#) [DMN12M3UCA6-7](#) [PJMF280N65E1_T0_00201](#) [PJMF380N65E1_T0_00201](#)
[PJMF280N60E1_T0_00201](#) [PJMF600N65E1_T0_00201](#) [PJMF900N65E1_T0_00201](#) [PJMF900N60E1_T0_00201](#)