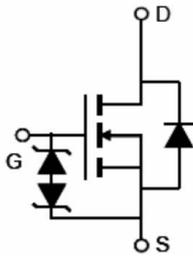


GENERAL DESCRIPTION

The HM2302DR is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance.

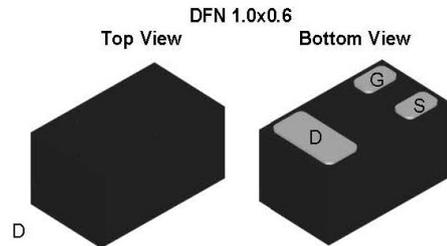
APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Load Switch



FEATURES

- $R_{DS(ON)} = 270\text{ m}\Omega @ V_{GS} = 4.5\text{V}$
- $R_{DS(ON)} = 330\text{ m}\Omega @ V_{GS} = 2.5\text{V}$
- $R_{DS(ON)} = 450\text{ m}\Omega @ V_{GS} = 1.8\text{V}$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Capable doing Cu wire bonding



Absolute Maximum Ratings (TA=25°C Unless Otherwise Noted)

| Parameter | Symbol | Maximum Ratings | Unit |
|----------------------|-----------------|-----------------|------|
| Drain-Source Voltage | V _{DS} | 20 | V |
| Gate-Source Voltage | V _{GS} | ±8 | V |

Absolute Maximum Ratings (TA=25°C Unless Otherwise Noted)

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| Drain-Source Voltage | V _{DS} | 20 | V |
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Electrical Characteristics (T_j=25°C Unless Otherwise Specified)

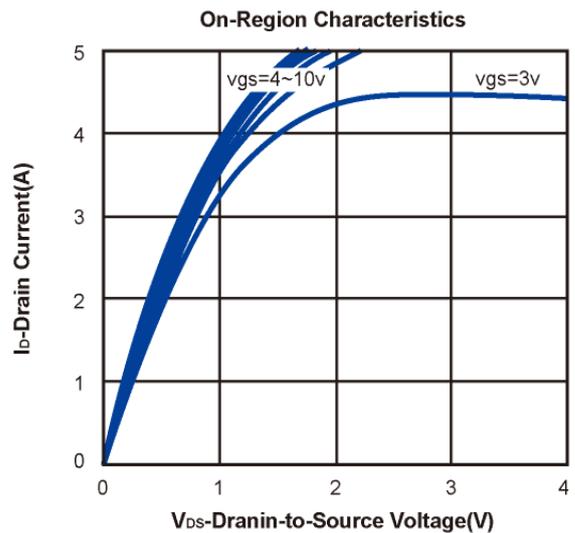
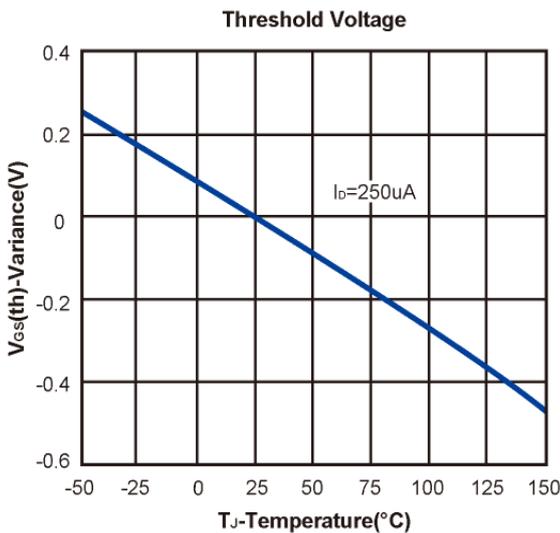
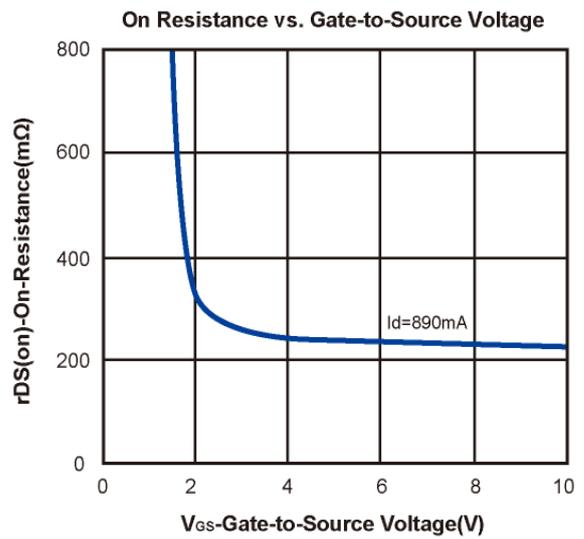
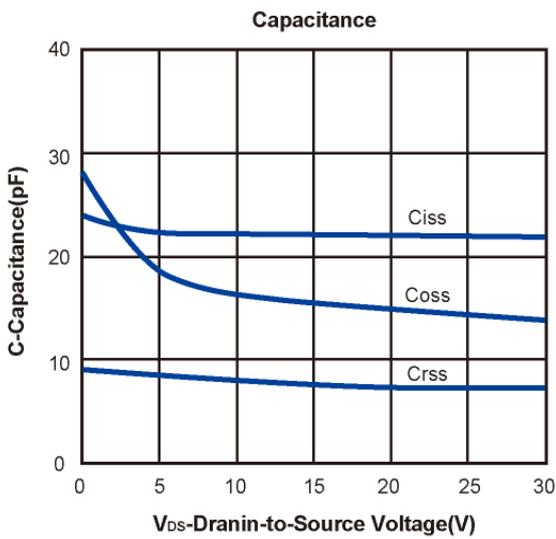
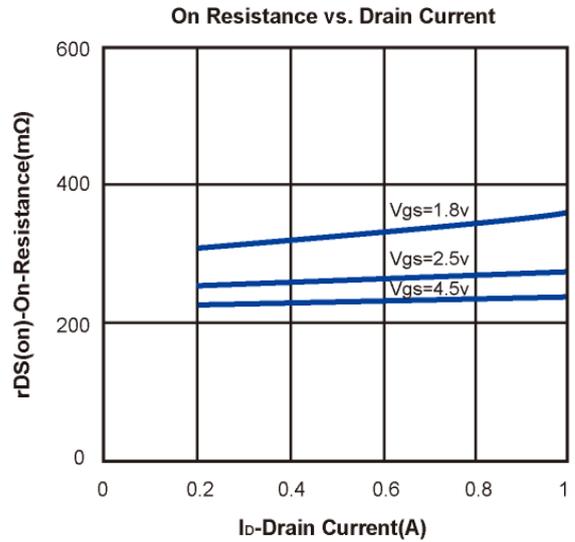
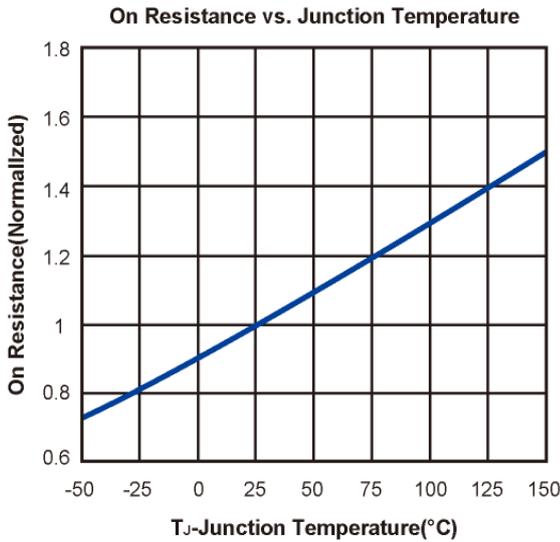
| Symbol | Parameter | Limit | Min | Typ | Max | Unit |
|---------------------|---|--|------|------|-----|------|
| STATIC | | | | | | |
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250 μA | 20 | | | V |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250 μA | 0.45 | | 1.2 | V |
| I _{GSS} | Gate Leakage Current | V _{DS} =0V, V _{GS} =±8V | | | ±10 | μA |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =20V, V _{GS} =0V | | | 1 | μA |
| R _{DS(ON)} | Drain-Source On-Resistance ^a | V _{GS} =4.5V, I _D =890mA | | 220 | 270 | mΩ |
| | | V _{GS} =2.5V, I _D =780mA | | 260 | 330 | |
| | | V _{GS} =1.8V, I _D =700mA | | 330 | 450 | |
| V _{SD} | Diode Forward Voltage | I _S =350mA, V _{GS} =0V | | 0.75 | 1.2 | V |
| DYNAMIC | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} =15V, V _{GS} =0V, f=1MHZ | | 21 | | pF |
| C _{oss} | Output Capacitance | | | 15 | | |
| C _{rss} | Reverse Transfer Capacitance | | | 8 | | |
| Q _g | Total Gate Charge | V _{DS} =25V, V _{GS} =10V, I _D =0.22A | | 6.7 | | nC |
| Q _{gs} | Gate-Source Charge | | | 1.2 | | |
| Q _{gd} | Gate-Drain Charge | | | 0.9 | | |
| t _{d(on)} | Turn-On Delay Time | V _{DD} =10V, R _L =3Ω V _{GEN} =10V, R _G =10Ω | | 120 | | ns |
| t _r | Turn-On Rise Time | | | 317 | | |
| t _{d(off)} | Turn-Off Delay Time | | | 748 | | |
| t _f | Turn-Off Fall Time | | | 716 | | |

Notes: a. Based on epoxy or solder paste and bond wire Cu wire 1mil×1(S), Cu wire 1mil×1(G) on each die of SOT-523 package.

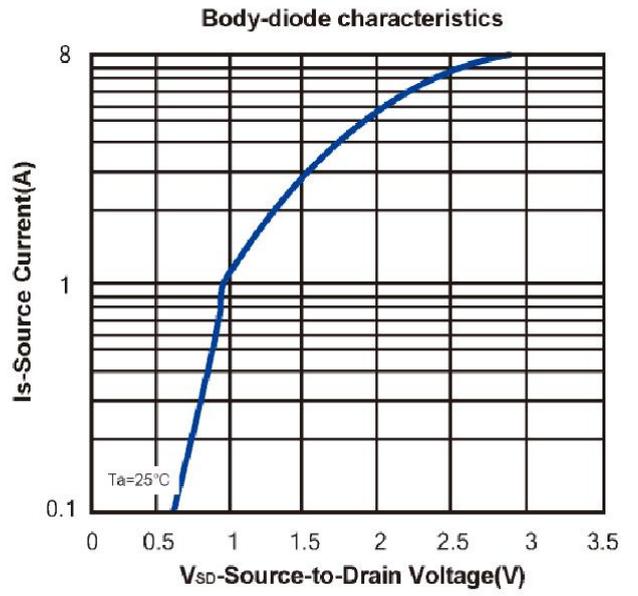
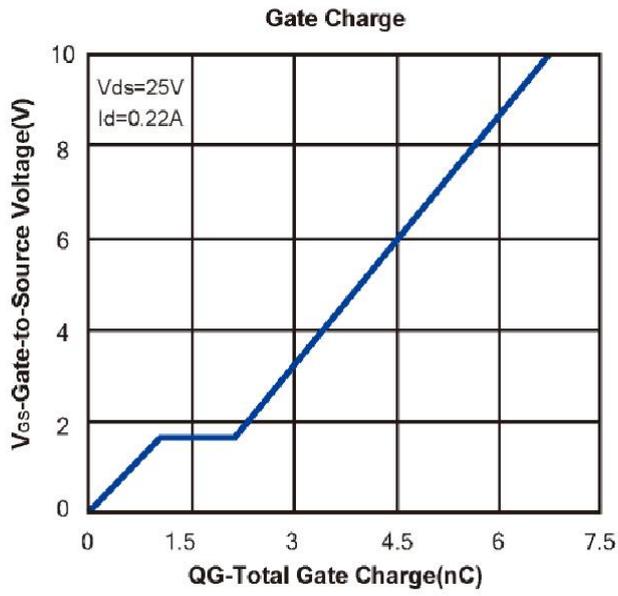
b. Pulse test; pulse width ≤ 300us, duty cycle ≤ 2%.

c. Force mos reserves the right to improve product design, functions and reliability without notice.

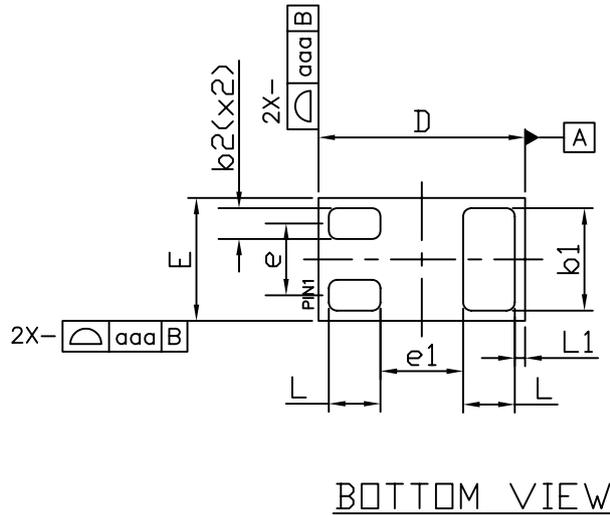
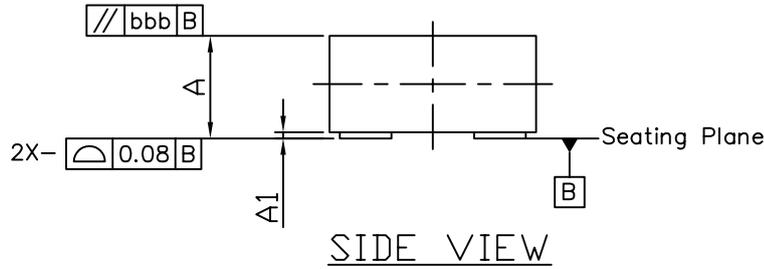
Typical Characteristics (T_J =25°C Noted)



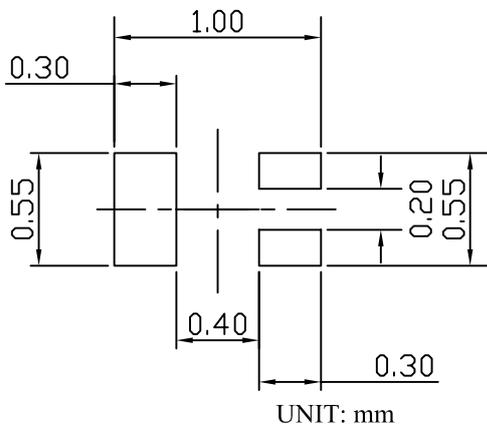
Typical Characteristics (T_J =25°C Noted)



DFN1.0X0.6-3L



RECOMMENDED LAND PATTERN



| SYMBOLS | DIMENSIONS IN MILLIMETERS | | | DIMENSIONS IN INCHES | | |
|---------|---------------------------|------|-------|----------------------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.50 | 0.52 | 0.55 | 0.019 | 0.020 | 0.022 |
| A1 | 0.00 | 0.03 | 0.05 | 0.000 | 0.001 | 0.002 |
| b1 | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| b2 | 0.10 | 0.15 | 0.20 | 0.004 | 0.006 | 0.008 |
| D | 0.95 | 1.00 | 1.075 | 0.037 | 0.039 | 0.042 |
| E | 0.55 | 0.60 | 0.675 | 0.022 | 0.024 | 0.027 |
| e | --- | 0.35 | --- | --- | 0.014 | --- |
| e1 | --- | 0.40 | --- | --- | 0.016 | --- |
| L | 0.20 | 0.25 | 0.30 | 0.008 | 0.010 | 0.012 |
| L1 | --- | 0.05 | --- | --- | 0.002 | --- |
| aaa | 0.15 | | | 0.006 | | |
| bbb | 0.05 | | | 0.002 | | |

NOTE

1. ALL DIMENSION ARE IN MILLIMETERS. ANGLES ARE IN DEGREES.
2. COPLANARITY APPLIES TO THE EXPOSED HEAT SINK SLUG AS WELL AS THE TERMINALS.