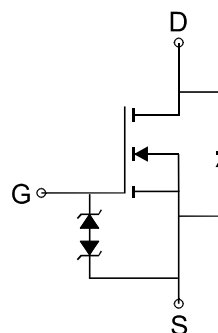
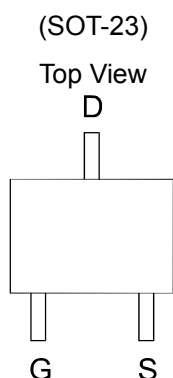


**GENERAL DESCRIPTION**

The ME2306D 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. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching , and low in-line power loss are needed in a very small outline surface mount package.

**PIN CONFIGURATION**



**FEATURES**

- $R_{DS(ON)} \leq 31m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} \leq 52m\Omega @ V_{GS}=4.5V$
- ESD Protected
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

**APPLICATIONS**

- Power Management in Note book
- Portable Equipment
- Load Switch

Ordering Information: ME2306D(Pb-free)

ME2306D-G (Green product-Halogen free)

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

| Parameter                               | Symbol          | Maximum Ratings  | Unit |
|---|-----------------|------------------|------|
| Drain-Source Voltage                    | $V_{DS}$        | 30               | V    |
| Gate-Source Voltage                     | $V_{GSS}$       | $\pm 20$         | V    |
| Continuous Drain*                       | $I_D$           | $T_A=25^\circ C$ | 5.3  |
|   |                 | $T_A=70^\circ C$ | 4.2  |
| Pulsed Drain Current                    | $I_{DM}$        | 21.2             | A    |
| Maximum Power Dissipation*              | $P_D$           | $T_A=25^\circ C$ | 1.39 |
|   |                 | $T_A=70^\circ C$ | 0.89 |
| Operating Junction Temperature          | $T_J$           | -55 to 150       | °C   |
| Storage Temperature Range               | $T_{stg}$       | -55 to 150       | °C   |
| Thermal Resistance-Junction to Ambient* | $R_{\theta JA}$ | 90               | °C/W |

\*The device mounted on 1in<sup>2</sup> FR4 board with 2 oz copper



## N-Channel 30V (D-S) MOSFET , ESD Protected

Electrical Characteristics (TA=25°C Unless Otherwise Specified)

| Symbol              | Parameter                               | Limit  | Min | Typ | Max | Unit |
|---------------------|---|--|-----|-----|-----|------|
| <b>STATIC</b>       |   |  |     |     |     |      |
| V <sub>GS(th)</sub> | Gate Threshold Voltage                  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA  | 1   | 1.5 | 3   | V    |
| I <sub>GSS</sub>    | Gate Leakage Current                    | V <sub>DS</sub> =0V, V <sub>GS</sub> =±16V   |     |     | ±10 | μA   |
| I <sub>DSS</sub>    | Zero Gate Voltage Drain Current         | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V  |     |     | 1   | μA   |
| R <sub>DS(ON)</sub> | Drain-Source On-Resistance <sup>a</sup> | V <sub>GS</sub> =10V, I <sub>D</sub> = 6.7A  |     | 26  | 31  | mΩ   |
|                     |   | V <sub>GS</sub> =4.5V, I <sub>D</sub> = 5.0A   |     | 40  | 52  |      |
| V <sub>SD</sub>     | Diode Forward Voltage                   | I <sub>S</sub> =1.7A, V <sub>GS</sub> =0V  |     | 0.8 | 1.2 | V    |
| <b>DYNAMIC</b>      |   |  |     |     |     |      |
| C <sub>iss</sub>    | Input Capacitance                       | V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHZ  |     | 370 |     | pF   |
| C <sub>oss</sub>    | Output Capacitance                      |  |     | 68  |     |      |
| C <sub>rss</sub>    | Reverse Transfer Capacitance            |  |     | 21  |     |      |
| R <sub>g</sub>      | Gate Resistance                         | f=1MHz   |     | 1.9 |     | Ω    |
| Q <sub>g</sub>      | Total Gate Charge                       | V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =6.7A   |     | 12  |     | nC   |
| Q <sub>g</sub>      | Total Gate Charge                       | V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =6.7A  |     | 5.7 |     |      |
| Q <sub>gs</sub>     | Gate-Source Charge                      |  |     | 3.0 |     |      |
| Q <sub>gd</sub>     | Gate-Drain Charge                       |  |     | 2.1 |     |      |
| t <sub>d(on)</sub>  | Turn-On Delay Time                      | V <sub>DD</sub> =15V, R <sub>L</sub> =15Ω<br>I <sub>D</sub> =1.0A, V <sub>GEN</sub> =10V<br>R <sub>G</sub> =6Ω |     | 9.2 |     | ns   |
| t <sub>r</sub>      | Turn-On Rise Time                       |  |     | 13  |     |      |
| t <sub>d(off)</sub> | Turn-Off Delay Time                     |  |     | 33  |     |      |
| t <sub>f</sub>      | Turn-Off Fall Time                      |  |     | 3.7 |     |      |

Notes: a. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%, Guaranteed by design, not subject to production testing.

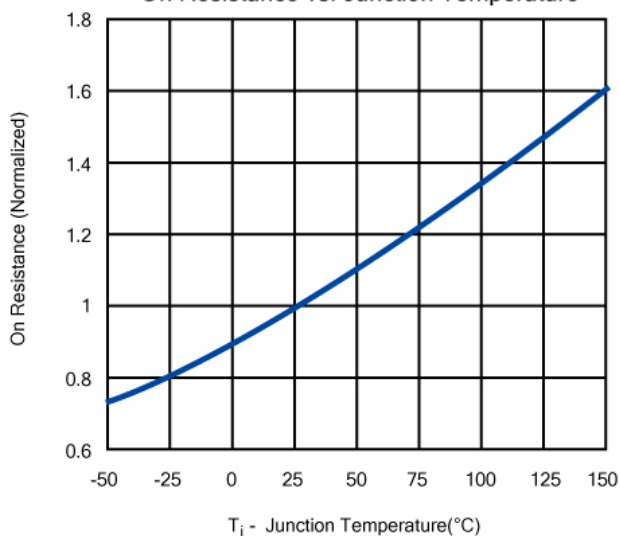
b. Matsuki Electric/ Force mos reserves the right to improve product design, functions and reliability without notice.

DCC  
正式發行

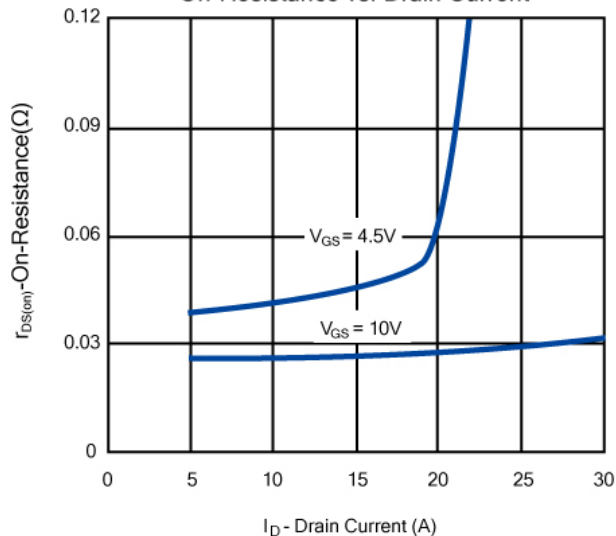
**N-Channel 30V (D-S) MOSFET , ESD Protected**

**Typical Characteristics (T<sub>J</sub> = 25°C Noted)**

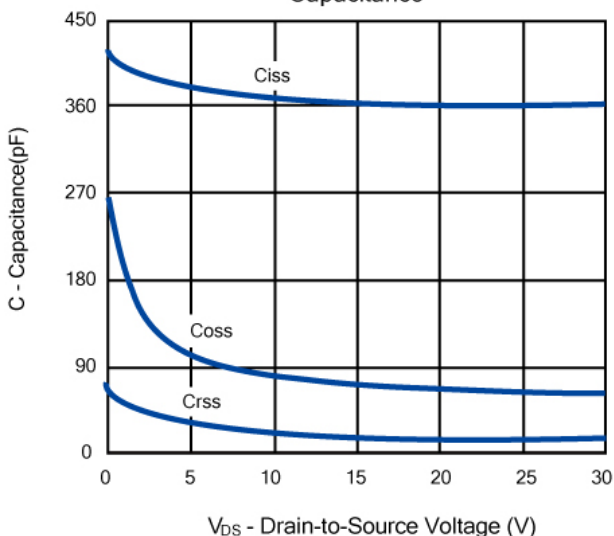
On Resistance vs. Junction Temperature



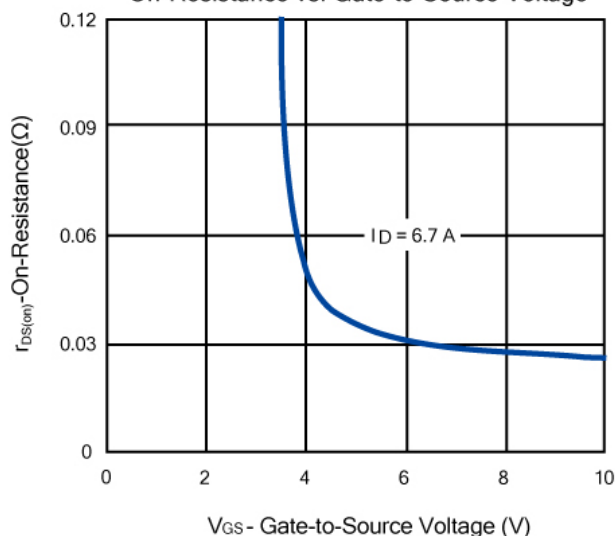
On-Resistance vs. Drain Current



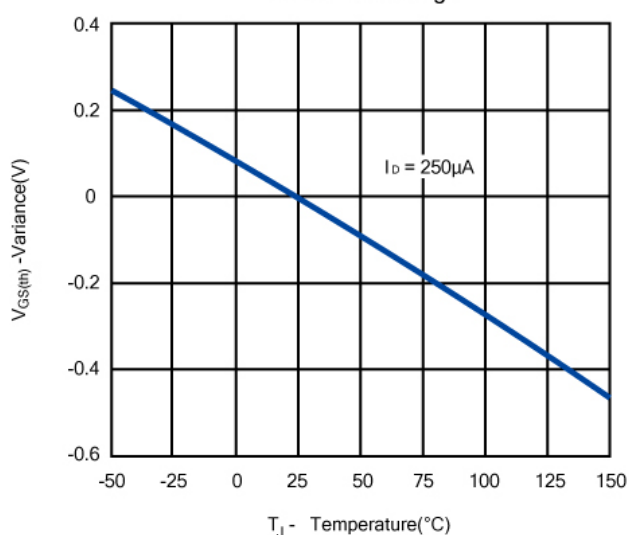
Capacitance



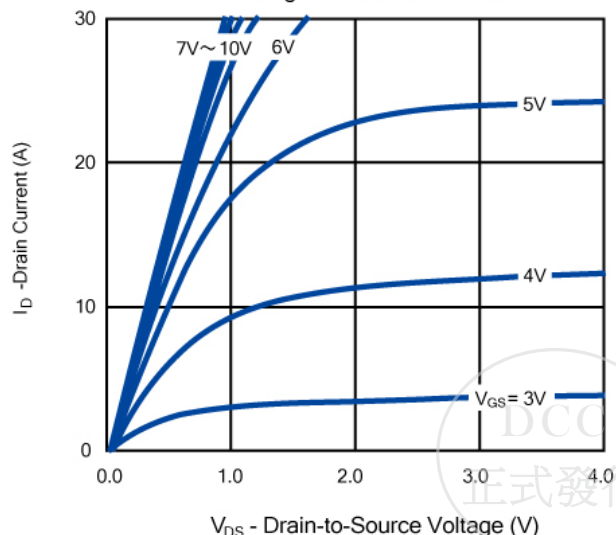
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

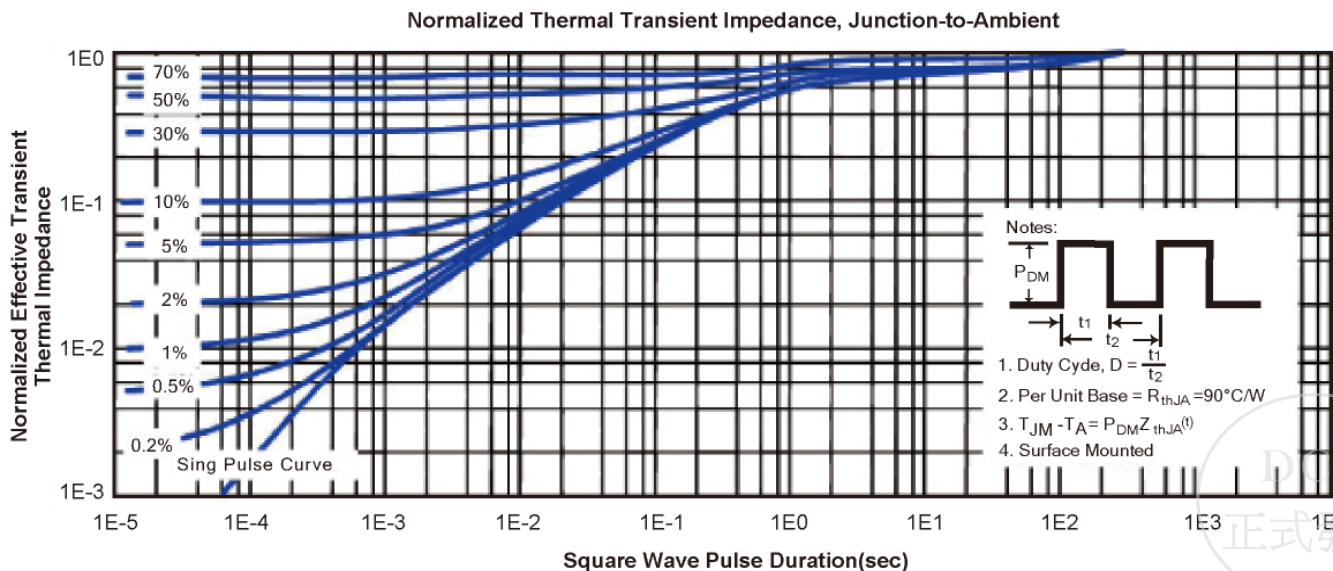
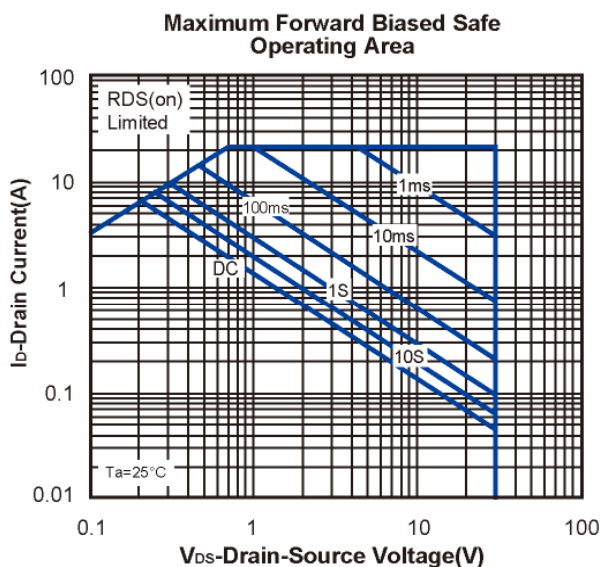
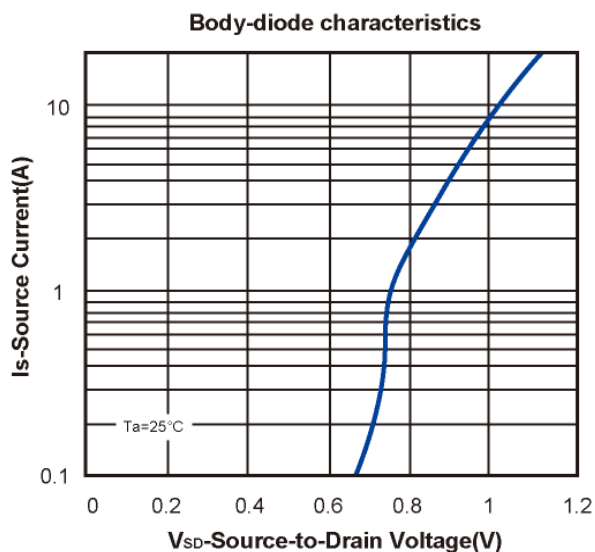
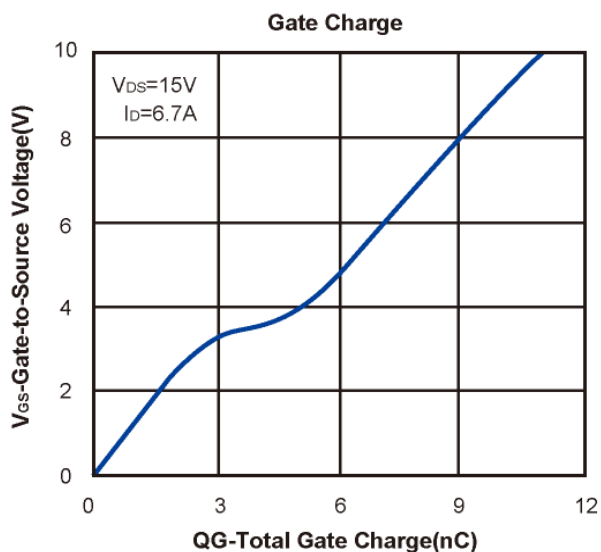


On-Region Characteristics

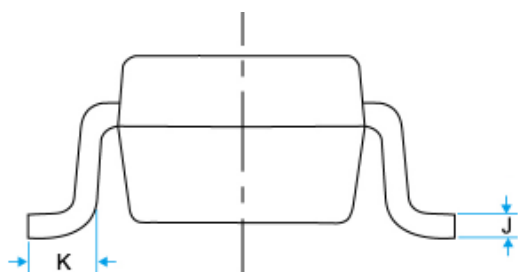
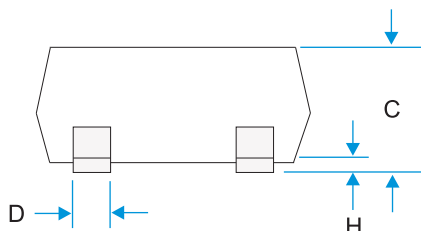
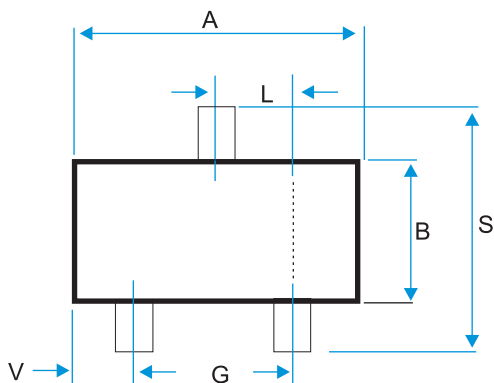


N-Channel 30V (D-S) MOSFET , ESD Protected

Typical Characteristics (T<sub>J</sub> =25°C Noted)



**SOT-23 Package Outline**



| DIM | MILLIMETERS (mm) |      |
|-----|------------------|------|
|     | MIN              | MAX  |
| A   | 2.800            | 3.00 |
| B   | 1.200            | 1.70 |
| C   | 0.900            | 1.30 |
| D   | 0.350            | 0.50 |
| G   | 1.780            | 2.04 |
| H   | 0.010            | 0.15 |
| J   | 0.085            | 0.20 |
| K   | 0.300            | 0.65 |
| L   | 0.890            | 1.02 |
| S   | 2.100            | 3.00 |
| V   | 0.450            | 0.60 |

