

**N-Channel 30V (D-S)MOSFET**

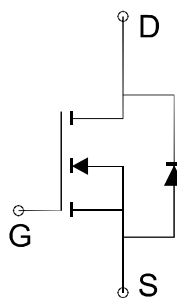
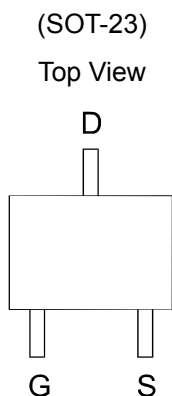
**GENERAL DESCRIPTION**

The ME2306A is the N-Channel logic enhancement mode power field effect transistors, 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, notebook computer power management and other battery powered circuits, and low in-line power loss that are needed in a very small outline surface mount package.

**PIN CONFIGURATION**



**FEATURES**

- $R_{DS(ON)} \leq 32m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} \leq 38m\Omega @ V_{GS}=4.5V$
- $R_{DS(ON)} \leq 50m\Omega @ V_{GS}=2.5V$
- 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
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

Ordering Information: ME2306A (Pb-free)

ME2306A-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	$V_{GS}$	±12	V
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	A
		$T_A=70^\circ C$	
Pulsed Drain Current	$I_{DM}$	21.5	
Maximum Power Dissipation	$P_D$	$T_A=25^\circ C$	W
		$T_A=70^\circ C$	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	°C
Thermal Resistance-Junction to Ambient*	$R_{\theta JA}$	90	°C/W

\*The device mounted on 1in2 FR4 board with 2 oz copper



## N-Channel 30V (D-S)MOSFET

Electrical Characteristics (T<sub>A</sub>=25°C Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μA	30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	0.7		1.4	
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
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> = 4A		25	32	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> = 3.5A		29	38	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> = 2.8A		39	50	
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1.25A, V <sub>GS</sub> =0V		0.8	1.2	V
<b>DYNAMIC PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =4A		15.5		nC
Q <sub>gs</sub>	Gate-Source Charge			3.2		
Q <sub>gd</sub>	Gate-Drain Charge			3.5		
R <sub>g</sub>	Gate Resistance	f =1MHz		0.7		Ω
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz		480		pF
C <sub>oss</sub>	Output Capacitance			70		
C <sub>rss</sub>	Reverse Transfer Capacitance			18		
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =15V, R <sub>L</sub> =15Ω I <sub>D</sub> =1A, V <sub>GEN</sub> =10V, R <sub>G</sub> =6Ω		8.5		ns
t <sub>r</sub>	Rise Time			17		
t <sub>d(off)</sub>	Turn-Off Delay Time			31		
t <sub>f</sub>	Fall Time			3		

Notes: a. Pulse test; pulse width ≤ 380us, duty cycle ≤ 2%

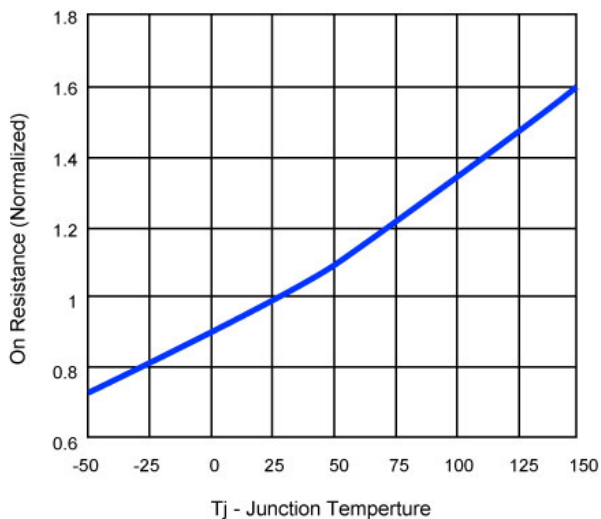
b. Matsuki Electric/ Force mos reserves the right to improve product design, functions and reliability without notice.



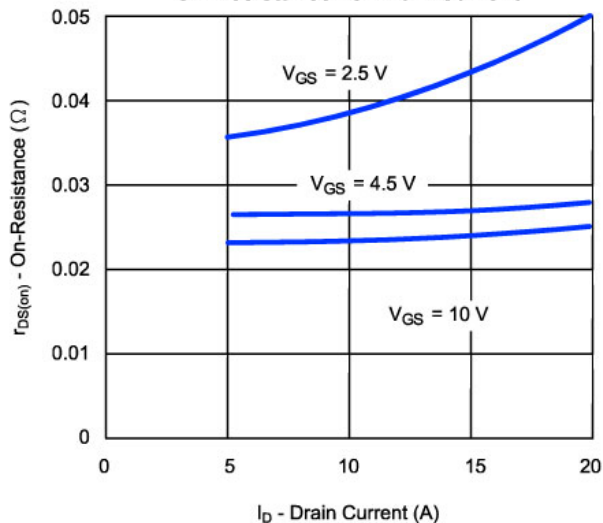
**N-Channel 30V (D-S)MOSFET**

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

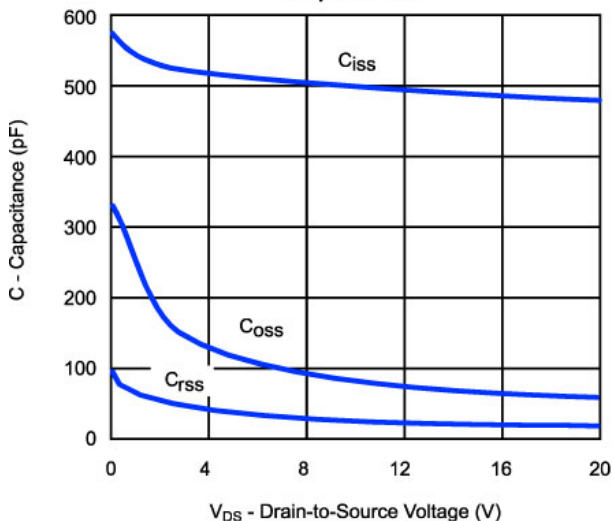
**On Resistance vs. Junction Temperature**



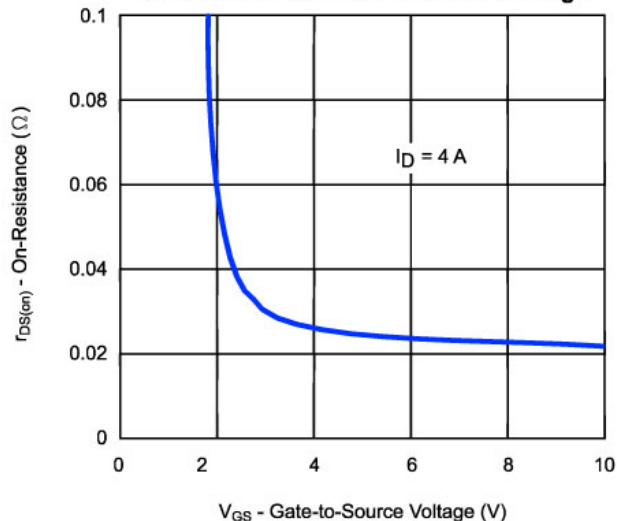
**On-Resistance vs. Drain Current**



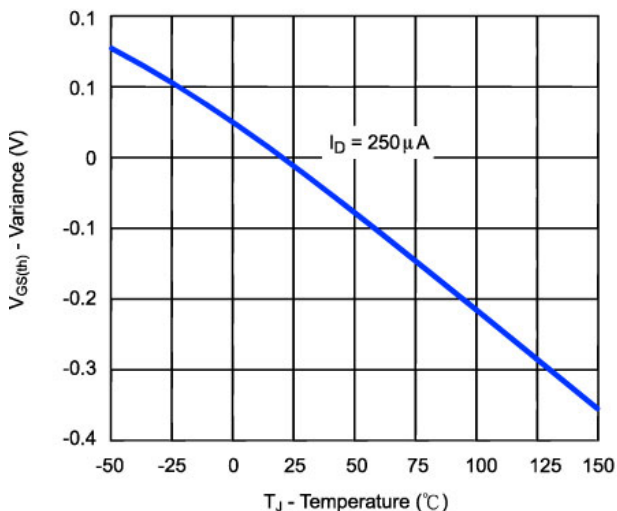
**Capacitance**



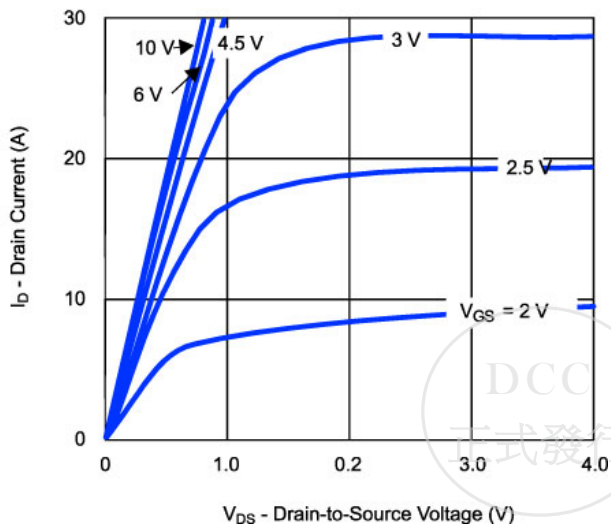
**On-Resistance vs. Gate-to-Source Voltage**



**Threshold Voltage**

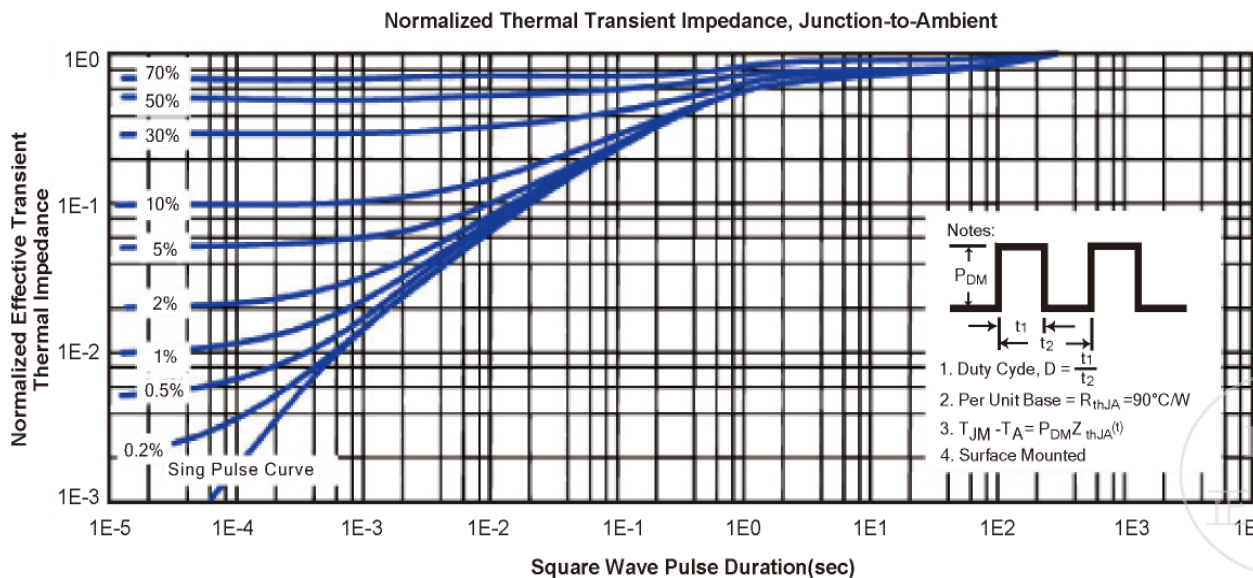
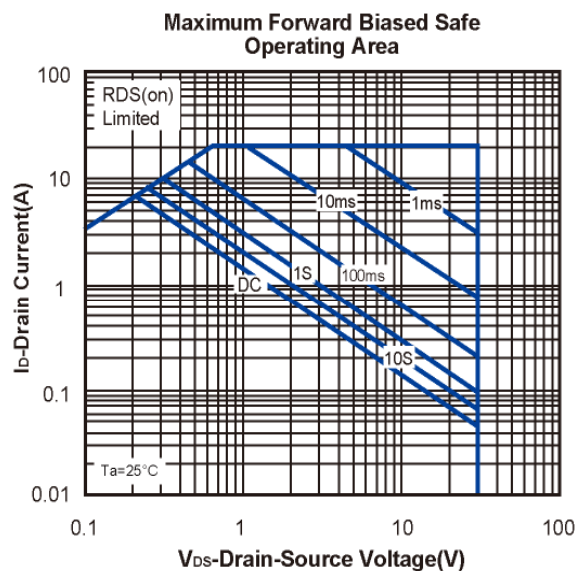
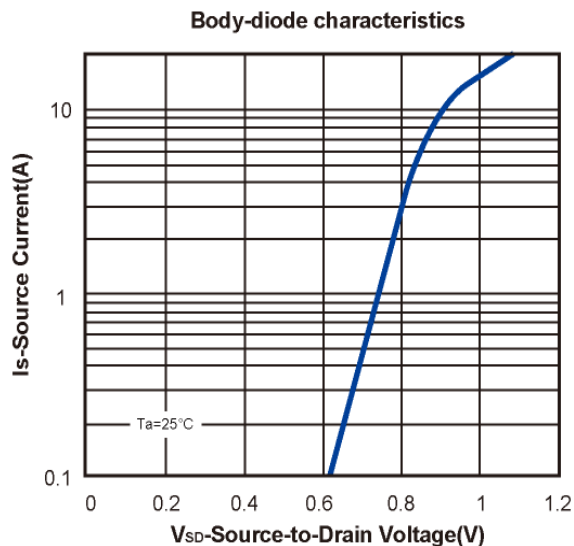
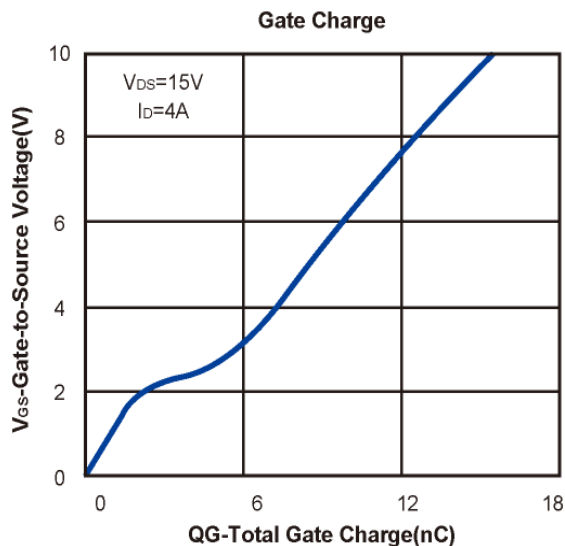


**On-Region Characteristics**

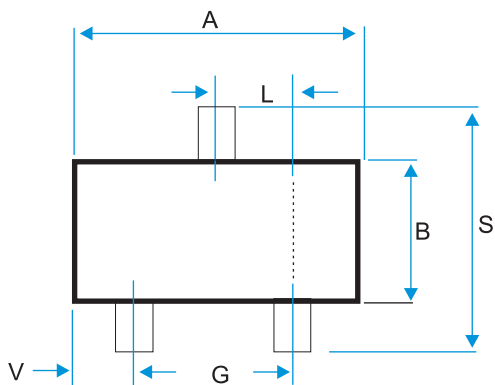


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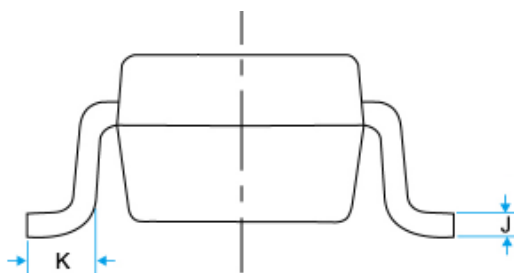
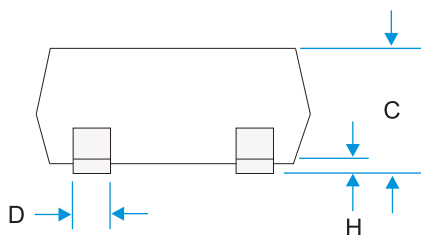
Typical Characteristics (T<sub>J</sub> =25°C Noted)



**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



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