

N-Channel 30V (D-S)MOSFET

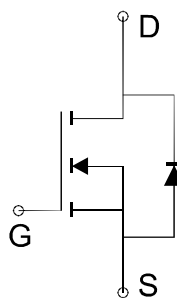
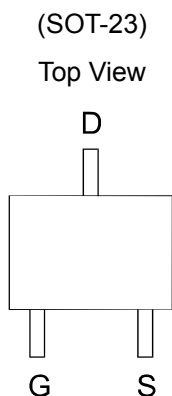
GENERAL DESCRIPTION

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



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

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

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

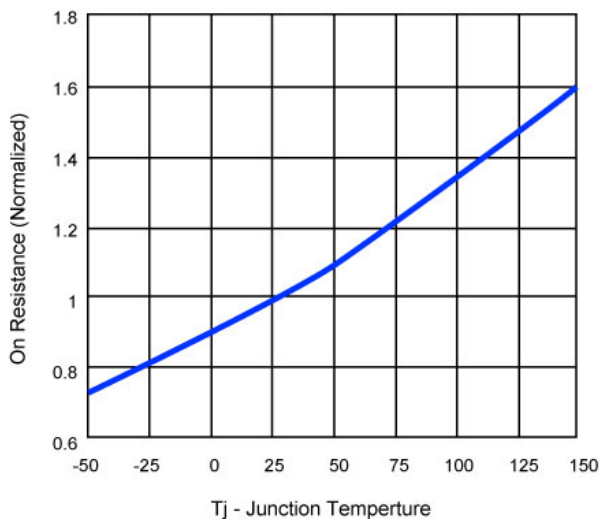
b. Matsuki Electric/ Force mos reserves the right to improve product design, functions and reliability without notice.



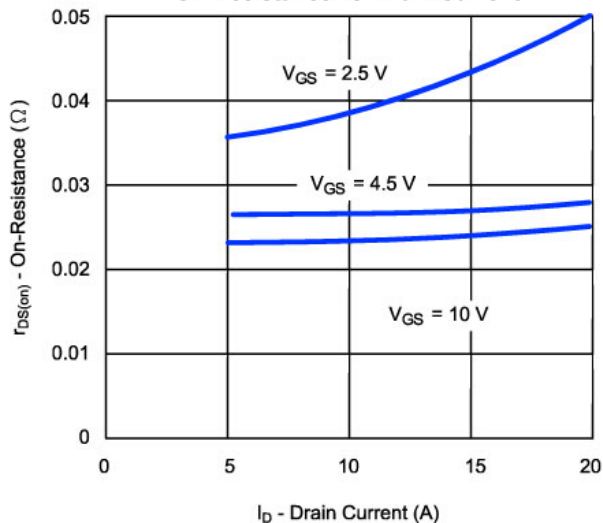
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Typical Characteristics (T_J = 25°C Noted)

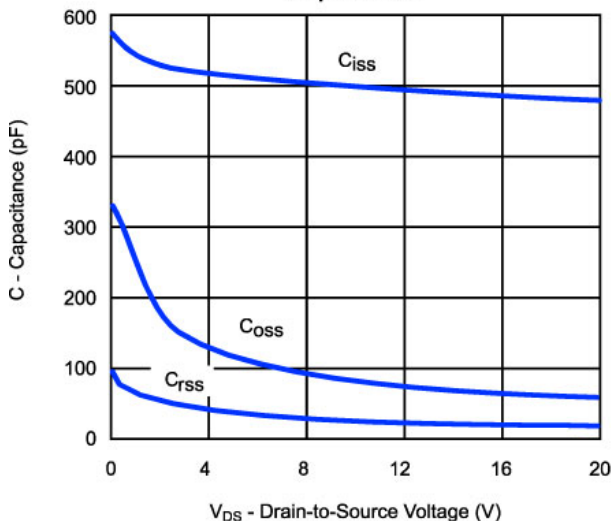
On Resistance vs. Junction Temperature



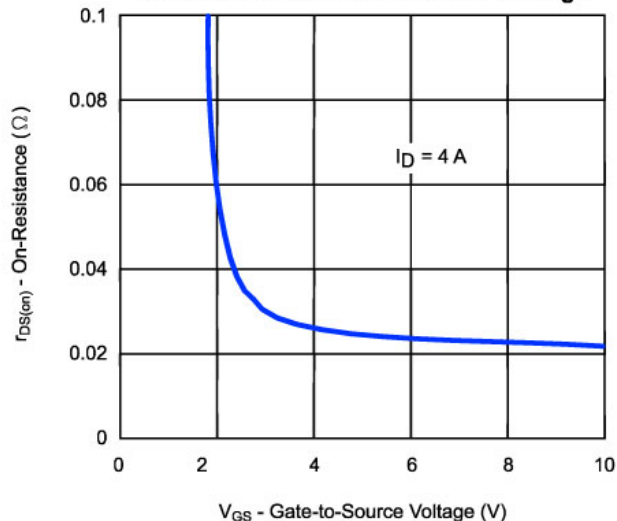
On-Resistance vs. Drain Current



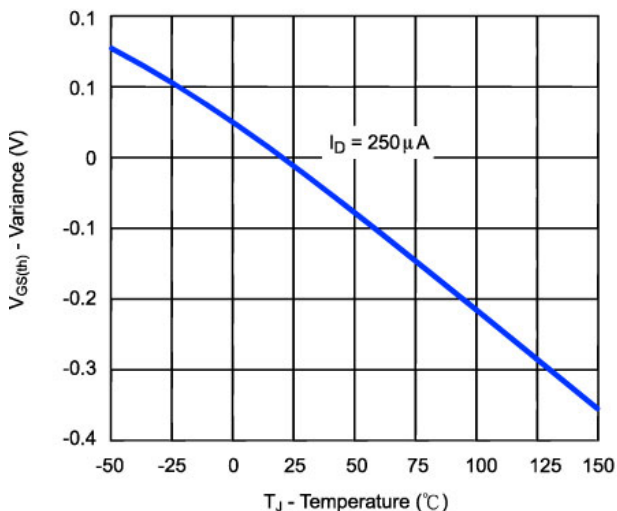
Capacitance



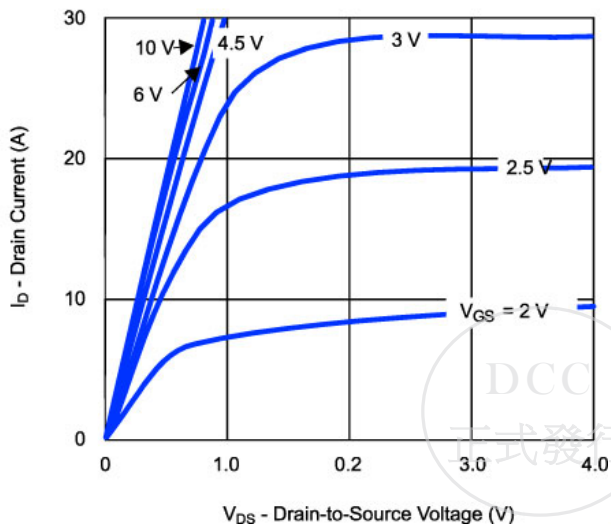
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

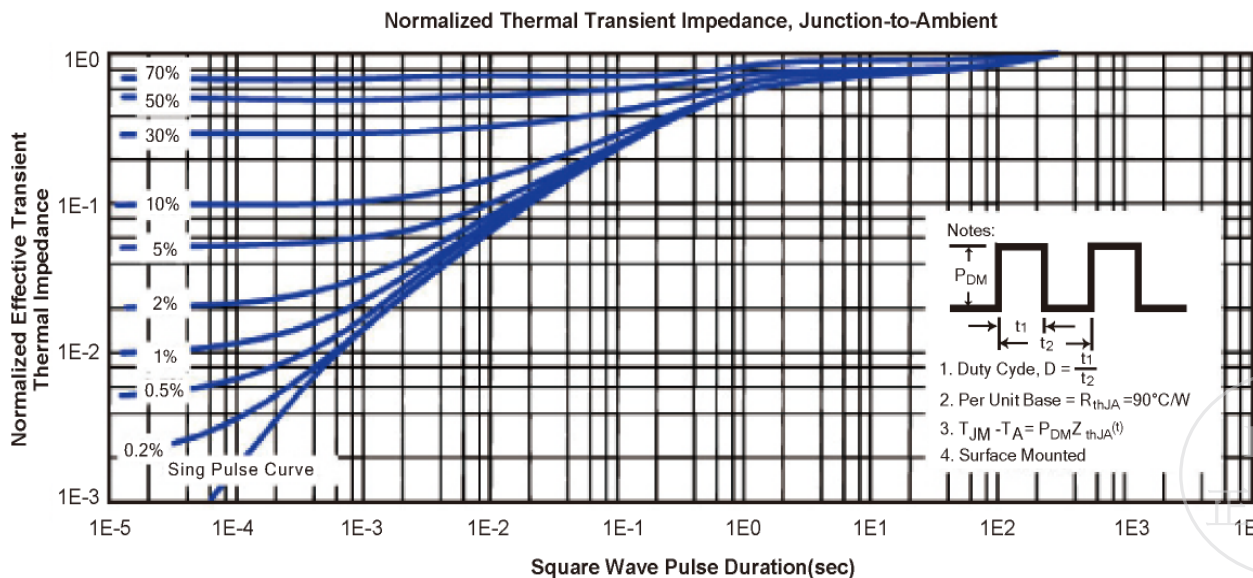
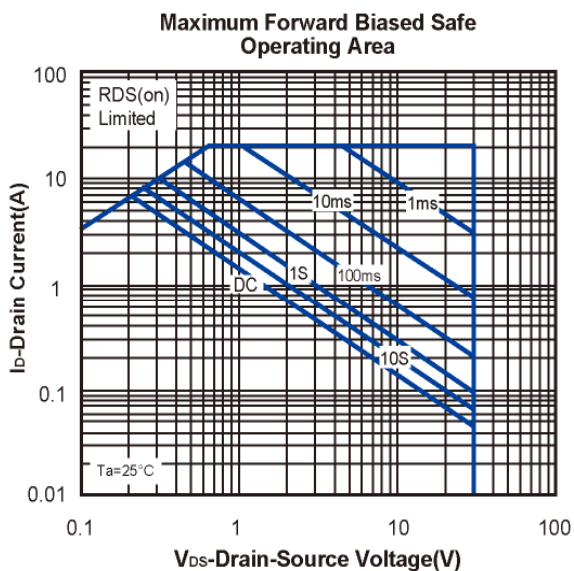
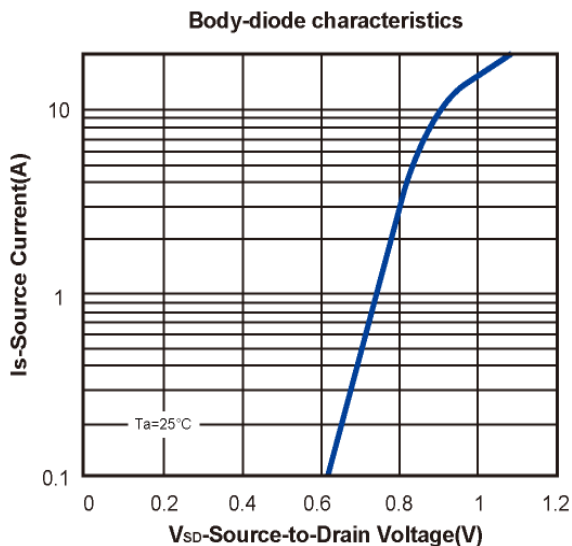
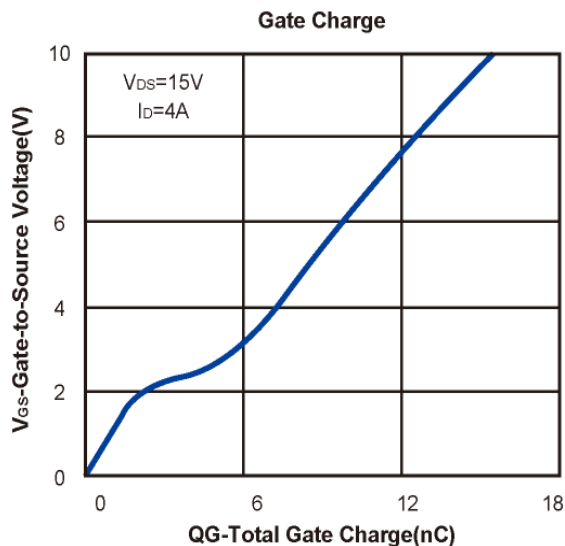


On-Region Characteristics

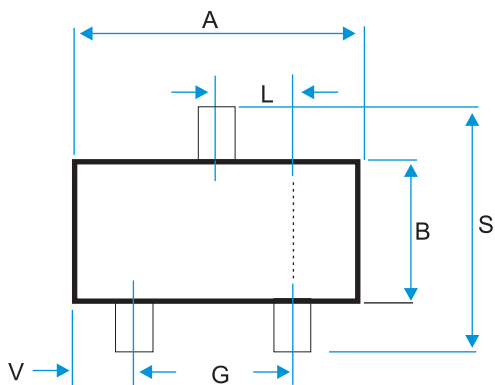


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Typical Characteristics (T_J =25°C Noted)



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

