N - Channel 250-V (D-S) MOSFET

GENERAL DESCRIPTION

The ME2326A 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.
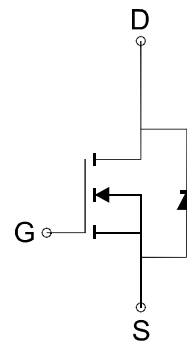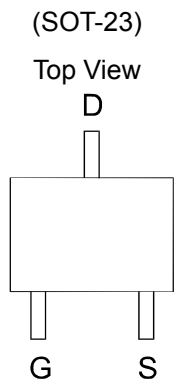
FEATURES

● $R_{DS(ON)} \leq 5.5\Omega@V_{GS}=10V$
● $R_{DS(ON)} \leq 5.5\Omega@V_{GS}=4.5V$
● 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
● DC/DC Converter
● Load Switch
● LCD Display inverter

PIN CONFIGURATION

(SOT-23)

Top View

D

G   S

D

G

S

N-Channel MOSFET

Ordering Information: ME2326A(Pb-free)

ME2326A-G (Green product-Halogen free)

Absolute Maximum Ratings ($T_A=25℃$ Unless Otherwise Noted)

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DS}	250	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	$T_A=25℃$	I_D	0.4	A
	$T_A=70℃$		0.3	
Pulsed Drain Current		I_{DM}	1.6	A
Maximum Power Dissipation	$T_A=25℃$	P_D	1.4	W
	$T_A=70℃$		0.9	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	℃
Thermal Resistance-Junction to Ambient*		$R_{θJA}$	90	℃/W

* The device mounted on 1in^2 FR4 board with 2 oz copper
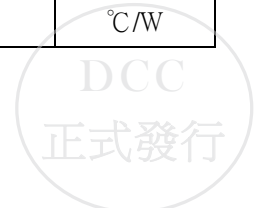
N - Channel 250-V (D-S) MOSFET

Electrical Characteristics (T$_A$ =25℃ Unless Otherwise Specified)

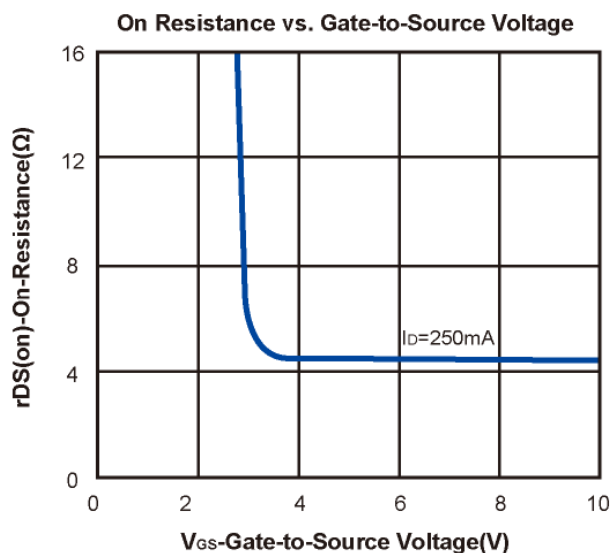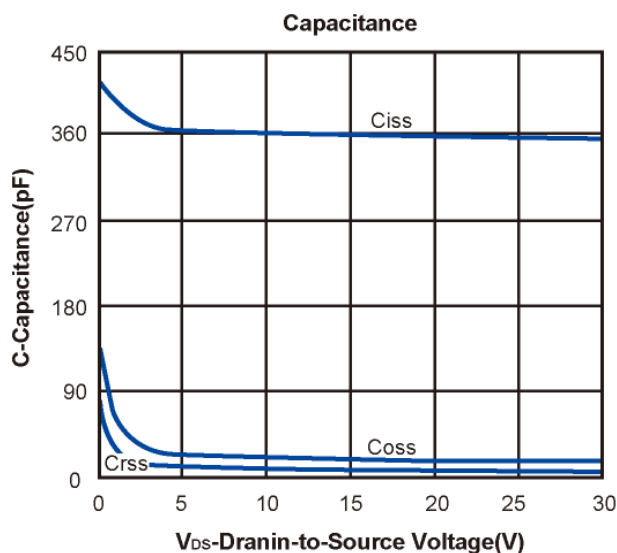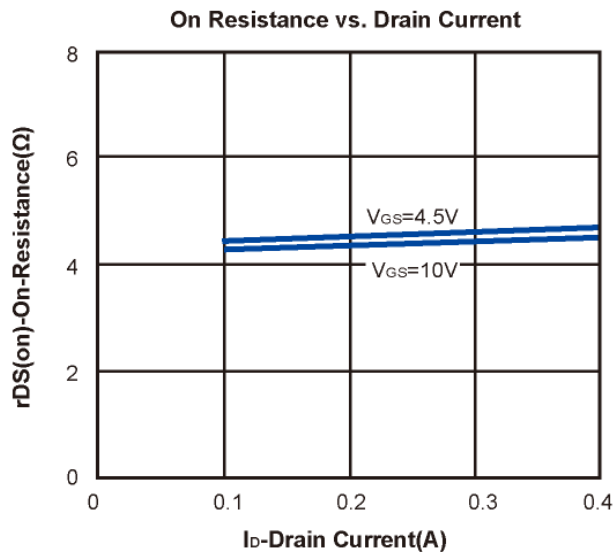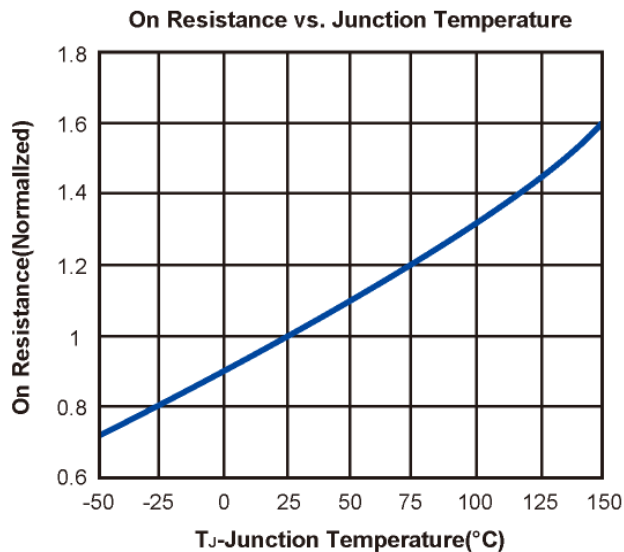| Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V, I$_D$=250μA	250			V
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=250μA	1.0		3.0	V
I$_{GSS}$	Gate-Body Leakage	V$_{DS}$=0V, V$_{GS}$=±20V			±100	nA
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=250V, V$_{GS}$=0V			1	μA
R$_{DS(ON)}$	Drain-Source On-Resistance*	V$_{GS}$=10V, I$_D$=250mA		4.5	5.5	Ω
		V$_{GS}$=4.5V, I$_D$=250mA		4.5	5.5	
V$_{SD}$	Diode Forward Voltage *	I$_S$=250mA, V$_{GS}$=0V		0.8	1.2	V
DYNAMIC						
Qg	Total Gate Charge	V$_{DS}$=10V, V$_{GS}$=10V, I$_D$=1.2A		11.2		nC
Qg	Total Gate Charge	V$_{DS}$=10V, V$_{GS}$=4.5V, I$_D$=1.2A		4.1		
Qgs	Gate-Source Charge			2.6		
Qgd	Gate-Drain Charge			0.9		
Ciss	Input Capacitance	V$_{DS}$=15V, V$_{GS}$=0V, f=1MHz		361		pF
Coss	Output Capacitance			16		
Crss	Reverse Transfer Capacitance			5.6		
t$_{d(on)}$	Turn-On Delay Time	V$_{DD}$=25V, R$_L$ =25Ω R$_G$=25Ω, V$_{GEN}$=10V,		9.7		ns
tr	Turn-On Rise Time			25.6		
t$_{d(off)}$	Turn-Off Delay Time			236		
tf	Turn-Off Fall Time			275		

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.
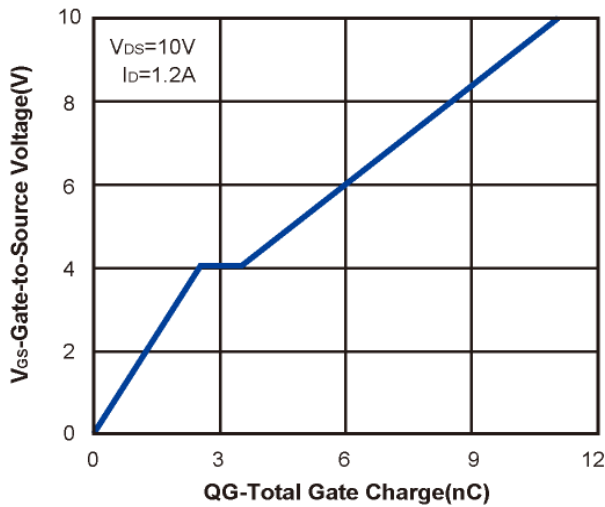
N - Channel 250-V (D-S) MOSFET
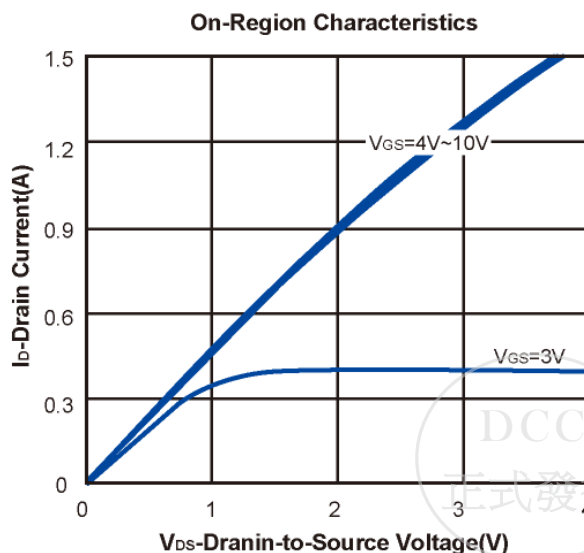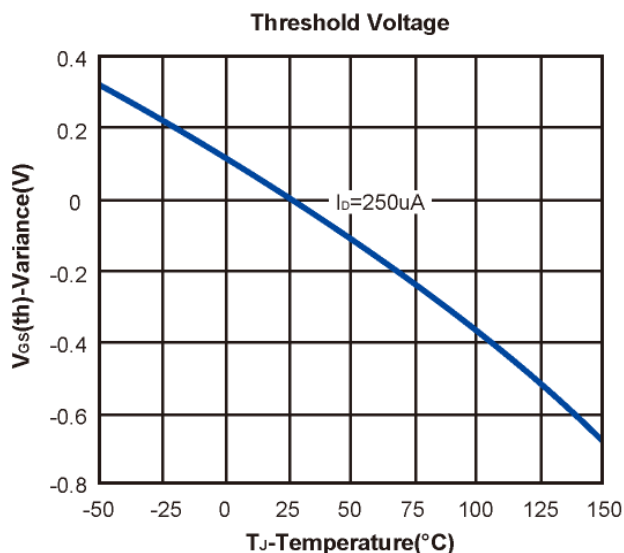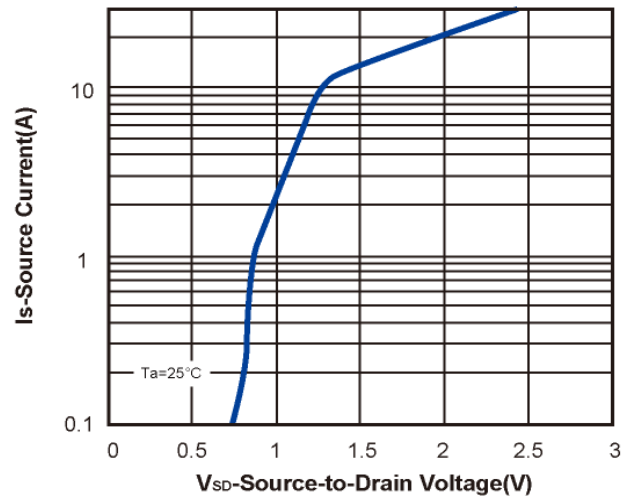
Typical Characteristics (TJ =25℃ Noted)

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 250-V (D-S) MOSFET

Typical Characteristics (TJ =25℃ Noted)

Gate Charge

$V_{DS}=10V$
$I_D=1.2A$

QG-Total Gate Charge(nC)
VGS-Gate-to-Source Voltage(V)
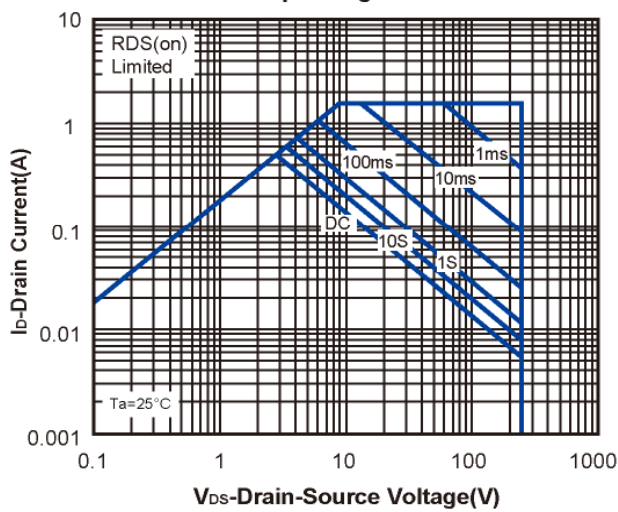

Body-diode characteristics

Ta=25°C

Is-Source Current(A)
VSD-Source-to-Drain Voltage(V)

Maximum Forward Biased Safe Operating Area

RDS(on) Limited

100ms
1ms
10ms
DC
10S
1S

Ta=25°C

ID-Drain Current(A)
VDS-Drain-Source Voltage(V)

Normalized Thermal Transient Impedance, Junction-to-Ambient

70%
50%
30%
10%
5%
2%
1%
0.5%
0.2%
Sing Pulse Curve

Normalized Effective Transient Thermal Impedance
Square Wave Pulse Duration(sec)

Notes:

P_{DM}

t_1
t_2

1. Duty Cyde, $D = \frac{t_1}{t_2}$

2. Per Unit Base = $R_{thJA}=90°C/W$

3. $T_{JM} - T_A = P_{DM}Z_{thJA}^{(t)}$

4. Surface Mounted

N - Channel 250-V (D-S) MOSFET
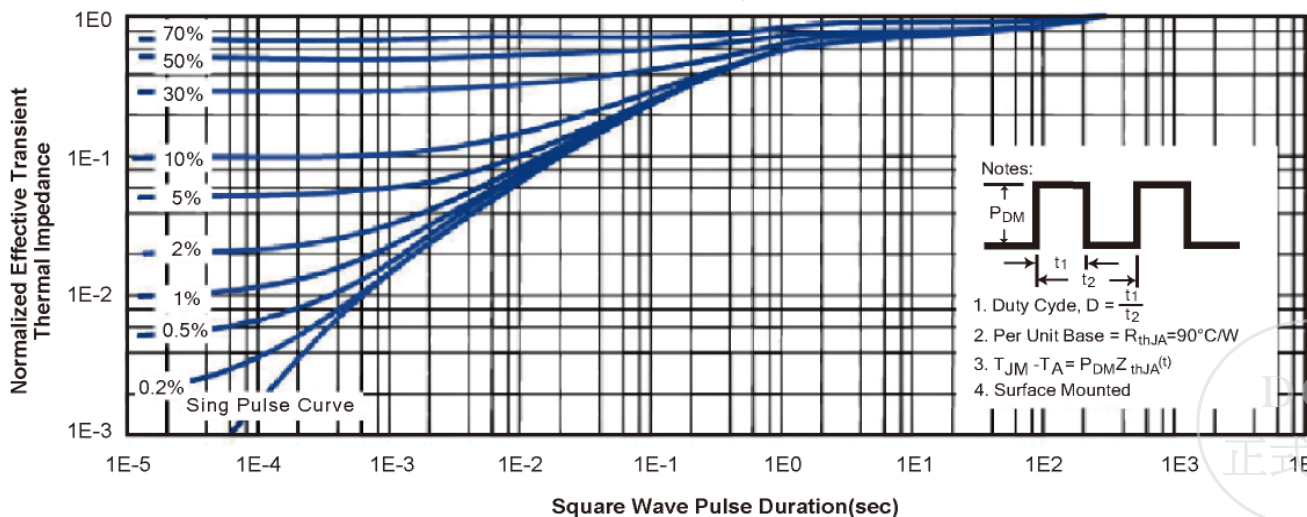
SOT-23 Package Outline
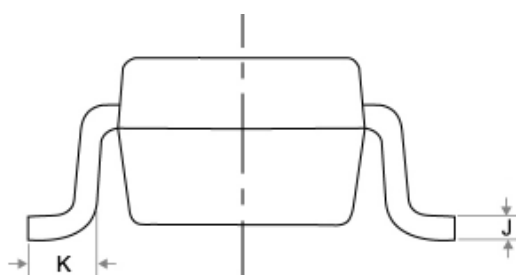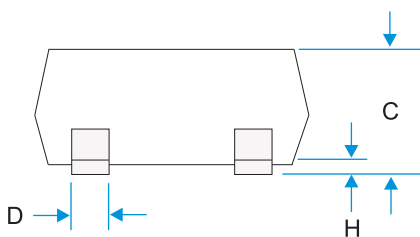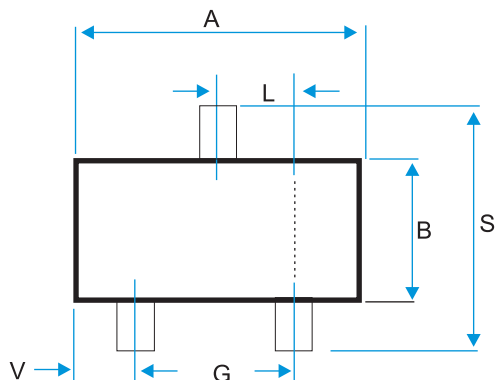
Symbol	MILLIMETERS (mm)	
	MIN	MAX
A	2.800	3.00
B	1.200	1.70
C	0.900	1.30
D	0.350	0.50
G	1.780	2.04
H	0.010	0.15
J	0.085	0.20
K	0.300	0.65
L	0.890	1.02
S	2.100	3.00
V	0.450	0.60

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