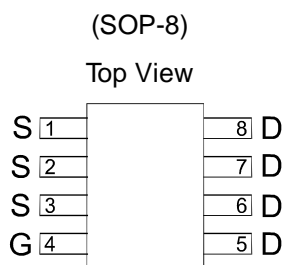## P-Channel 30V (D-S) MOSFET

GENERAL DESCRIPTION

The ME4435 is the P-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.

FEATURES

● $R_{DS(ON)} \leqq 20m\Omega @ V_{GS}=-10V$

● $R_{DS(ON)} \leqq 35m\Omega @ V_{GS}=-4.5V$

● 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
● Portable Equipment
● Battery Powered System
● DC/DC Converter
● Load Switch
● DSC
● LCD Display inverter

PIN CONFIGURATION

(SOP-8)

Top View

```
S 1         8 D
S 2         7 D
S 3         6 D
G 4         5 D
```

Ordering Information: ME4435 (Pb-free)

ME4435-G (Green product-Halogen free)

P-Channel MOSFET

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

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	$T_A=25℃$	I_D	-8.8	A
	$T_A=70℃$		-7.1	
Pulsed Drain Current		I_{DM}	-35	A
Maximum Power Dissipation	$T_A=25℃$	P_D	2.5	W
	$T_A=70℃$		1.6	
Operating Junction Temperature		T_J	-55 to 150	℃
Thermal Resistance-Junction to Ambient*		$R_{\theta JA}$	50	℃/W

*The device mounted on $1in^2$ FR4 board with 2 oz copper

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P-Channel 30V (D-S) MOSFET

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

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=-250μA	-1	-1.4	-3	V
I$_{GSS}$	Gate Leakage Current	V$_{DS}$=0V, V$_{GS}$=±20V			±100	nA
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=-30V, V$_{GS}$=0V			-1	μA
I$_{D(ON)}$	On-State Drain Current[a]	V$_{DS}$=-5V, V$_{GS}$= -10V	-30			A
R$_{DS(ON)}$	Drain-Source On-State Resistance[a]	V$_{GS}$=-10V, I$_D$= -9.1A		15	20	mΩ
		V$_{GS}$=-4.5V, I$_D$= -6.9A		25	35	
V$_{SD}$	Diode Forward Voltage	I$_S$=-2.1A, V$_{GS}$=0V		-0.8	-1.2	V
DYNAMIC						
Qg	Total Gate Charge	V$_{DS}$=-15V, V$_{GS}$=-10V, I$_D$=-9.1A		38		nC
Qgs	Gate-Source Charge			7.7		
Qgd	Gate-Drain Charge			9		
Rg	Gate Resistance	V$_{GS}$=0V, V$_{DS}$=0V, f=1MHz		6.9		Ω
Ciss	Input capacitance	V$_{DS}$=-15V, V$_{GS}$=0V, f=1MHz		1490		pF
Coss	Output Capacitance			209		
Crss	Reverse Transfer Capacitance			148		
t$_{d(on)}$	Turn-On Delay Time	V$_{DD}$=-15V, R$_L$ =15Ω I$_D$=-1A, V$_{GEN}$=-10V R$_G$=6Ω		38.2		ns
tr	Turn-On Rise Time			16.7		
t$_{d(off)}$	Turn-Off Delay Time			106		
tf	Turn-Off Fall Time			24.1		

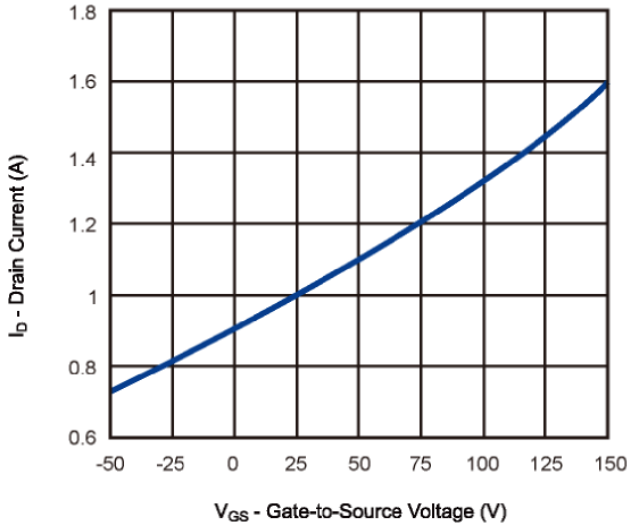Notes: a. Pulse test: pulse width≦ 300us, duty cycle≦ 2%, Guaranteed by design, not subject to production testing.

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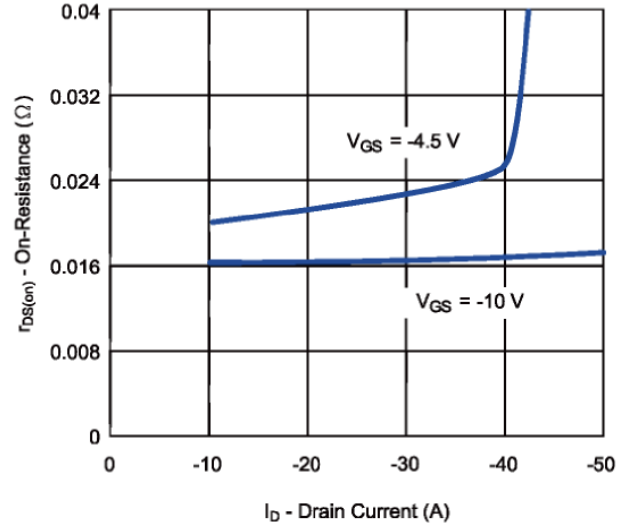
Matsuki Electric

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P-Channel 30V (D-S) MOSFET

Typical Characteristics (TJ =25℃ Noted)
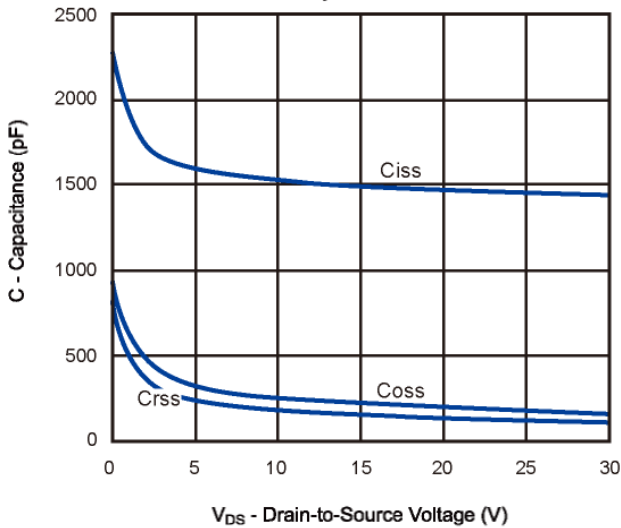

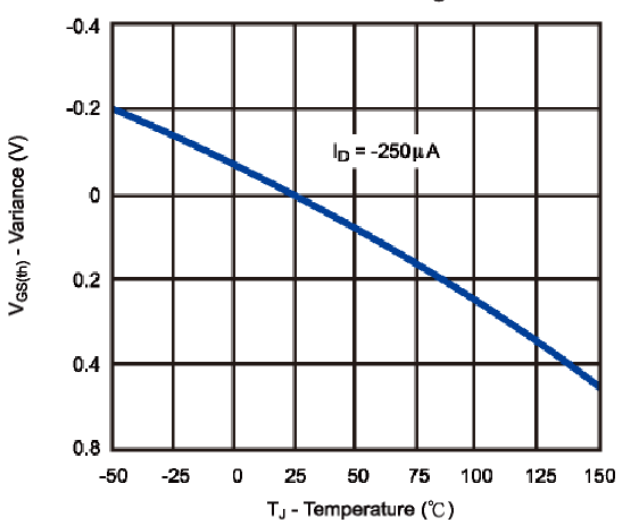Transfer Characteristics

On-Resistance vs. Drain Current

$V_{GS} = -4.5$ V
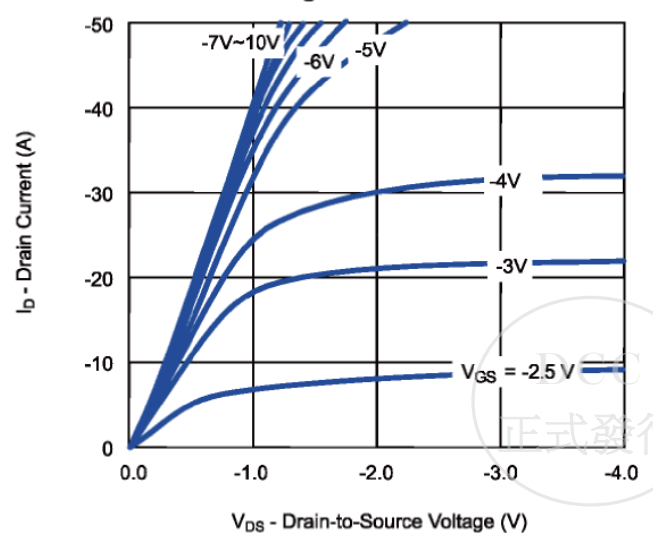
$V_{GS} = -10$ V

Capacitance

Ciss

Crss
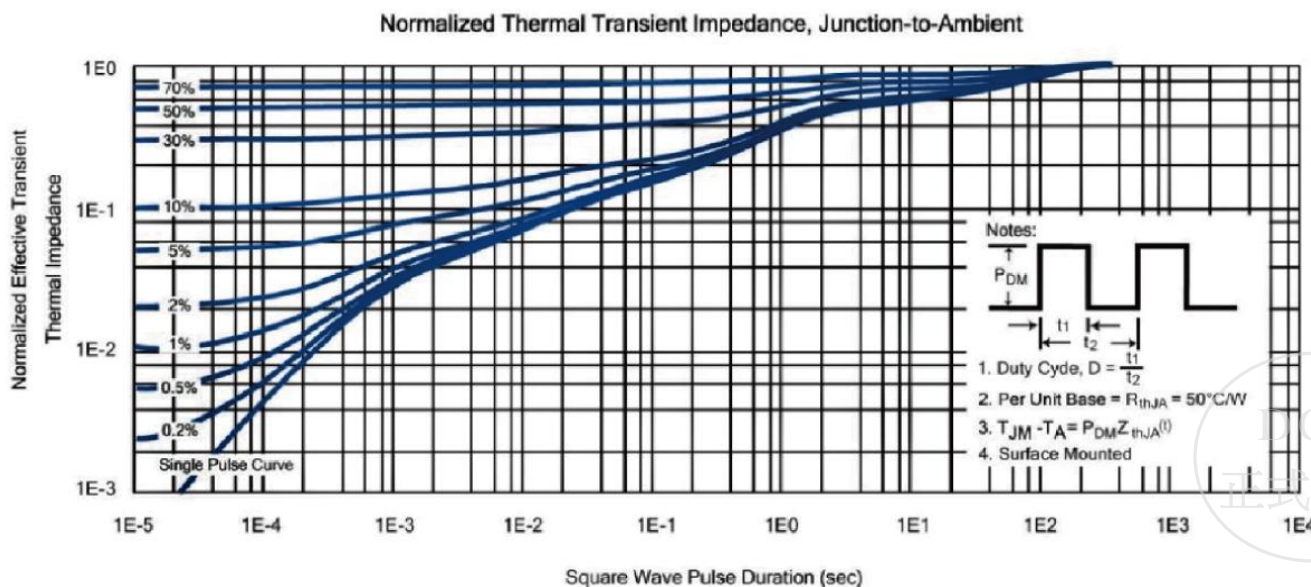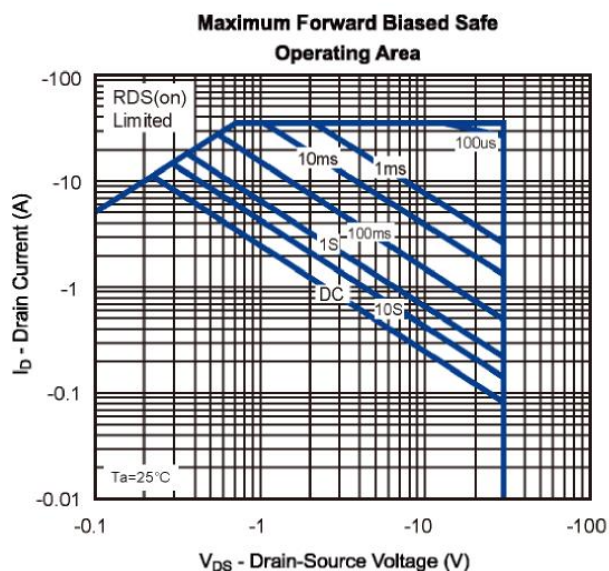
Coss

On-Resistance vs. Gate-to-Source Voltage

$I_D = -9.1$ A

Threshold Voltage

$I_D = -250\mu$A
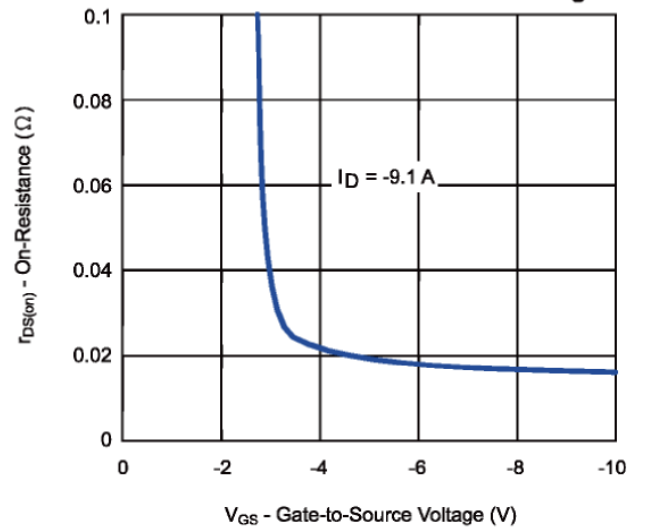
On-Region Characteristics

-7V~10V

-6V

-5V

-4V

-3V

$V_{GS} = -2.5$ V

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P-Channel 30V (D-S) MOSFET

Typical Characteristics (TJ =25℃ Noted)

Gate Charge

V_{DS} = -15 V
I_D = -9.1 A

Body-diode characteristics

T_A = 25°C

Maximum Forward Biased Safe Operating Area

RDS(on) Limited

Ta=25℃

Normalized Thermal Transient Impedance, Junction-to-Ambient

Notes:
1. Duty Cyde, D = $\frac{t_1}{t_2}$
2. Per Unit Base = R_{thJA} = 50°C/W
3. $T_{JM} - T_A = P_{DM} Z_{thJA}(t)$
4. Surface Mounted

Single Pulse Curve

Square Wave Pulse Duration (sec)
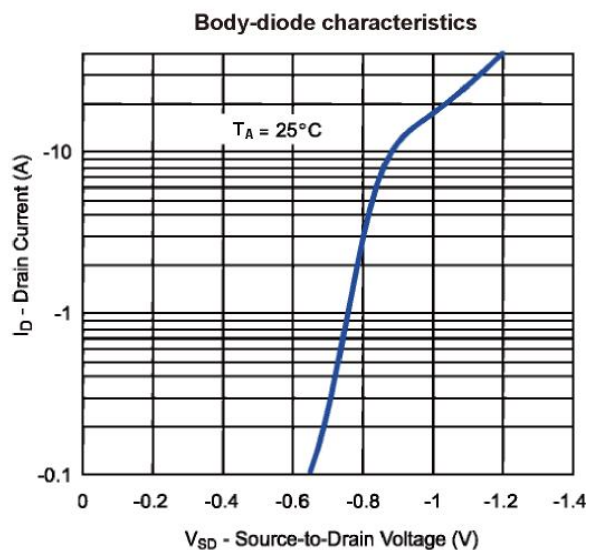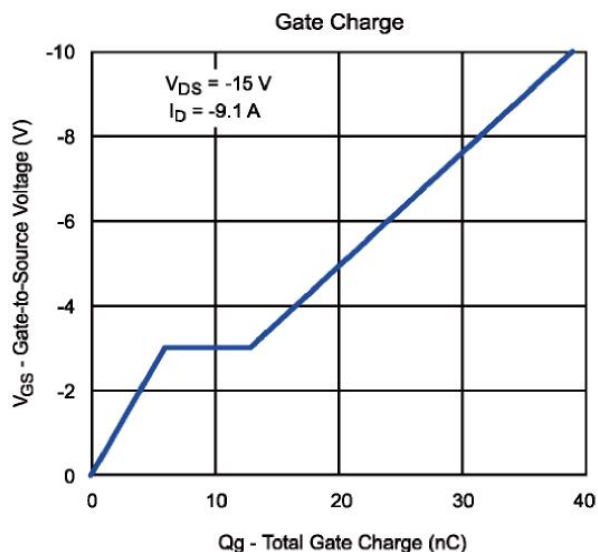
SOP-8 Package Outline
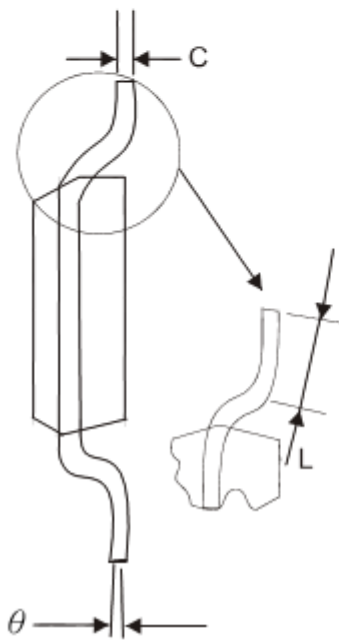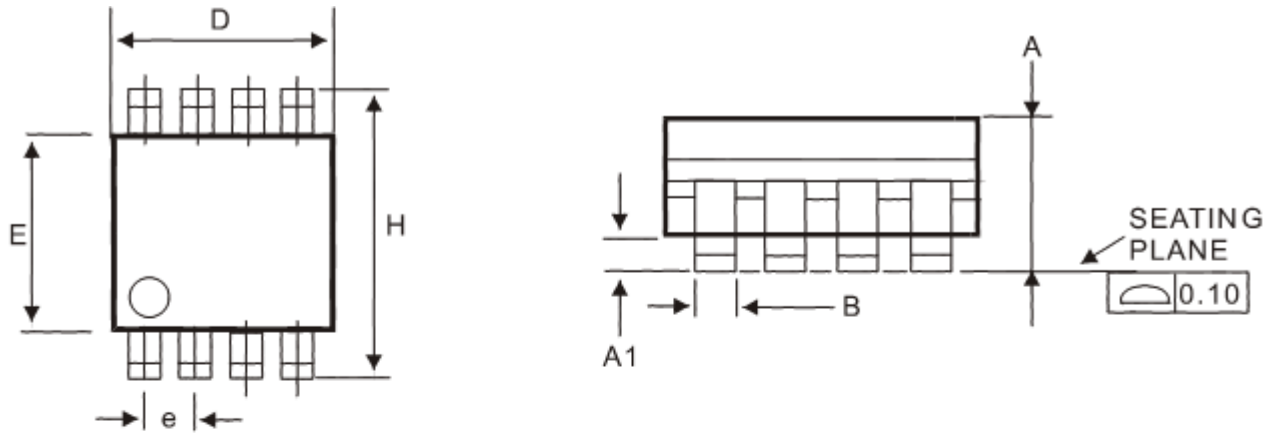
DIM	MILLIMETERS (mm)	
	MIN	MAX
A	1.35	1.75
A1	0.10	0.25
B	0.35	0.49
C	0.18	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27 BSC	
H	5.80	6.20
L	0.40	1.25
θ	0°	7°

Note: 1. Refer to JEDEC MS-012AA.

2. Dimension "D" does not include mold flash, protrusions

or gate burrs . Mold flash, protrusions or gate burrs shall not

exceed 0.15 mm per side.

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