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

GENERAL DESCRIPTION

The ME4822 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.

FEATURES

- 30V/12A,$R_{DS(ON)}$=11mΩ@V_{GS}=10V
- 30V/9.9A,$R_{DS(ON)}$=16mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

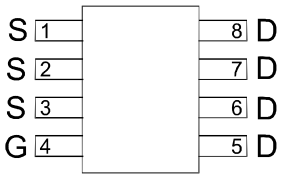
APPLICATIONS

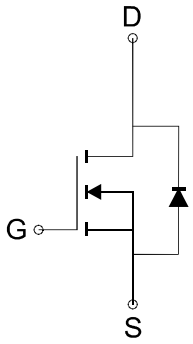
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

PIN CONFIGURATION

(SOP-8)

Top View





N-Channel MOSFET

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J =150℃)	T_A=25℃	I_D	12	A
	T_A=70℃		9.7	
Pulsed Drain Current		I_{DM}	60	A
Continuous Source Current (Diode Conduction)		I_S	2.3	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	T≦10 sec	$R_{\theta JA}$	50	℃/W
	Steady State		80	

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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	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0		3.0	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V			1	μA
		V_{DS}=24V, V_{GS}=0V T_J=55℃			5	
$I_{D(ON)}$	On-State Drain Current	V_{DS}≧5V, V_{GS}= 10V	30			A
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=12A		9	11	mΩ
		V_{GS}=4.5V, I_D=9.9A		12	16	
g_{FS}	Forward Transconductance	V_{DS}=15V, I_D=12A		8		S
V_{SD}	Diode Forward Voltage	I_S=2.3A, V_{GS}=0V		0.7	1.1	V
DYNAMIC						
Rg	Gate resistance	VDS=0V, VGS=0V, f=1MHz		1.5		Ω
Qg	Total Gate Charge	V_{DS}=15V, V_{GS}=5V, I_D=12A		15	30	nC
Qgs	Gate-Source Charge			10		
Qgd	Gate-Drain Charge			8		
$t_{d(on)}$	Turn-On Time	V_{DD}=15V, R_L =15Ω I_D=1A, V_{GEN}=10V R_G=6Ω		17	37	ns
t_r				14	34	
$t_{d(off)}$	Turn-Off Time			60	100	
t_f				10	20	

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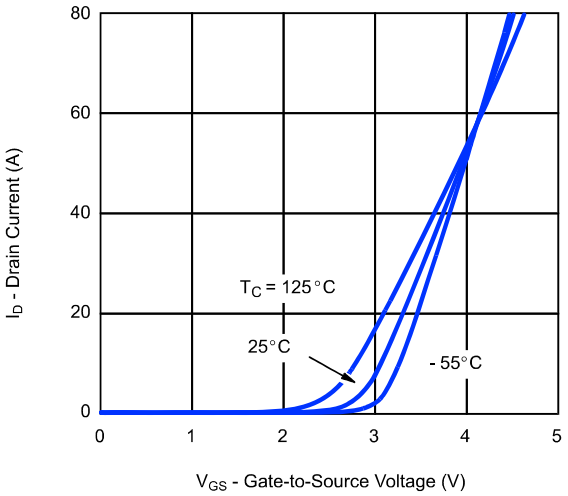
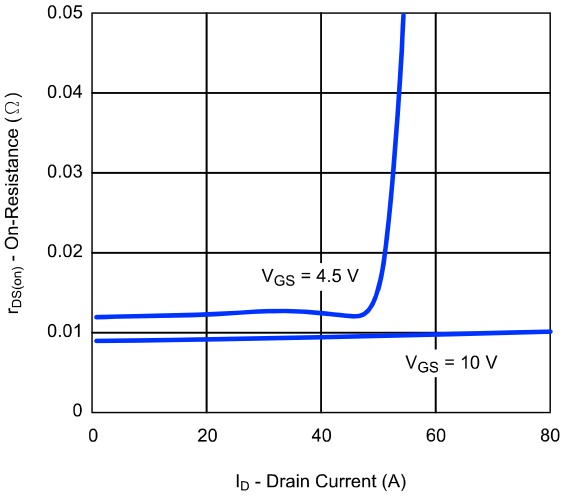
Typical Characteristics (T_J =25℃ Noted)

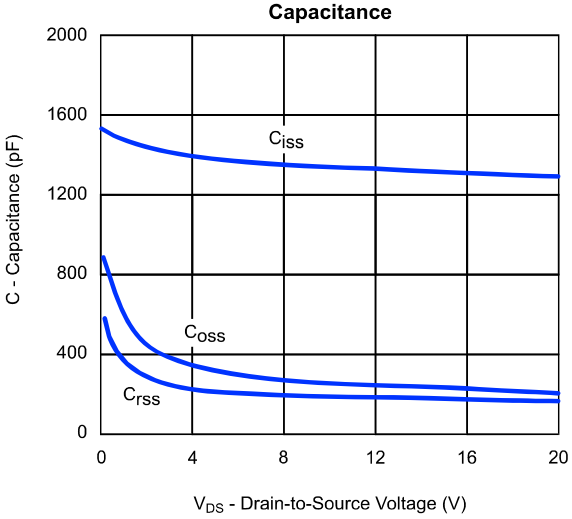
Transfer Characteristics



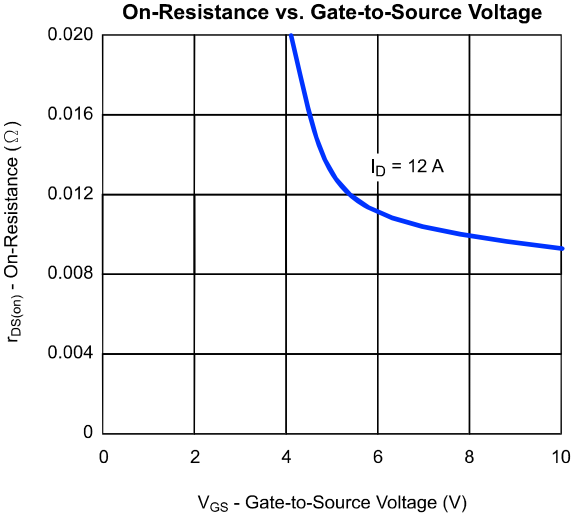
On-Resistance vs. Drain Current



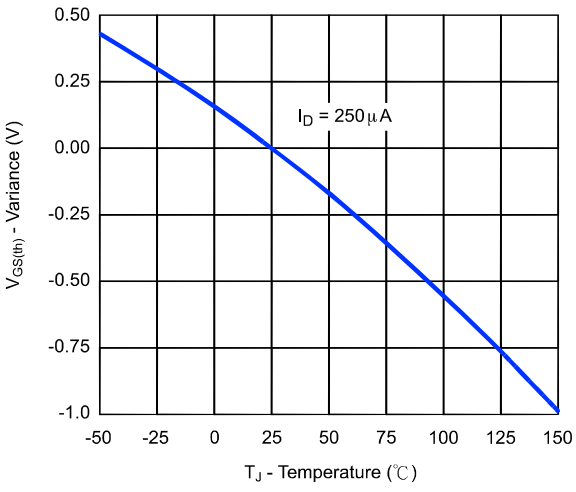
Capacitance



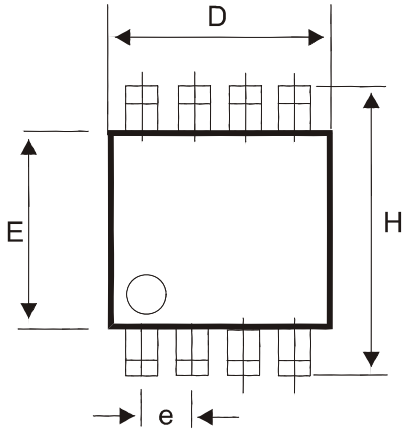
On-Resistance vs. Gate-to-Source Voltage

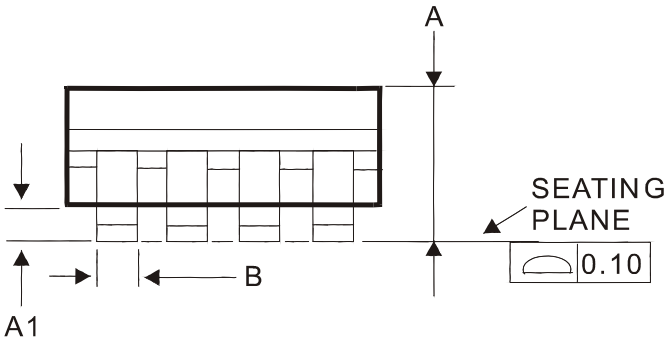


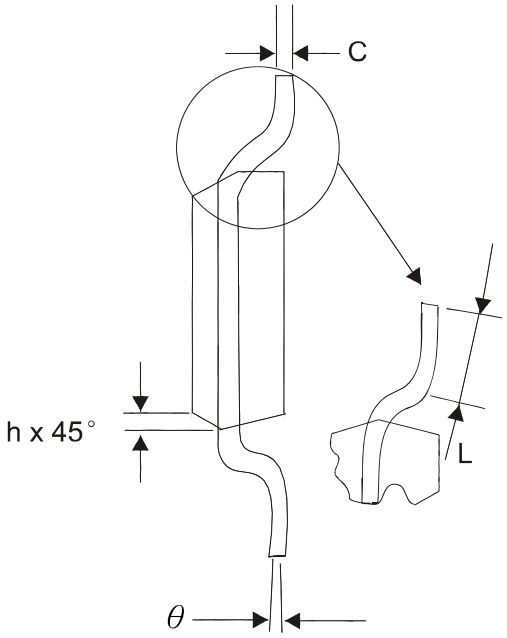
Threshold Voltage



SOP-8 Package Outline







DIM	MILLIMETERS	
	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
h	0.25	0.50
L	0.40	1.25
θ	0°	7°