

Dual N-Channel 20V(D-S) Enhancement Mode Mosfet

GENERAL DESCRIPTION

The ME6980ED Dual 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

- $R_{DS(ON)} \leq 14.5m\Omega @ V_{GS}=4.5V$
- $R_{DS(ON)} \leq 15m\Omega @ V_{GS}=4.0V$
- $R_{DS(ON)} \leq 17m\Omega @ V_{GS}=3.1V$
- $R_{DS(ON)} \leq 20m\Omega @ V_{GS}=2.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

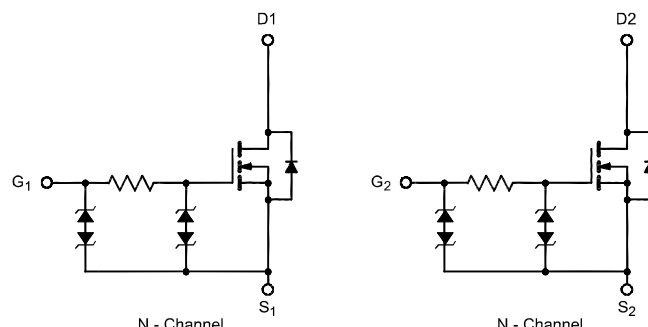
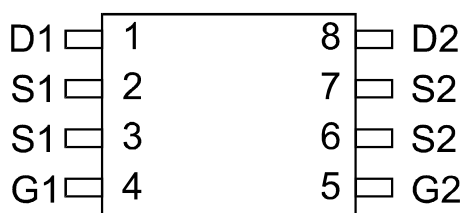
APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Load Switch
- DSC

PIN CONFIGURATION

(TSSOP-8)

Top View



*Typical value by design

Ordering Information: ME6980ED (Pb-free)

ME6980ED-G (Green product-Halogen free)

Absolute Maximum Ratings (TA=25°C Unless Otherwise Noted)

Parameter	Symbol	Maximum	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	±12	V
Continuous Drain Current (tJ=150°C)	I_D	TA=25°C	7.3
		TA=70°C	5.9
Pulsed Drain Current	I_{DM}	29	A
Maximum Power Dissipation	P_D	TA=25°C	1.3
		TA=70°C	0.8
Operating Junction Temperature	T_J	-55 to 150	°C
Thermal Resistance-Junction to Ambient*	$R_{\theta JA}$	100	°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)

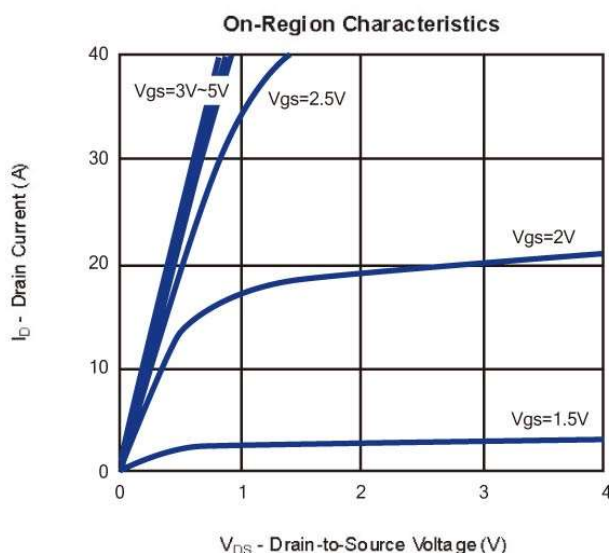
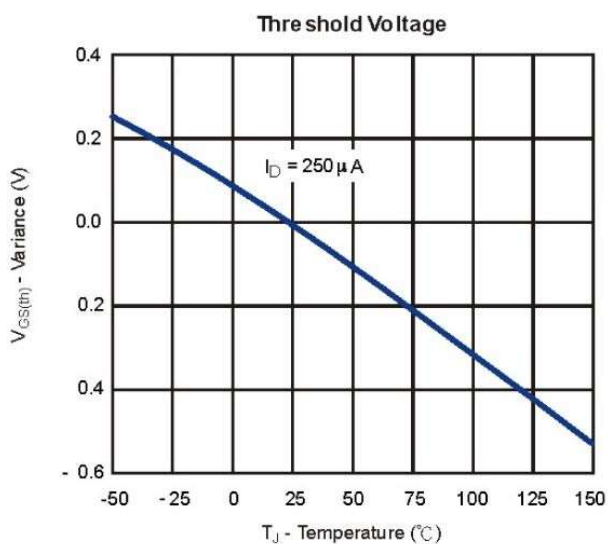
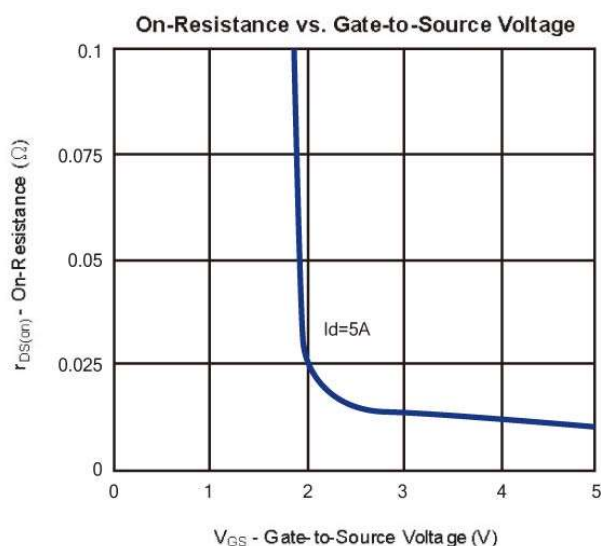
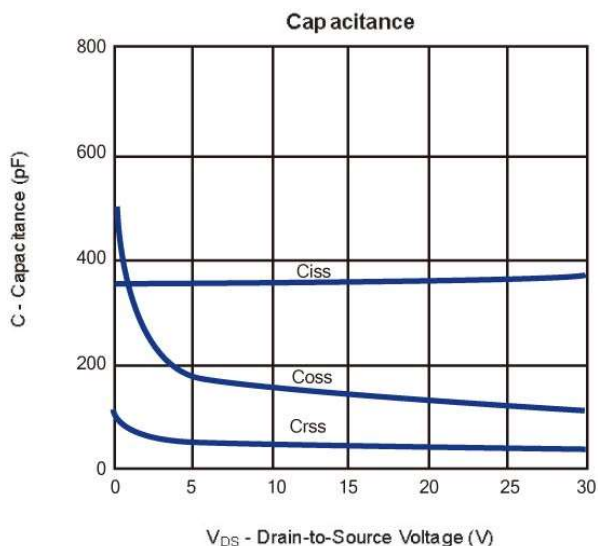
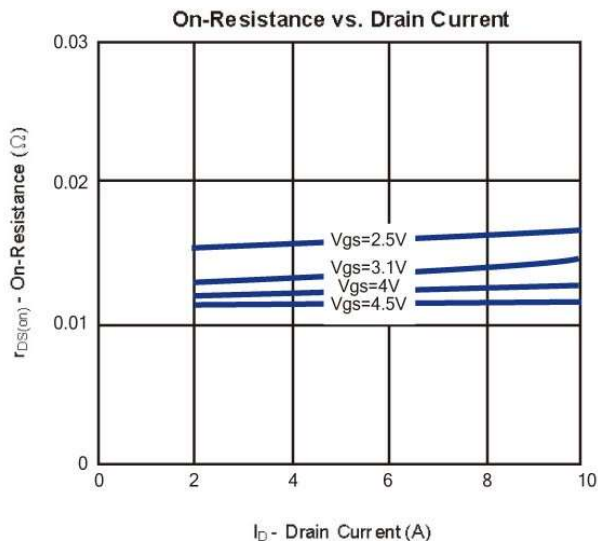
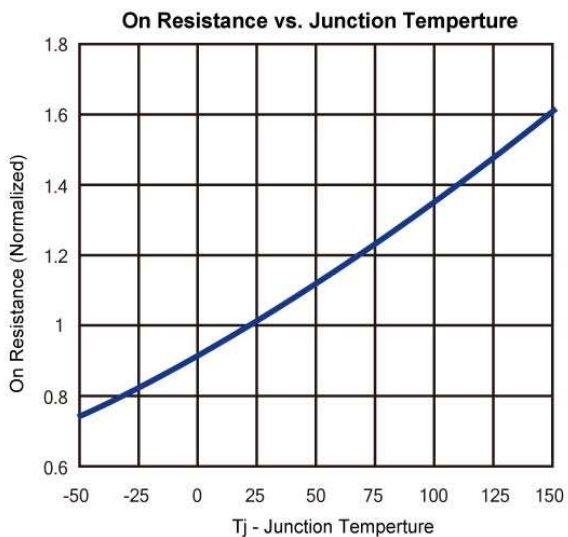
Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μA	20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250 μA	0.6		1.2	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±10	uA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V			1	μA
R _{DS(ON)}	Drain-Source On-State Resistance ^a	V _{GS} =4.5V, I _D =5A		12	14.5	mΩ
		V _{GS} =4V, I _D = 5A		12.5	15	
		V _{GS} =3.1V, I _D = 5A		13.5	17	
		V _{GS} =2.5V, I _D = 5A		16	20	
V _{SD}	Diode Forward Voltage	I _S =10A, V _{GS} =0V		0.9	1.2	V
DYNAMIC						
Q _g	Total Gate Charge	V _{DS} =16V, V _{GS} =10V, I _D =10A		36		nC
Q _g	Total Gate Charge	V _{DS} =16V, V _{GS} =4.5V, I _D =10A		19		
Q _{gs}	Gate-Source Charge			3.2		
Q _{gd}	Gate-Drain Charge			7.4		
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz		365		pF
C _{oss}	Output Capacitance			123		
C _{rss}	Reverse Transfer Capacitance			37		
t _{d(on)}	Turn-On Delay Time	V _{DD} =10V, R _L =2Ω I _D =5A, V _{GEN} =4V R _G =10Ω		0.8		μs
t _r	Turn-On Rise Time			1.1		
t _{d(off)}	Turn-Off Delay Time			4.6		
t _f	Turn-Off Fall Time			2.3		

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

Matsuki reserves the right to improve product design, functions and reliability without notice.

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Typical Characteristics (T_J =25°C Noted)



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