N-Channel 100-V (D-S) MOSFET

GENERAL DESCRIPTION

The ME15N10 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.

FEATURES

- $R_{DS(ON)} \leqq 100m\Omega$@VGS=10V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

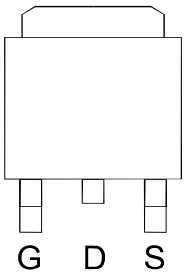
APPLICATIONS

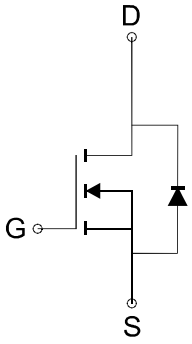
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION

(TO-252-3L)

Top View





N-Channel MOSFET

Ordering Information: ME15N10 (Pb-free)

ME15N10-G (Green product-Halogen free)

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(Tj=150℃)	T_C=25℃	I_D	14.7	A
	T_C=70℃		13.6	
Pulsed Drain Current		I_{DM}	59	A
Maximum Power Dissipation	T_C=25℃	P_D	34.7	W
	T_C=70℃		22.2	
Operating Junction Temperature		T_J	-55 to 150	℃
Thermal Resistance-Junction to Case *		$R_{\theta JC}$	3.6	℃/W

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

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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	100			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1		3	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance [a]	V_{GS}=10V, I_D= 8A		80	100	mΩ
V_{SD}	Diode Forward Voltage	I_S=8A, V_{GS}=0V		0.9	1.2	V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=80V, V_{GS}=10V, I_D=10A		24		nC
Qg	Total Gate Charge	V_{DS}=80V, V_{GS}=4.5V, I_D=10A		13		
Qgs	Gate-Source Charge			4.6		
Qgd	Gate-Drain Charge			7.6		
Ciss	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		890		pF
Coss	Output Capacitance			58		
Crss	Reverse Transfer Capacitance			23		
Rg	Gate-Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		0.9		Ω
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=50V, R_L=5Ω, V_{GEN}=10V, R_G=1Ω		14		ns
tr	Turn-On Rise Time			33		
$t_{d(off)}$	Turn-Off Delay Time			39		
tf	Turn-Off Fall Time			5		

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

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

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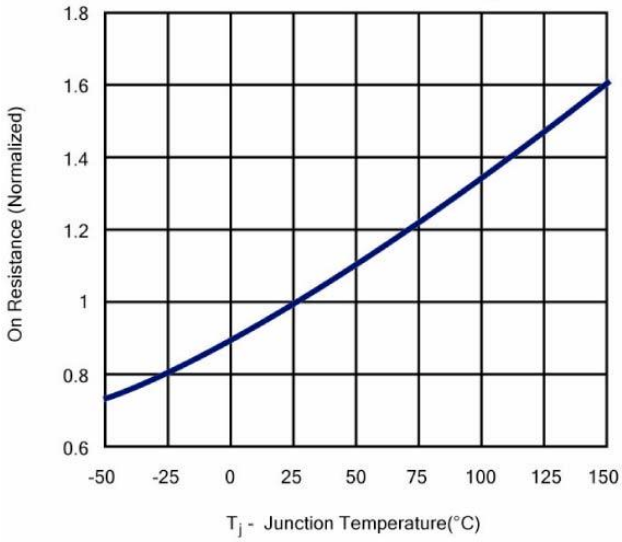
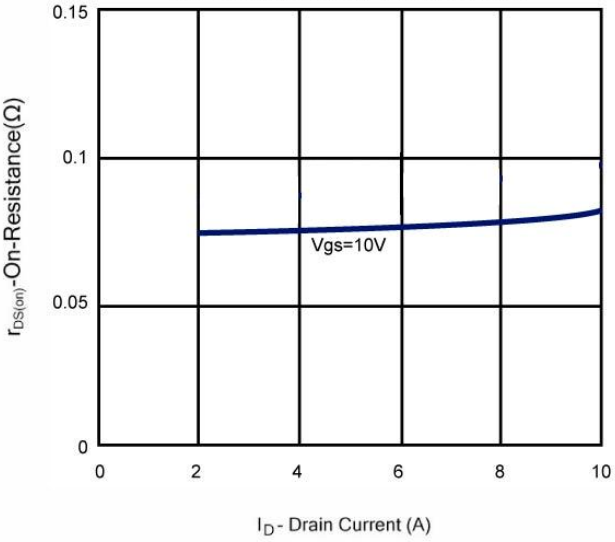
Typical Characteristics (T_J =25℃ Noted)

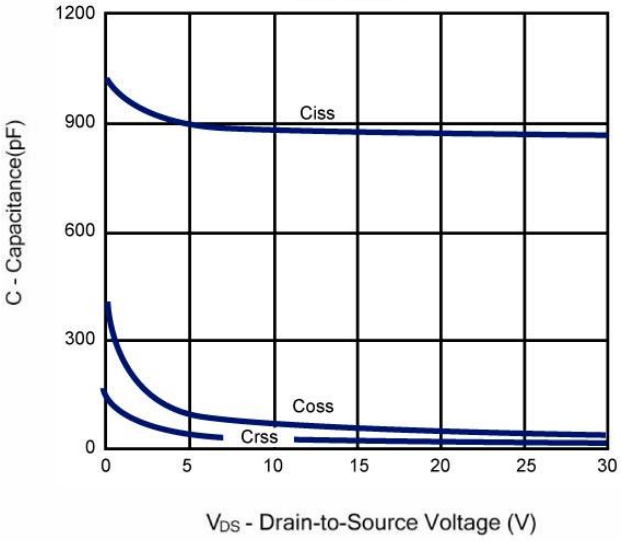
On Resistance vs. Junction Temperature



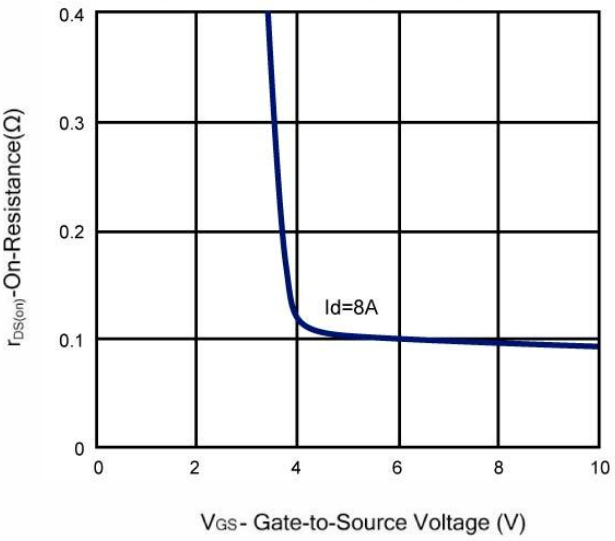
On-Resistance vs. Drain Current



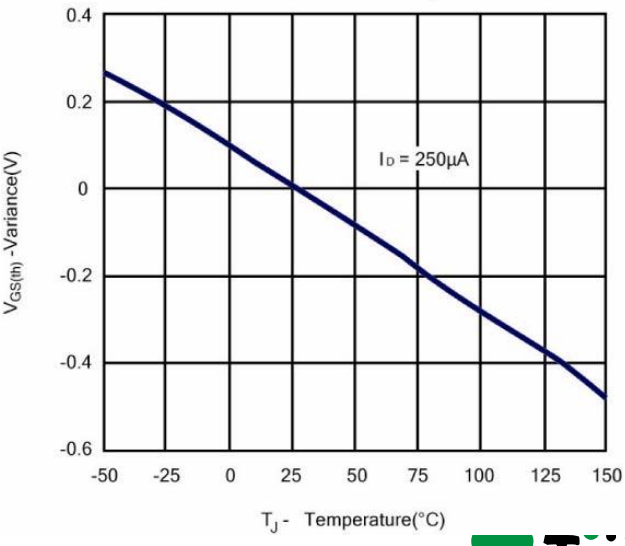
Capacitance



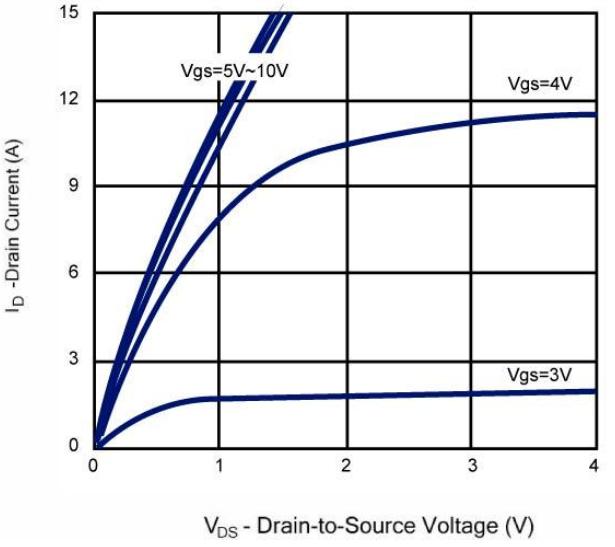
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



On-Region Characteristics



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