ME20N10/ME20N10-G

N- Channel 100V (D-S) MOSFET

GENERAL DESCRIPTION

The ME20N10 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 , and low in-line power loss are needed in a very small outline surface mount package.

FEATURES

- $R_{DS(ON)} \leqq 78m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} \leqq 98m\Omega @ V_{GS}=5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

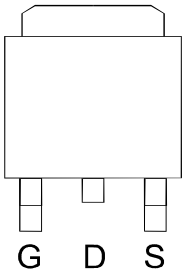
APPLICATIONS

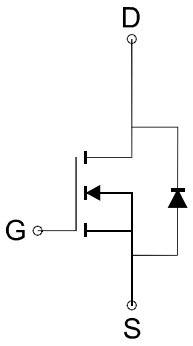
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION

(TO-252-3L)

Top View





N-Channel MOSFET

Ordering Information: ME20N10 (Pb-free)

ME20N10-G (Green product-Halogen free)

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

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current*	Tc=25℃	I_D	19	A
	Tc=70℃		15	
Pulsed Drain Current		I_{DM}	76	A
Maximum Power Dissipation*	Tc=25℃	P_D	45	W
	Tc=70℃		29	
Operating Junction Temperature		T_J	-55 to 150	℃
Thermal Resistance-Junction to Case*		$R_{\theta JC}$	2.8	℃/W

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

N- Channel 100V (D-S) MOSFET

Electrical Characteristics (T_C =25℃ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
$V_{(BR)DSS}$	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		2.5	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-State Resistance[a]	V_{GS}=10V, I_D= 12A		65	78	mΩ
		V_{GS}=5V, I_D= 12A		75	98	
V_{SD}	Diode Forward Voltage	I_S=12A, V_{GS}=0V			1.3	V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=80V, V_{GS}=10V, I_D=15.7A		28.6		nC
Qg	Total Gate Charge	V_{DS}=80V, V_{GS}=5V, I_D=15.7A		16.8		
Qgs	Gate-Source Charge			7.3		
Qgd	Gate-Drain Charge			9.7		
Ciss	Input capacitance	V_{DS}=15V, V_{GS}=0V, F=1MHz		1120		pF
Coss	Output Capacitance			83		
Crss	Reverse Transfer Capacitance			54		
Rg	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		1.4		Ω
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=50V, R_L =3.3Ω V_{GEN}=5V, R_G=4.7Ω		25.5		ns
t_r	Turn-On Rise Time			429		
$t_{d(off)}$	Turn-Off Delay Time			45.5		
t_f	Turn-On Fall Time			91.2		

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.

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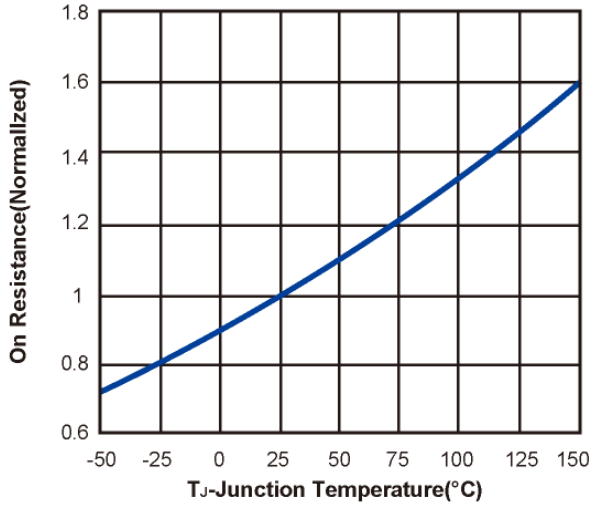
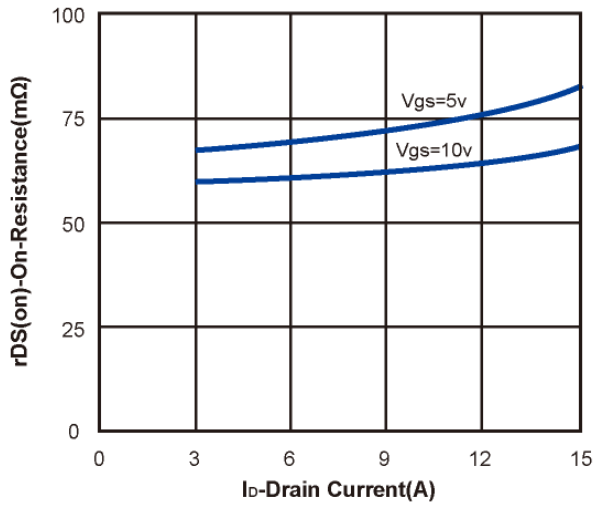
Typical Characteristics (T_J =25℃ Noted)

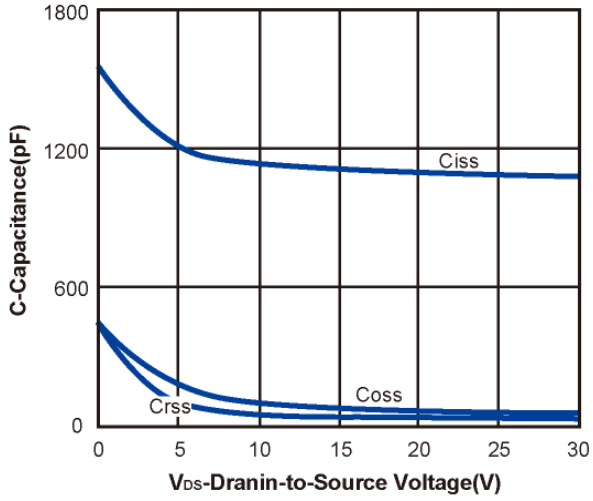
On Resistance vs. Junction Temperature



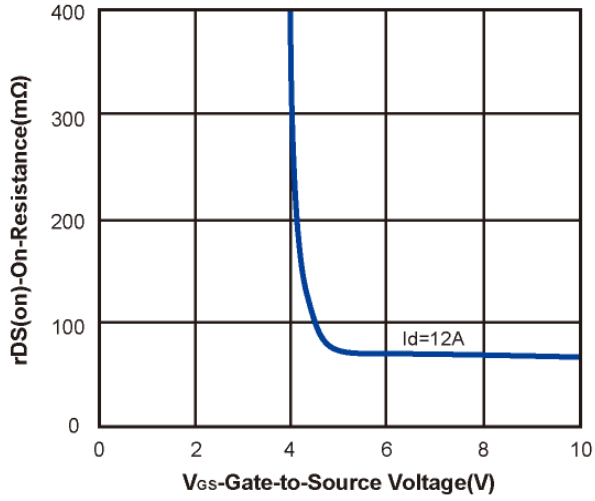
On Resistance vs. Drain Current



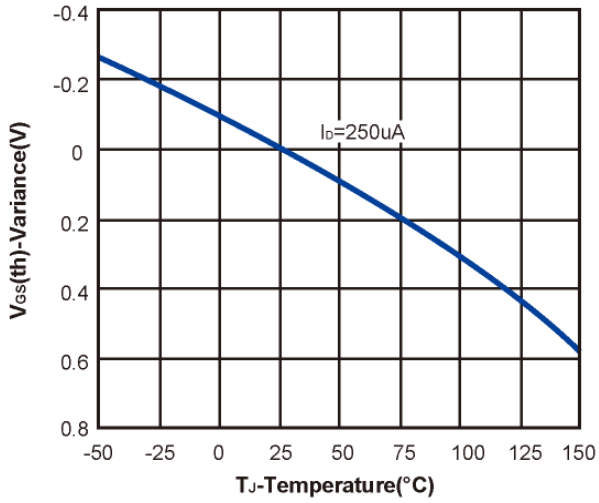
Capacitance



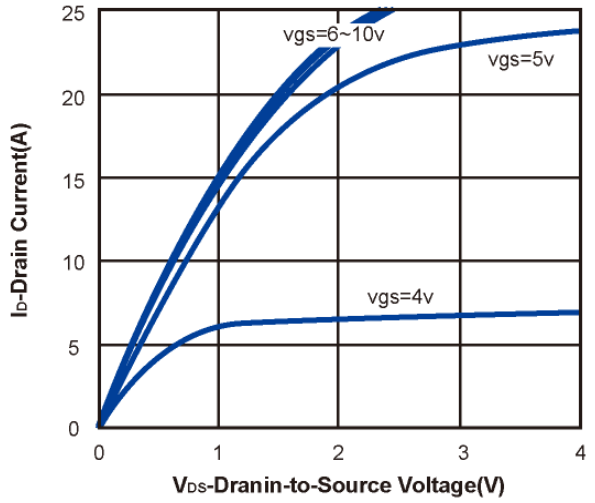
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage



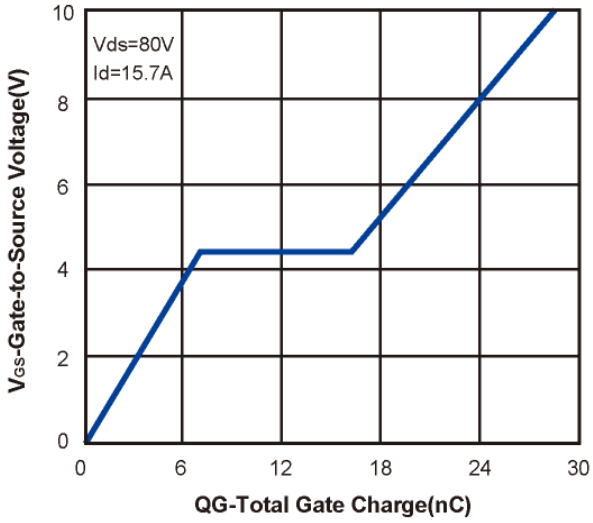
On-Region Characteristics



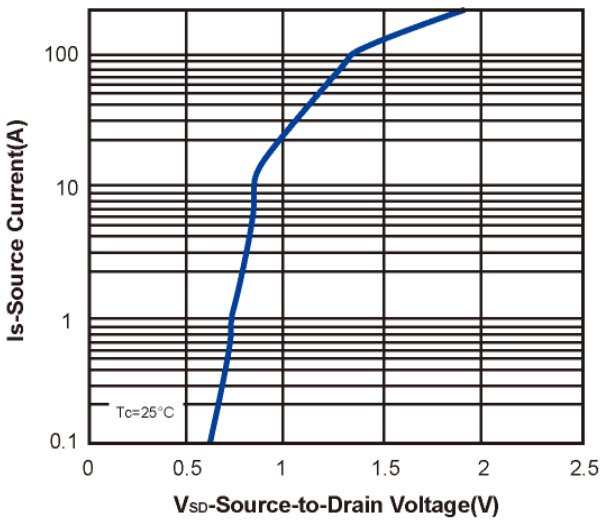
N- Channel 100V (D-S) MOSFET

Typical Characteristics (T_J =25℃ Noted)

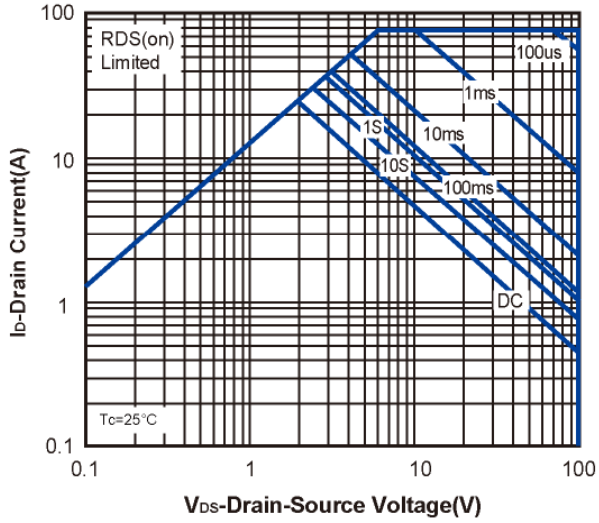
Gate Charge



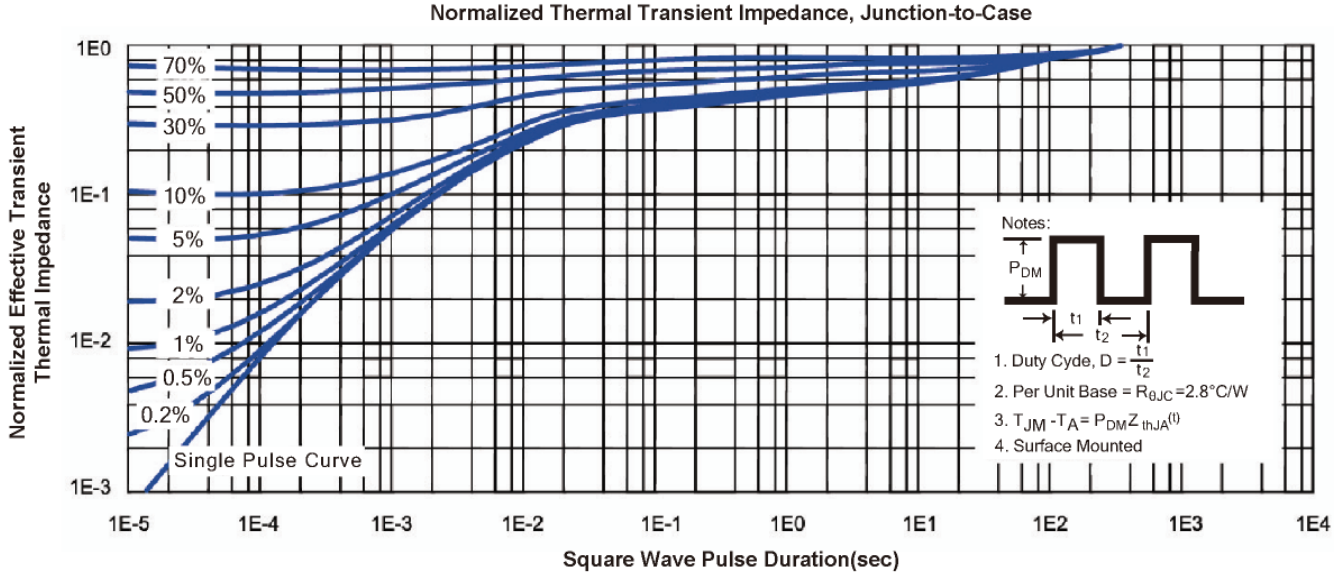
Body-diode characteristics



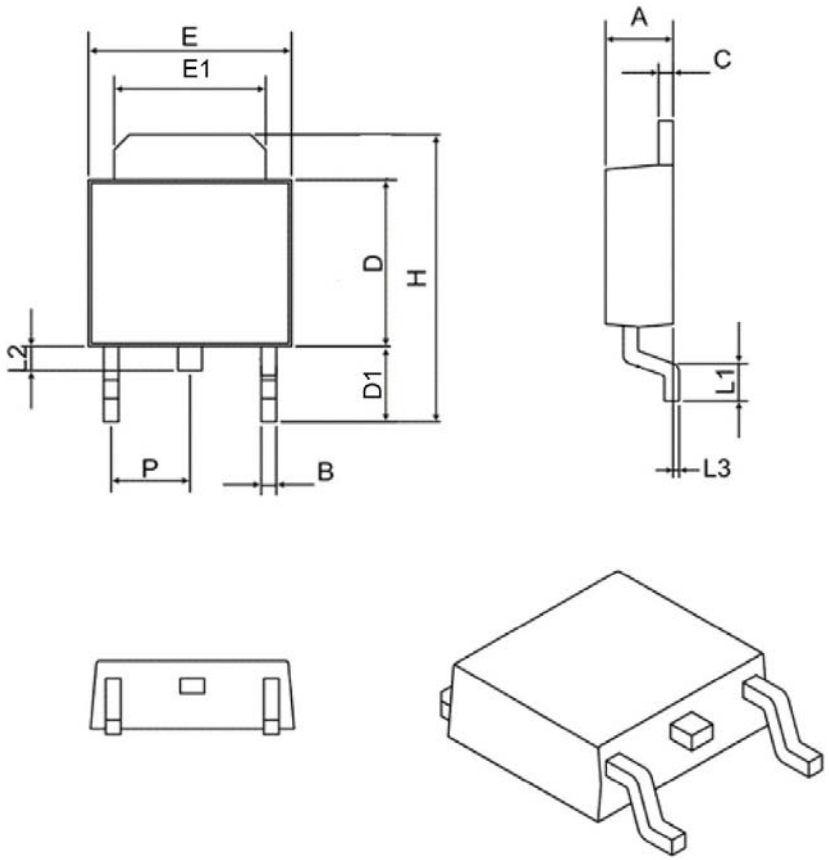
Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case



TO252-3L Package Outline



SYMBOL	MIN	MAX
A	2.10	2.50
B	0.40	0.90
C	0.40	0.90
D	5.30	6.30
D1	2.20	2.90
E	6.30	6.75
E1	4.80	5.50
L1	0.90	1.80
L2	0.50	1.10
L3	0.00	0.20
H	8.90	10.40
P	2.30 BSC	