

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

GENERAL DESCRIPTION

The ME50N10F 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.

FEATURES

- $R_{DS(ON)} \leq 30m\Omega @ V_{GS}=10V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

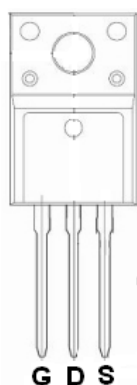
APPLICATIONS

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

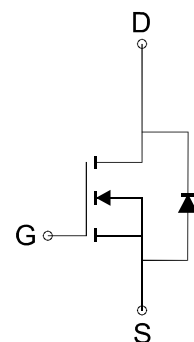
PIN CONFIGURATION

(TO-220F)

Top View



G D S



N-Channel MOSFET

Ordering Information: ME50N10F (Pb-free)

ME50N10F-G (Green product-Halogen free)

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

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current	Tc=25°C	I_D	19.7	A
	Tc=70°C		16.5	
Pulsed Drain Current ^a		I_{DM}	79	A
Power Dissipation	Tc=25°C	P_D	23.4	W
	Tc=70°C		16.4	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	°C
Thermal Resistance-Junction to Case*		$R_{\theta JC}$	6.4	°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)

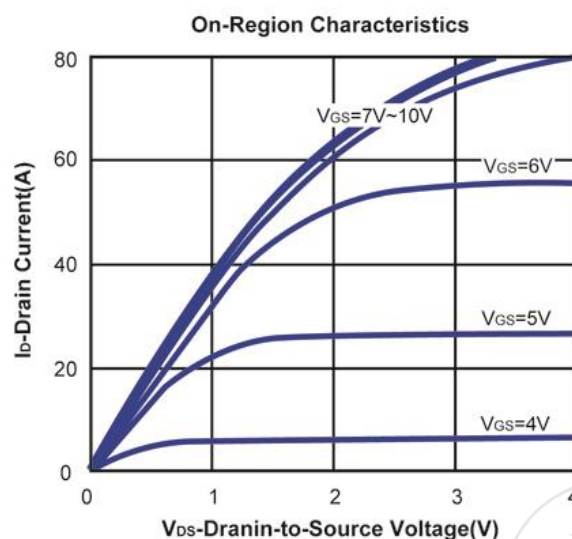
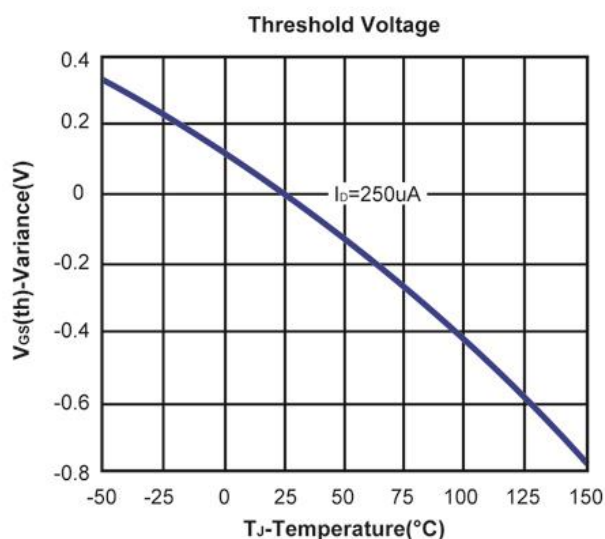
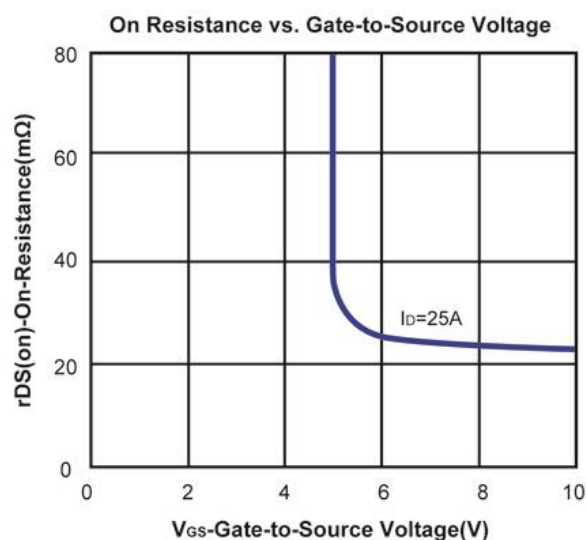
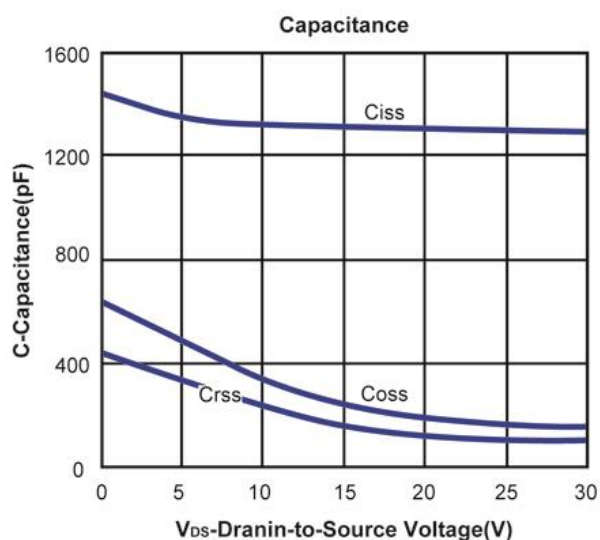
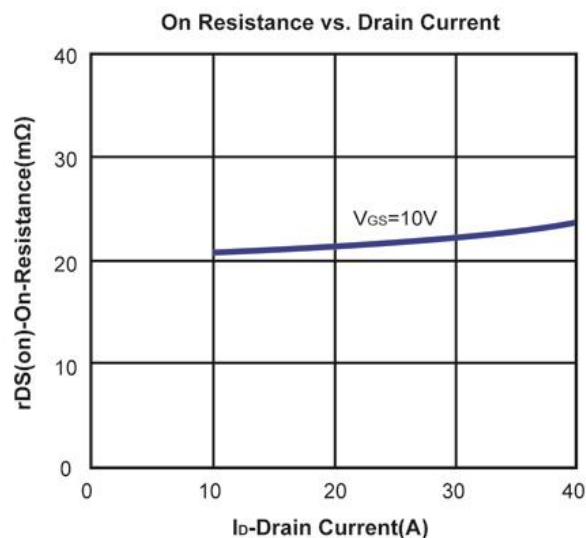
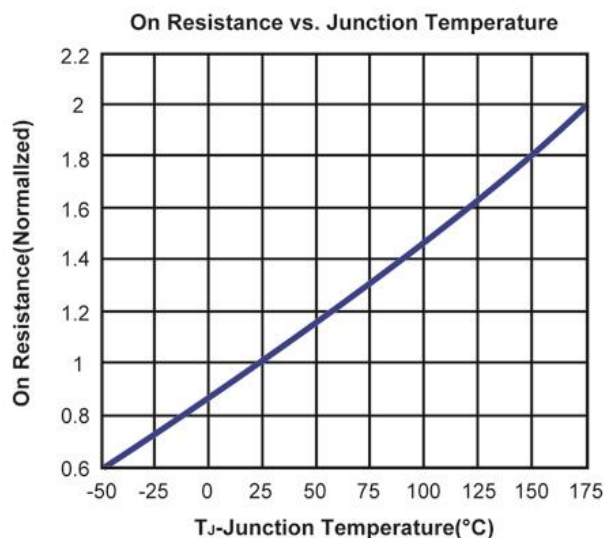
Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μA	100			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250 μA	2.0		4.0	V
I _{GSS}	Gate-Body Leakage	V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V			1	μA
R _{DS(ON)}	Drain-Source On-Resistance*	V _{GS} =10V, I _D =25A		23	30	mΩ
V _{SD}	Diode Forward Voltage *	I _S =55A, V _{GS} =0V			1.5	V
DYNAMIC						
Q _g	Total Gate Charge	V _{DD} =80V, V _{GS} =10V, I _D =55A		70.9		nC
Q _{gs}	Gate-Source Charge			17.1		
Q _{gd}	Gate-Drain Charge			23.8		
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz		1295		pF
C _{oss}	Output Capacitance			166		
C _{rss}	Reverse Transfer Capacitance			110		
t _{d(on)}	Turn-On Delay Time	V _{DS} =50V, R _L =50Ω V _{GS} =10V, R _G =25Ω		27.2		ns
t _r	Turn-On Rise Time			11.8		
t _{d(off)}	Turn-Off Delay Time			76.3		
t _f	Turn-Off Fall Time			21.2		

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.

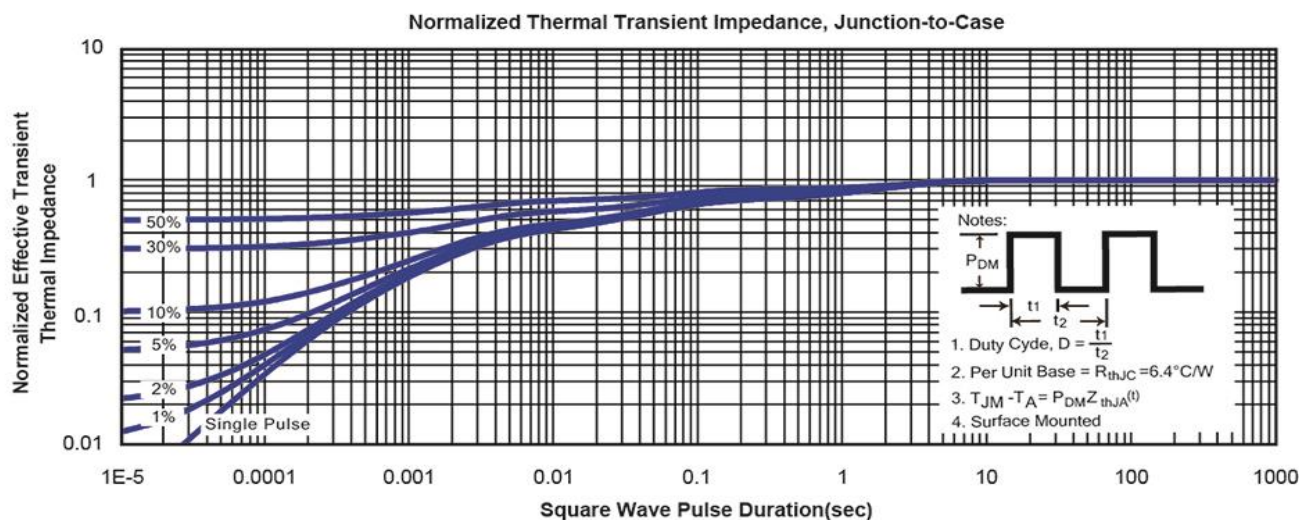
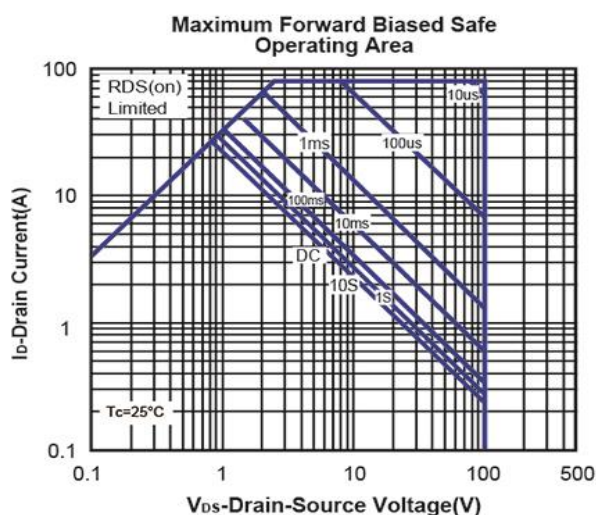
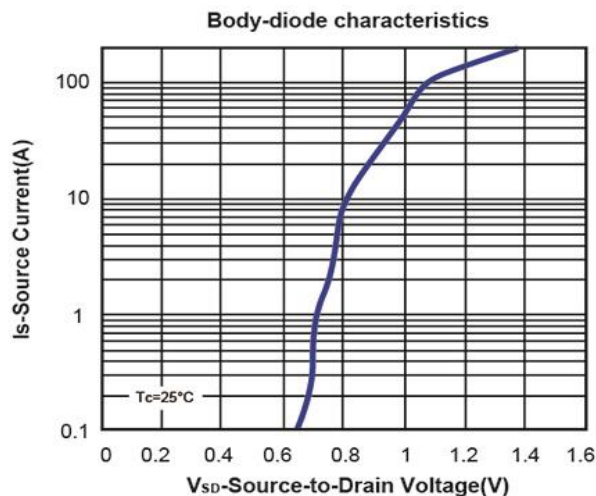
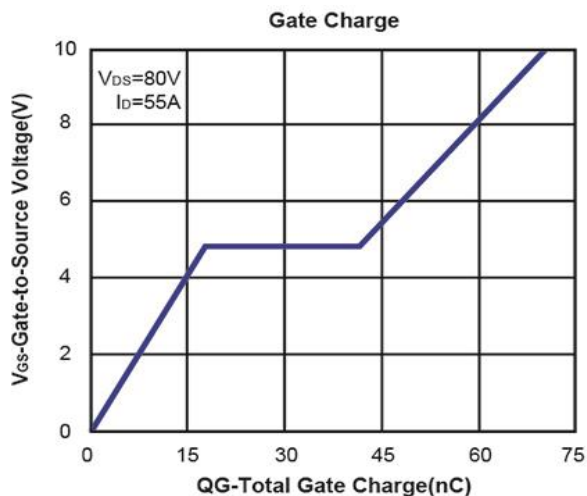
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Typical Characteristics (T_J = 25°C Noted)

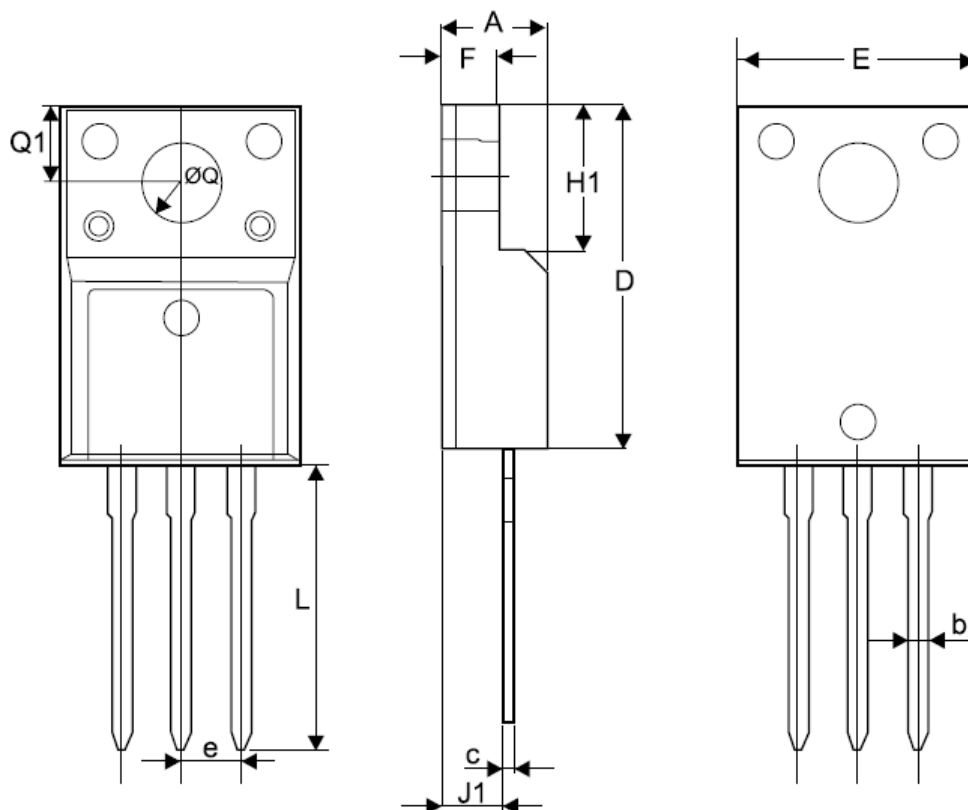


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Typical Characteristics (T_J = 25°C Noted)



TO-220F Package Outline



Symbol	MILLIMETERS(mm)	
	MIN	MAX
A	4.40	5.00
b	0.60	1.00
C	0.30	0.70
D	15.40	16.40
E	6.96	10.46
F	2.30	2.80
e	2.54 TYP	
H1	6.40	7.00
J1	2.45	3.05
L	12.28	13.68
Ø Q	2.92	3.38
Q1	3.05	3.55