N-Channel 60-V (D-S) MOSFET

GENERAL DESCRIPTION

The ME35N06F 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.

FEATURES

- $R_{DS(ON)} \leqq 32m\Omega$ @VGS=10V
- $R_{DS(ON)} \leqq 40m\Omega$ @VGS=4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

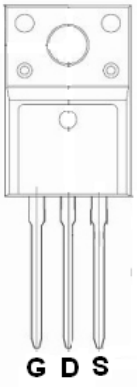
APPLICATIONS

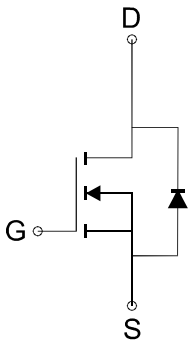
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION

(TO-220F)

Top View





N-Channel MOSFET

Ordering Information: ME35N06F (Pb-free)

ME35N06F-G (Green product-Halogen free)

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

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25℃	I_D	25.8	A
	T_C=70℃		21.6	
Pulsed Drain Current		I_{DM}	103	A
Maximum Power Dissipation	T_C=25℃	P_D	40.3	W
	T_C=70℃		28.2	
Operating Junction Temperature		T_J	-55 to 175	℃
Thermal Resistance-Junction to Case *		$R_{\theta JC}$	3.72	℃/W

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

N-Channel 60-V (D-S) MOSFET

Electrical Characteristics (T_C =25℃ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	60			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}=48V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance [a]	V_{GS}=10V, I_D= 20A		27	32	mΩ
		V_{GS}=4.5V, I_D= 16A		34	40	
V_{SD}	Diode Forward Voltage	I_S=1A, V_{GS}=0V		0.7		V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=30V, V_{GS}=10V, I_D=20A		23.5		nC
Qg	Total Gate Charge	V_{DS}=30V, V_{GS}=4.5V, I_D=20A		12.2		
Qgs	Gate-Source Charge			5.6		
Qgd	Gate-Drain Charge			7.5		
Ciss	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		972		pF
Coss	Output Capacitance			92		
Crss	Reverse Transfer Capacitance			66		
Rg	Gate-Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		0.9		Ω
td(on)	Turn-On Delay Time	V_{DS}=30V, R_L =1.5Ω, V_{GEN}=10V, R_G=3Ω		13		ns
tr	Turn-On Rise Time			20.8		
td(off)	Turn-Off Delay Time			40.4		
tf	Turn-Off Fall Time			4.2		

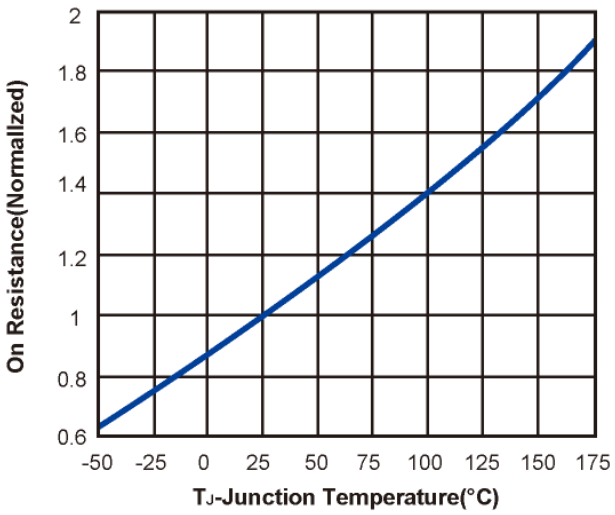
Notes: a. Pulse test: pulse width≦ 300us, duty cycle≦ 2%,Guaranteed by design, not subject to production testing.

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

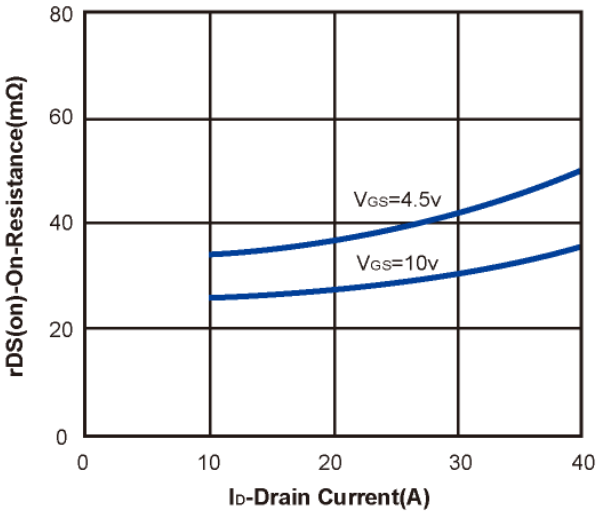
N-Channel 60-V (D-S) MOSFET

Typical Characteristics (T_J =25℃ Noted)

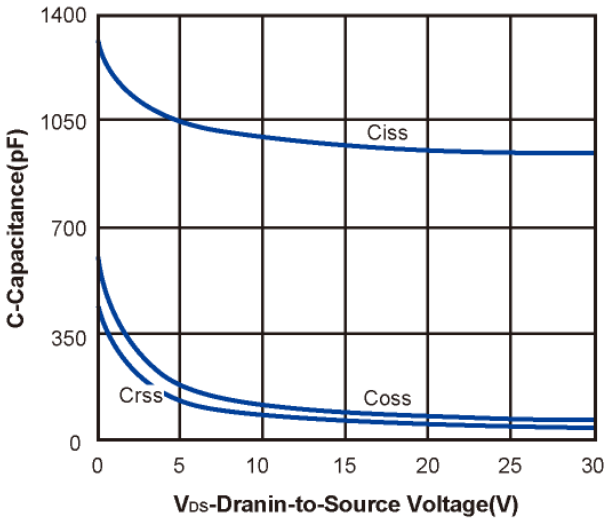
On Resistance vs. Junction Temperature



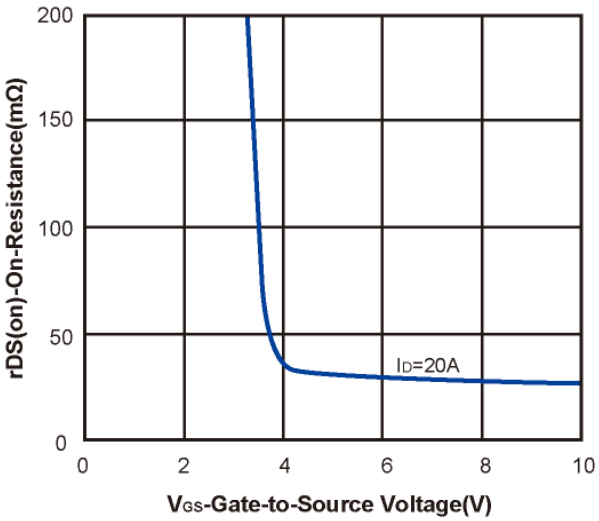
On Resistance vs. Drain Current



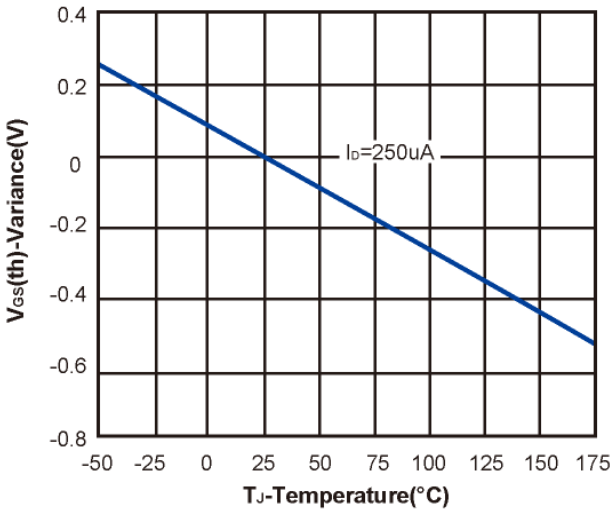
Capacitance



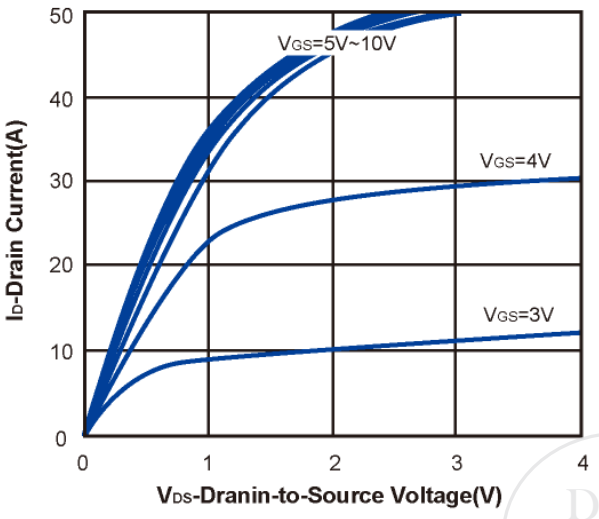
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage



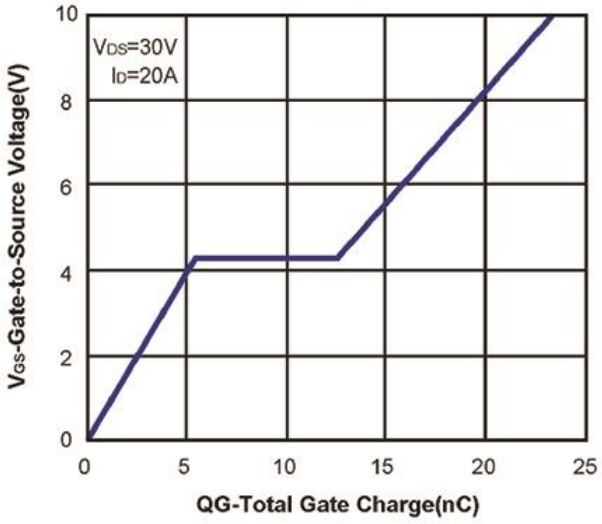
On-Region Characteristics



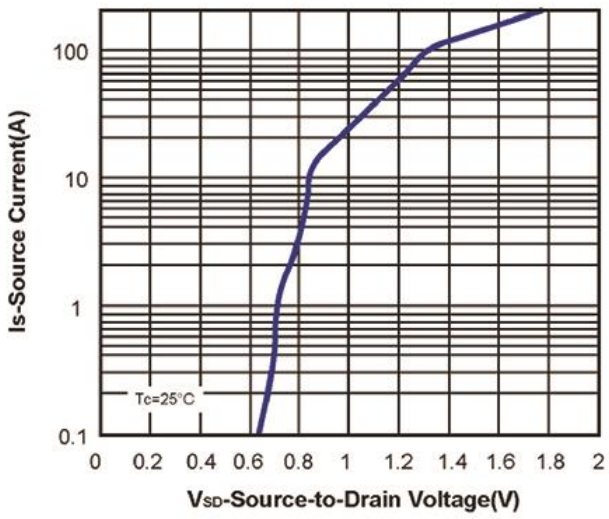
N-Channel 60-V (D-S) MOSFET

Typical Characteristics (T_J =25℃ Noted)

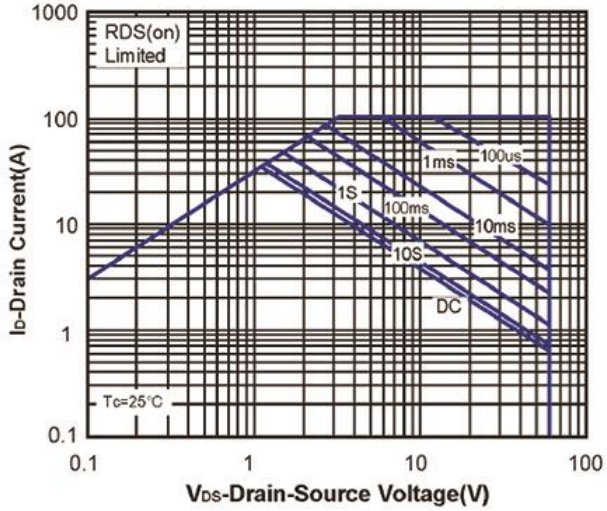
Gate Charge



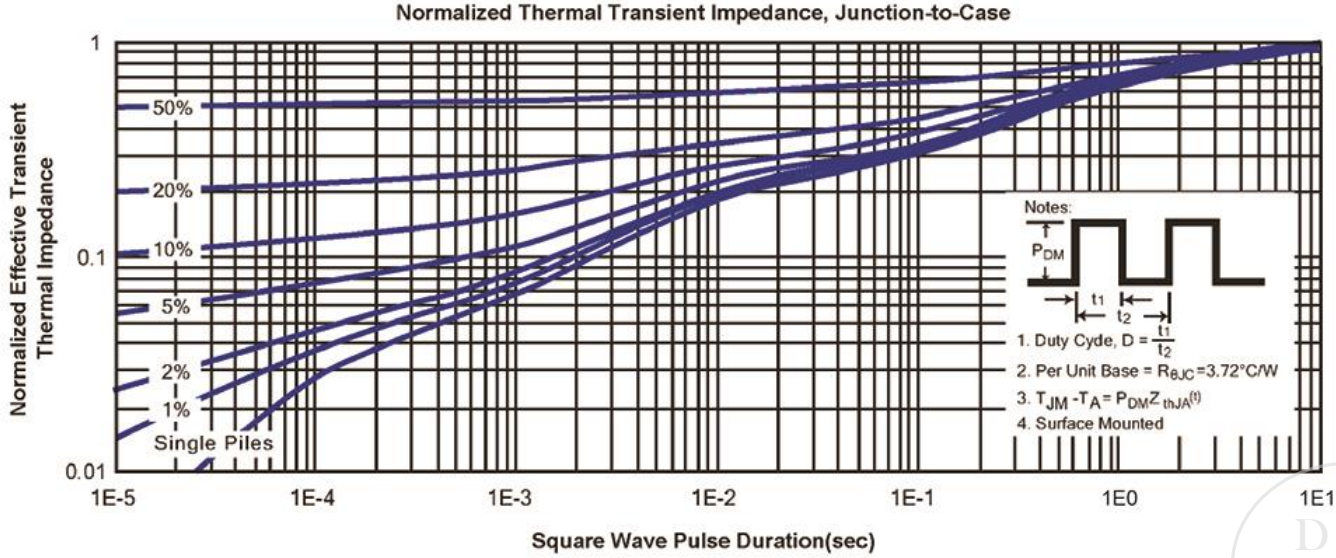
Body-diode characteristics



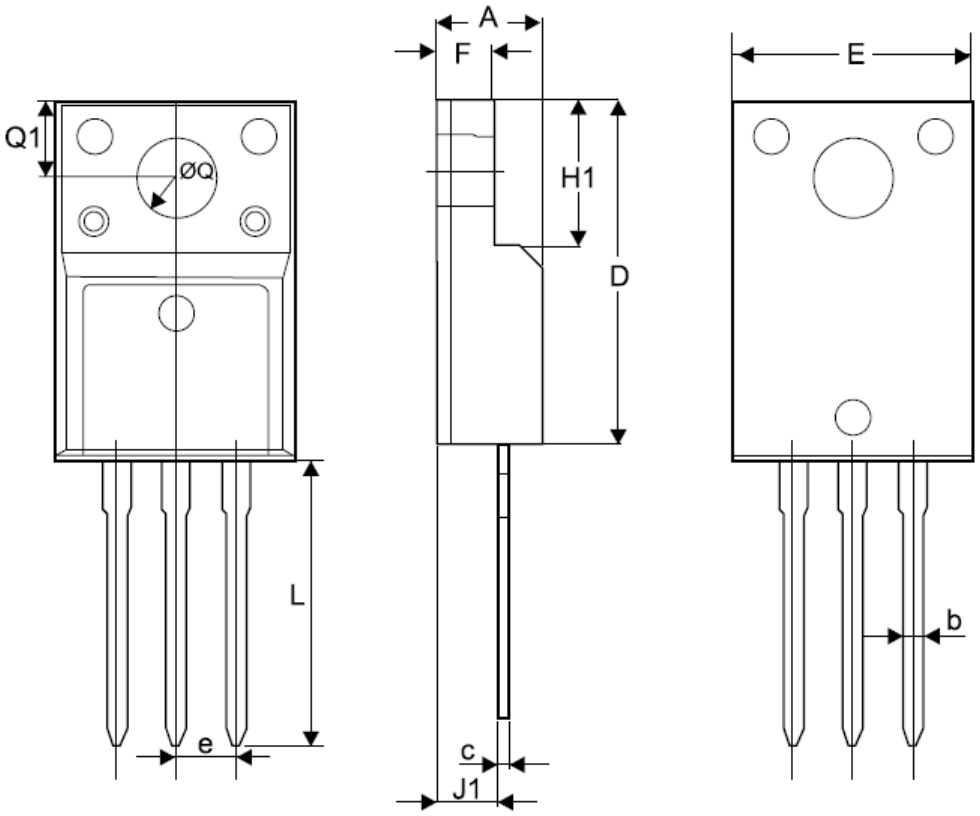
Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case



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