ME20P03F/ME20P03F-G

P-Channel 30V (D-S) MOSFET

GENERAL DESCRIPTION

The ME20P03F is the P-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.

FEATURES

- $R_{DS(ON)} \leqq 31.5m\Omega @ V_{GS}=-10V$
- $R_{DS(ON)} \leqq 44m\Omega @ V_{GS}=-4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

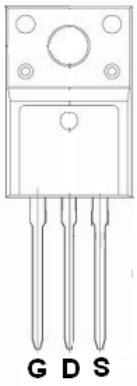
APPLICATIONS

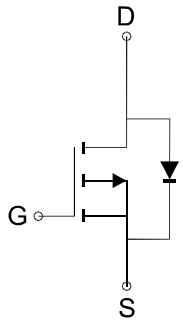
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION

(TO-220F)

Top View





P-Channel MOSFET

Ordering Information: ME20P03F (Pb-free)

ME20P03F-G (Green product-Halogen free)

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

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25℃	I_D	-29.7	A
	T_C=70℃		-24.9	
Pulsed Drain Current		I_{DM}	-119	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.

P-Channel 30V (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	-30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-1		-3	V
I_{GSS}	Gate-Body Leakage	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-30, V_{GS}=0V			-1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance*	V_{GS}=-10V, I_D=-18A		26	31.5	mΩ
		V_{GS}=-4.5V, I_D=-10A		34	44	
V_{SD}	Diode Forward Voltage*	I_{SD}=-18A, V_{GS}=0V			-1.3	V
DYNAMIC						
Qg	Total Gate Charge	V_{DD}=-25V, V_{GS}=-4.5V, I_D=-18A		17.6		nc
Qgs	Gate-Source Charge			7.3		
Qgd	Gate-Drain Charge			9.3		
Ciss	Input Capacitance	V_{DS}=-25V, V_{GS}=0V, f=1MHz		887		pF
Coss	Output Capacitance			110		
Crss	Reverse Transfer Capacitance			96.2		
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=-15V, I_D=-18A, V_{GS} =-10V, R_G=3.3Ω, R_L=0.8Ω		34		ns
t_r	Turn-On Rise Time			17		
$t_{d(off)}$	Turn-Off Delay Time			51		
t_f	Turn-Off Fall Time			10		

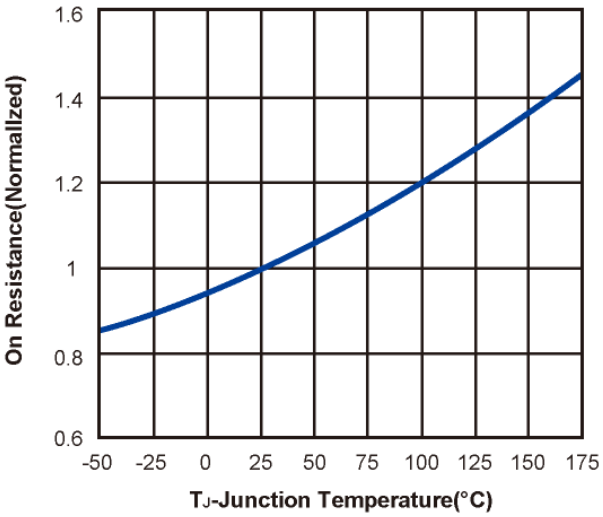
Notes: a, pulse test: pulse width≦ 300us, duty cycle≦ 2%, Guaranteed by design, not subject to production testing.

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

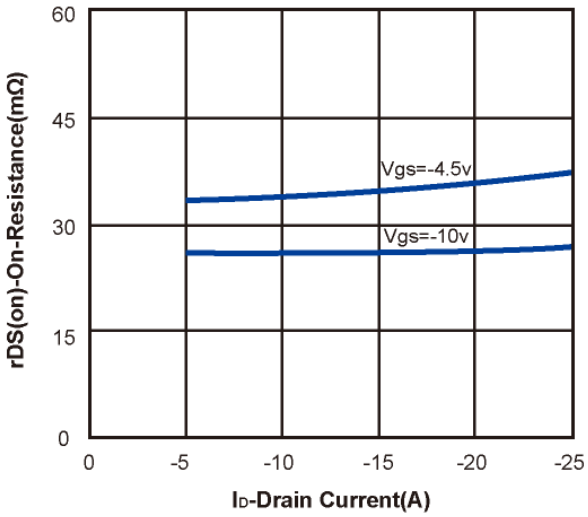
P-Channel 30V (D-S) MOSFET

Typical Characteristics (T_J =25℃ Noted)

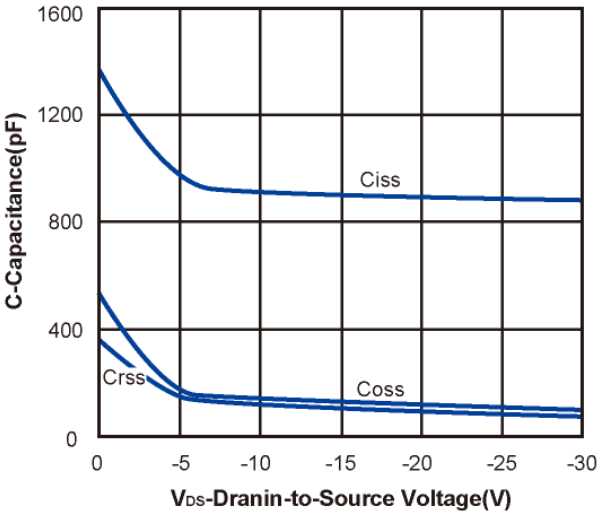
On Resistance vs. Junction Temperature



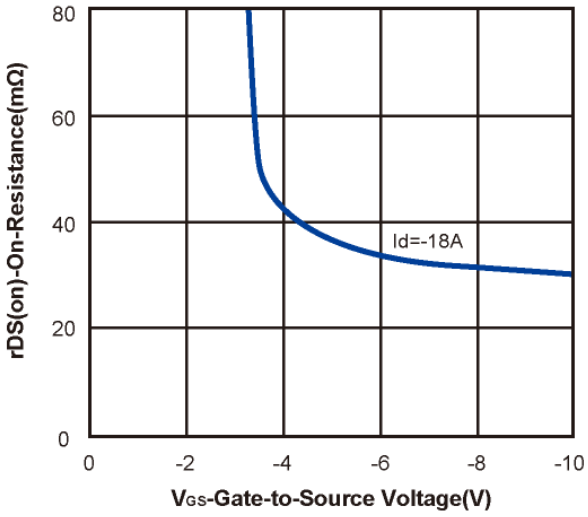
On Resistance vs. Drain Current



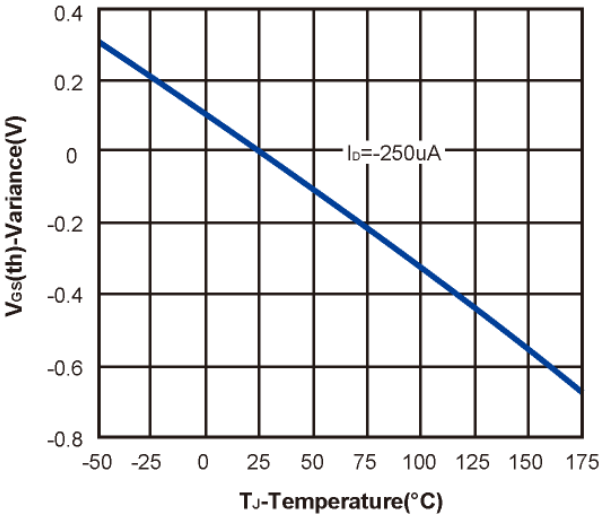
Capacitance



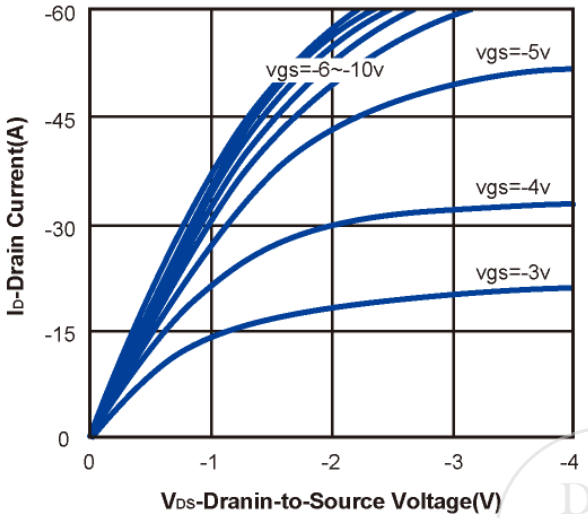
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage



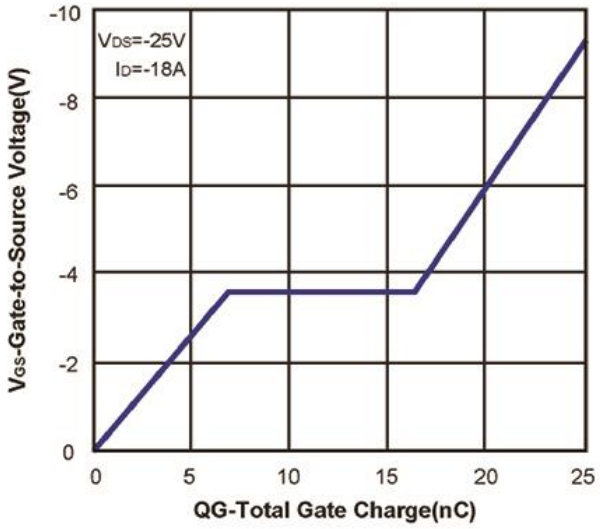
On-Region Characteristics



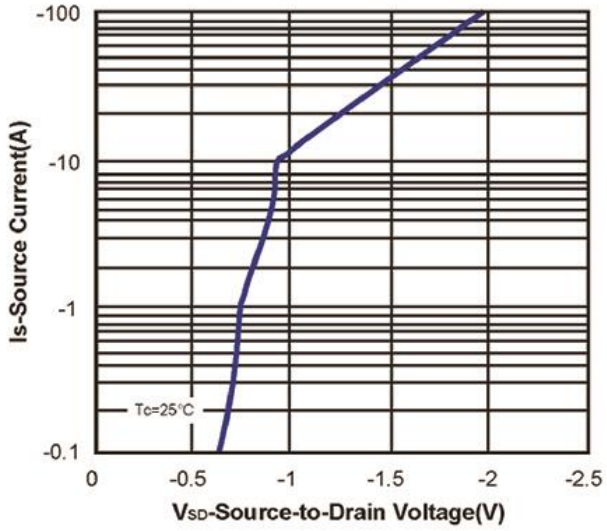
P-Channel 30V (D-S) MOSFET

Typical Characteristics (T_J =25℃ Noted)

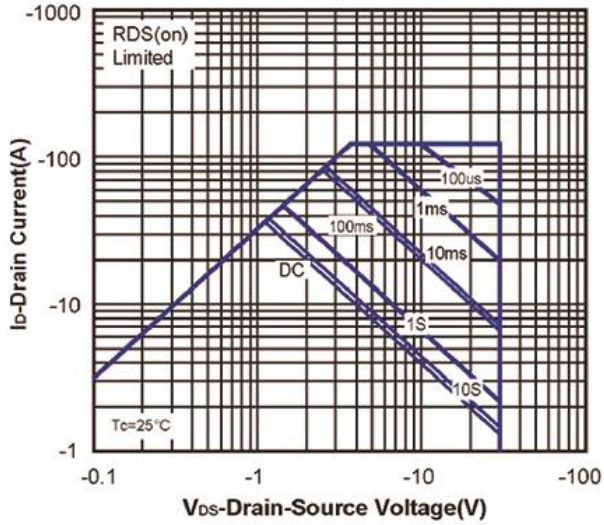
Gate Charge



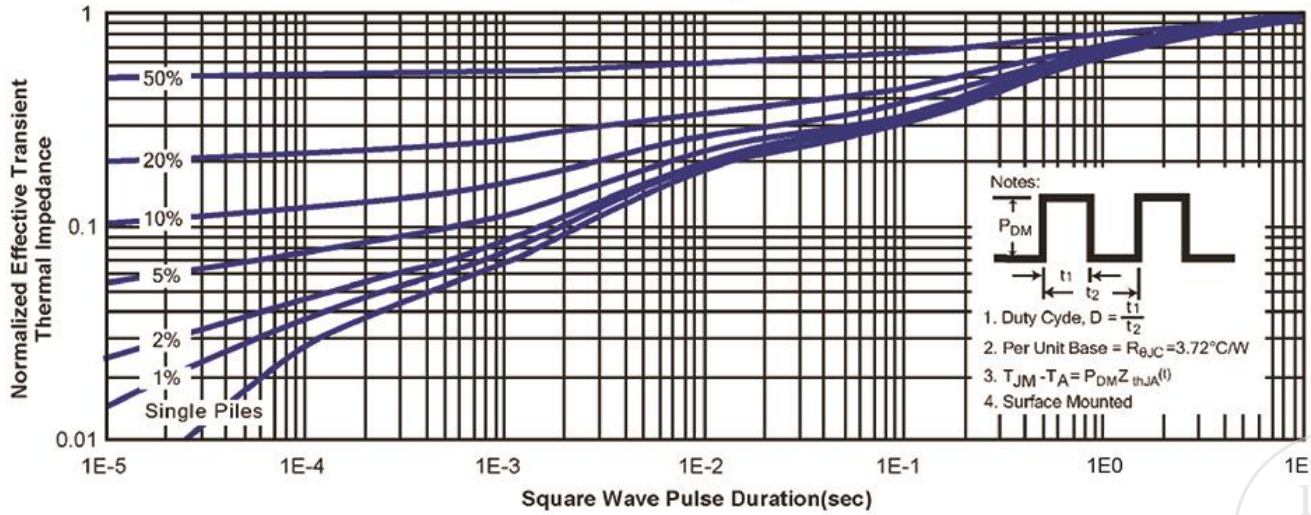
Body-diode characteristics



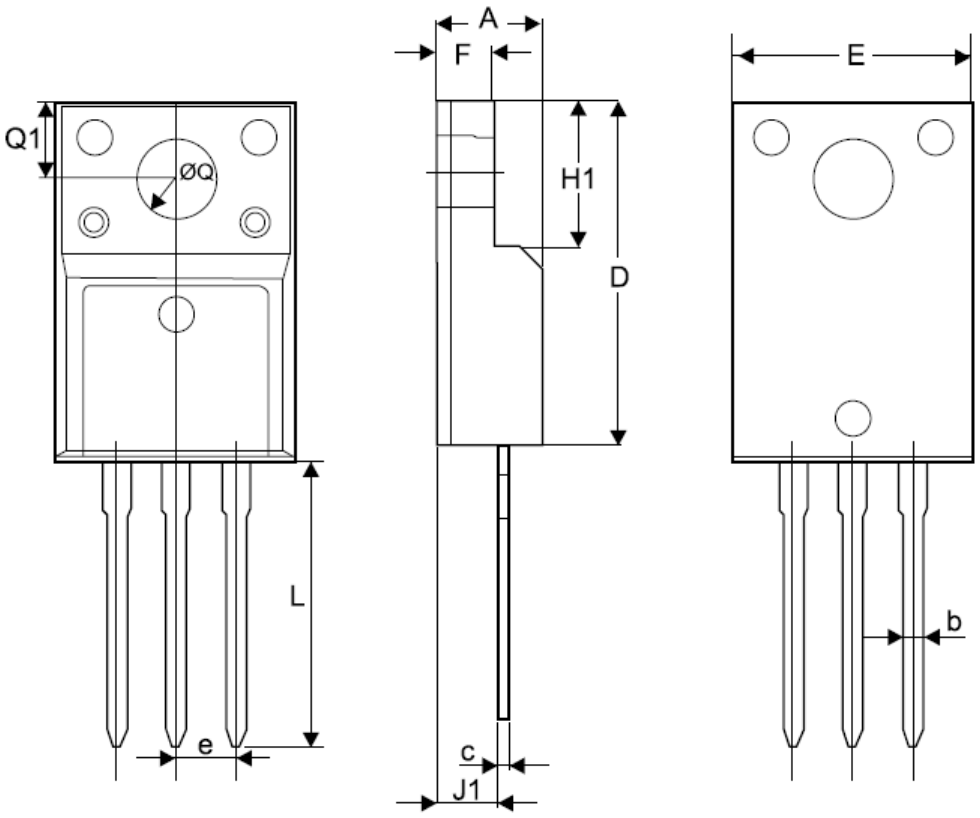
Maximum Forward Biased Safe Operating Area



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