ME20P03/ME20P03-G

P- Channel 30-V (D-S) MOSFET

GENERAL DESCRIPTION

The ME20P03 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 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

- $R_{DS(ON)} \leqq 32m\Omega @ V_{GS}=-10V$
- $R_{DS(ON)} \leqq 42m\Omega @ V_{GS}=-4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

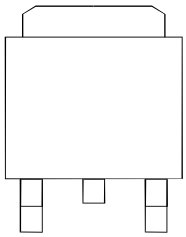
APPLICATIONS

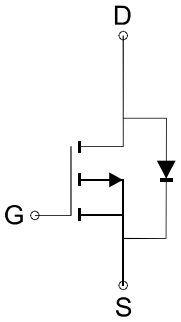
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION

(TO-252-3L)

Top View





P-Channel MOSFET

Ordering Information: ME20P03 (Pb-free)

ME20P03-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	-27.6	A
	T_C=70℃		-25.5	
Pulsed Drain Current		I_{DM}	-110	A
Maximum Power Dissipation	T_C=25℃	P_D	39	W
	T_C=70℃		25	
Operating Junction Temperature		T_J	-55 to 150	℃
Thermal Resistance-Junction to Case*		$R_{\theta JC}$	3.2	℃/W

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

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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	-30			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}=-24V, V_{GS}=0V			-1	μA
$R_{DS(ON)}$	Drain-Source On-State Resistance[a]	V_{GS}=-10V, I_D= -18A		27	32	mΩ
		V_{GS}=-4.5V, I_D= -10A		35	42	
V_{SD}	Diode Forward Voltage	I_S=-1A, V_{GS}=0V		-0.7	-1.2	V
DYNAMIC						
Qg	Total Gate Charge(10V)	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-18A		21		nC
Qg	Total Gate Charge(4.5V)			10		
Qgs	Gate-Source Charge			5		
Qgd	Gate-Drain Charge			4.2		
Ciss	Input capacitance	V_{DS}=-15V, V_{GS}=0V, F=1MHz		804		pF
Coss	Output Capacitance			123		
Crss	Reverse Transfer Capacitance			40		
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=-15V, R_L=15Ω I_D=-1A, V_{GEN}=-10V, R_G=3Ω		37		ns
t_r	Turn-On Rise Time			19		
$t_{d(off)}$	Turn-Off Delay Time			54		
t_f	Turn-Off Fall Time			7		

Notes:a. Pulse test; pulse width ≦ 300us, duty cycle≦ 2%

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

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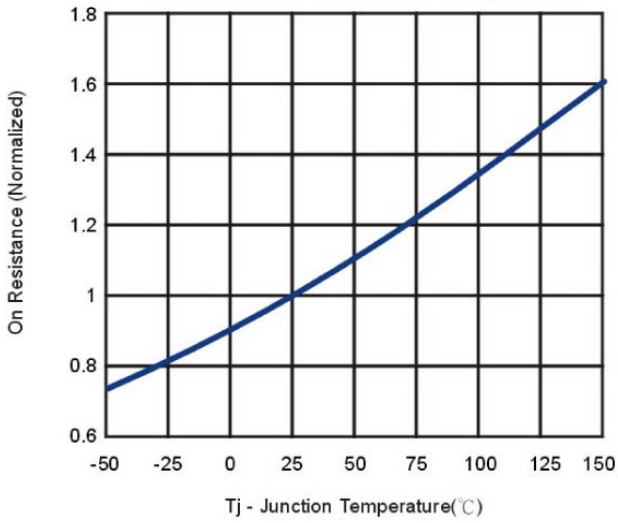
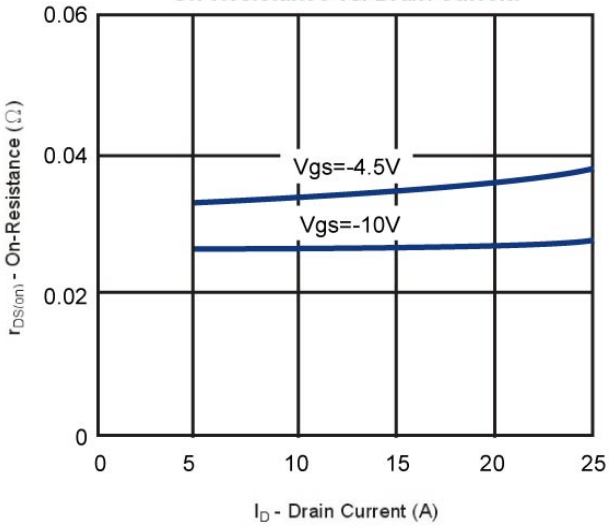
Typical Characteristics (T_J =25℃ Noted)

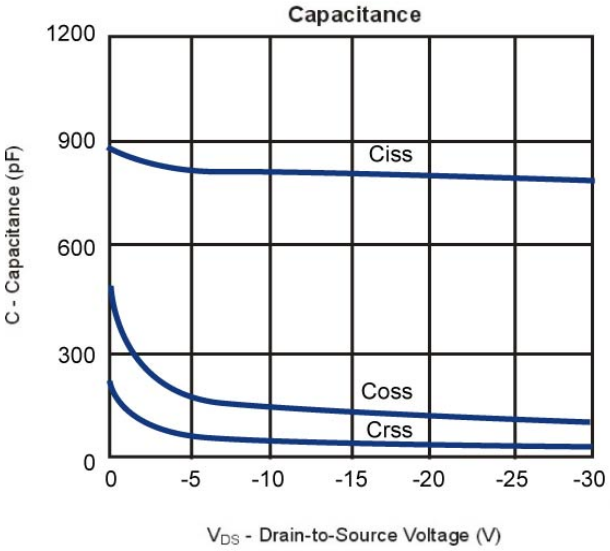
On Resistance vs. Junction Temperature



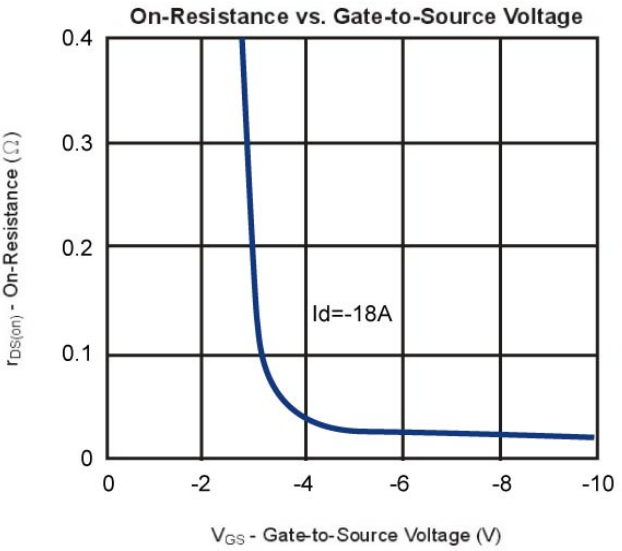
On-Resistance vs. Drain Current



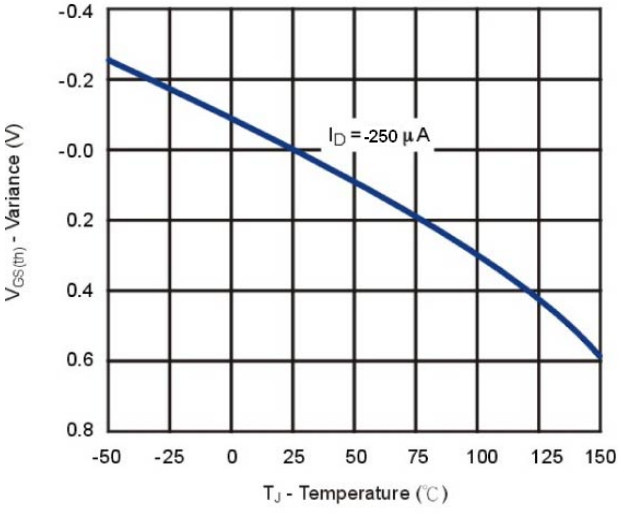
Capacitance



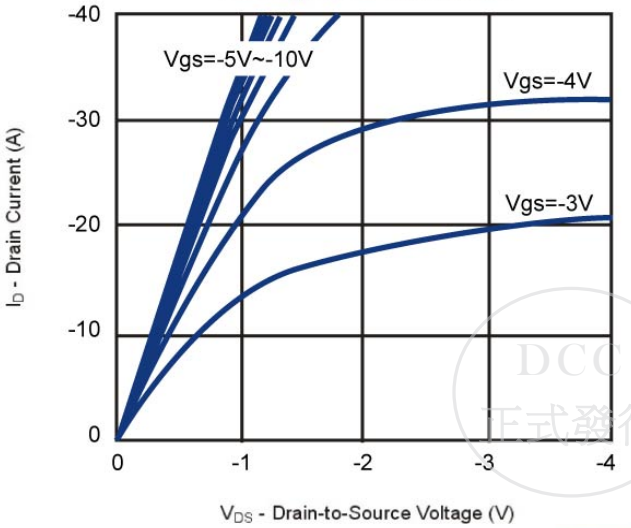
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



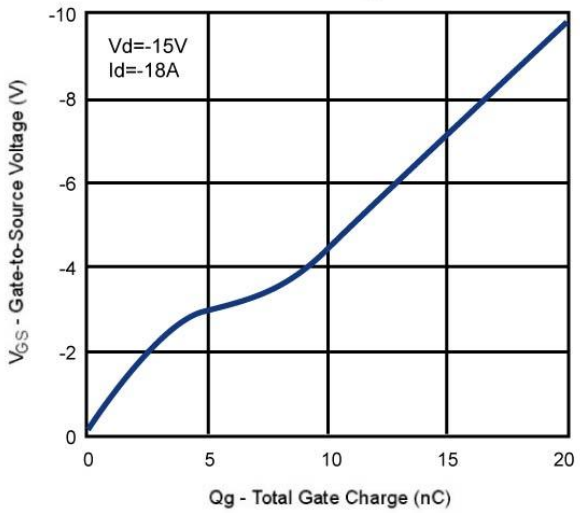
On-Region Characteristics



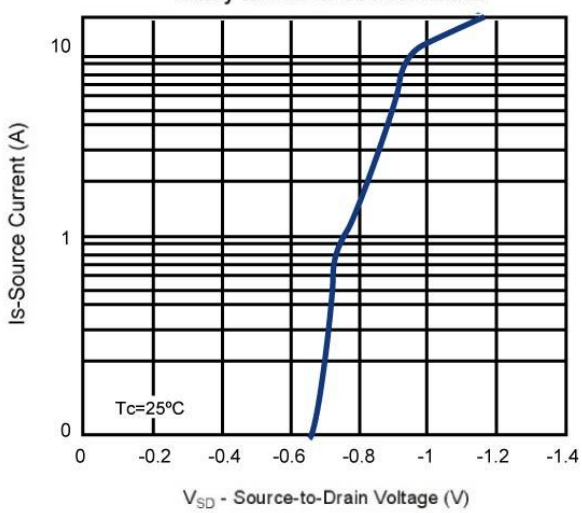
P- Channel 30-V (D-S) MOSFET

Typical Characteristics (T_J =25℃ Noted)

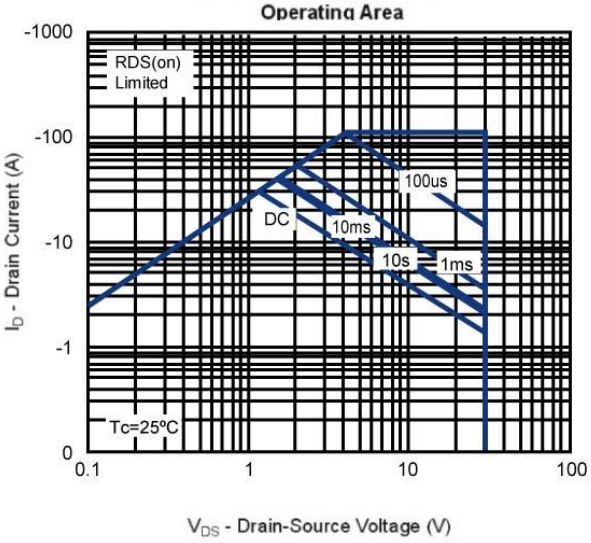
Gate Charge



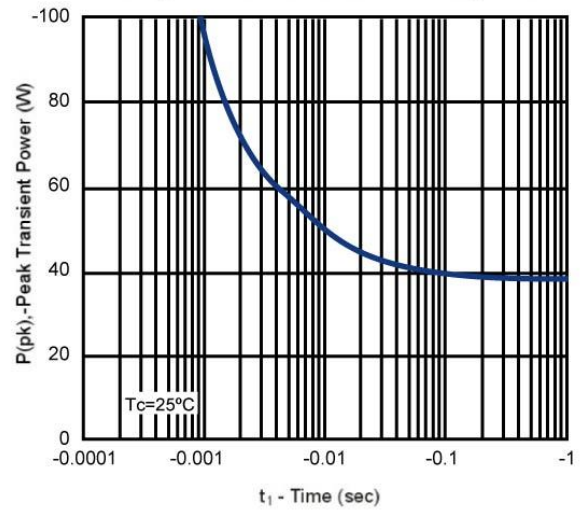
Body-diode characteristics



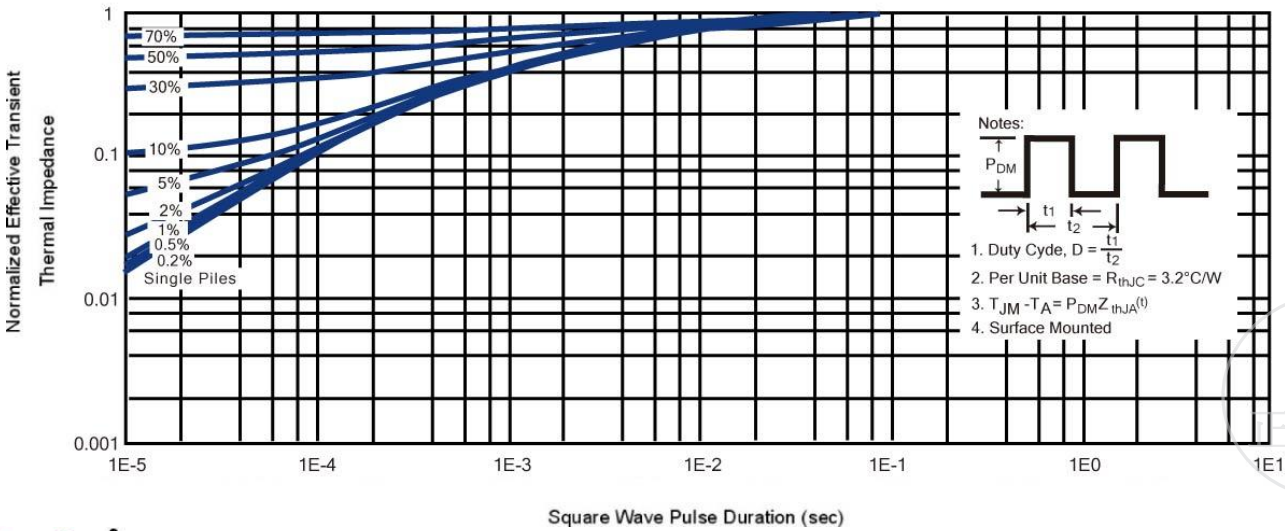
Maximum Forward Biased Safe Operating Area



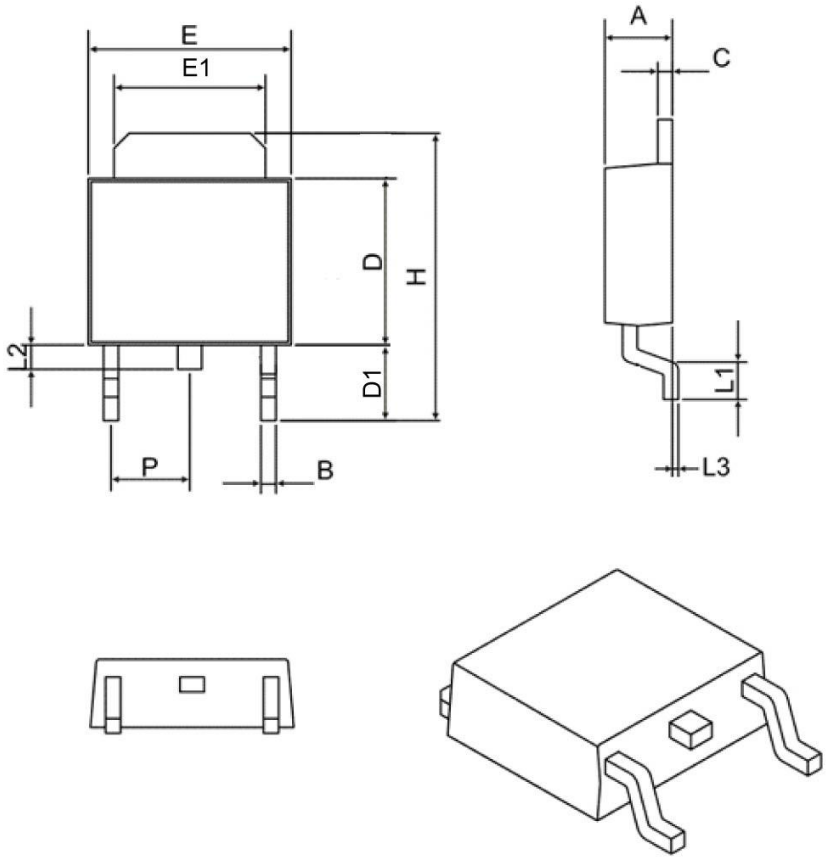
Single Pulse Maximum Power Dissipation



Normalized Thermal Transient Impedance, Junction-to-Case



TO-252 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	