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

GENERAL DESCRIPTION

The ME60P06T 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.

FEATURES

- $R_{DS(ON)} \leqq 16.5m\Omega @ V_{GS}=-10V$
- $R_{DS(ON)} \leqq 20.5m\Omega @ V_{GS}=-4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

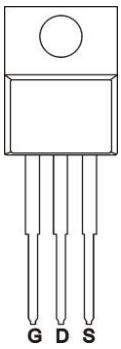
APPLICATIONS

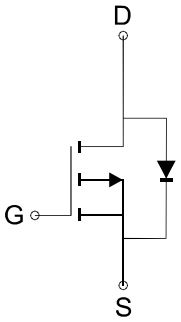
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION

(TO-220)

Top View





P-Channel MOSFET

Ordering Information: ME60P06T (Pb-free)

ME60P06T-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	-55.3	A
	T_C=70℃		-46.3	
Pulsed Drain Current		I_{DM}	-221	A
Maximum Power Dissipation*	T_C=25℃	P_D	90.9	W
	T_C=70℃		63.6	
Operating Junction Temperature		T_J	-55 to 175	℃
Thermal Resistance-Junction to Case*		$R_{\theta JC}$	1.65	℃/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	-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}=-60V, V_{GS}=0V			-1	μA
$R_{DS(ON)}$	Drain-Source On-State Resistance[a]	V_{GS}=-10V, I_D= -30A		13	16.5	mΩ
		V_{GS}=-4.5V, I_D= -20A		15	20.5	
V_{SD}	Diode Forward Voltage	I_S=-30A, V_{GS}=0V		-1.0	-1.5	V
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=-30V, V_{GS}=-10V, I_D=-50A		98.6		nC
Qg	Total Gate Charge	V_{DS}=-30V, V_{GS}=-4.5V, I_D=-50A		50.1		
Qgs	Gate-Source Charge			15.9		
Qgd	Gate-Drain Charge			25.2		
Ciss	Input capacitance	V_{DS}=-15V, V_{GS}=0V, F=1MHz		4480		pF
Coss	Output Capacitance			427		
Crss	Reverse Transfer Capacitance			355		
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=-30V, R_L =30Ω V_{GEN}=-10V, R_G=6Ω		50.7		ns
t_r	Turn-On Rise Time			18.1		
$t_{d(off)}$	Turn-Off Delay Time			221		
t_f	Turn-Off Fall Time			60.1		

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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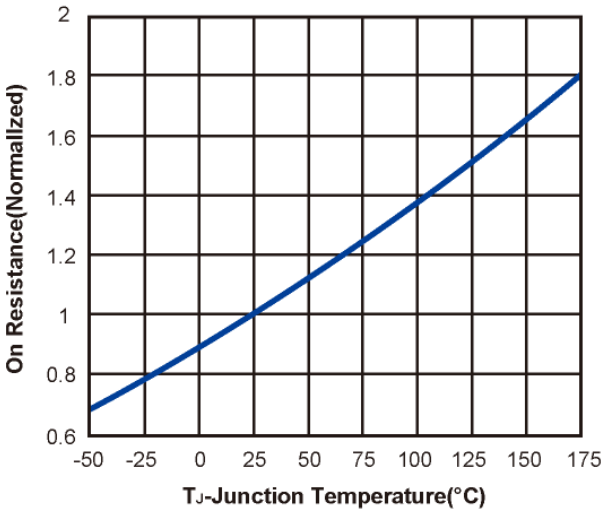
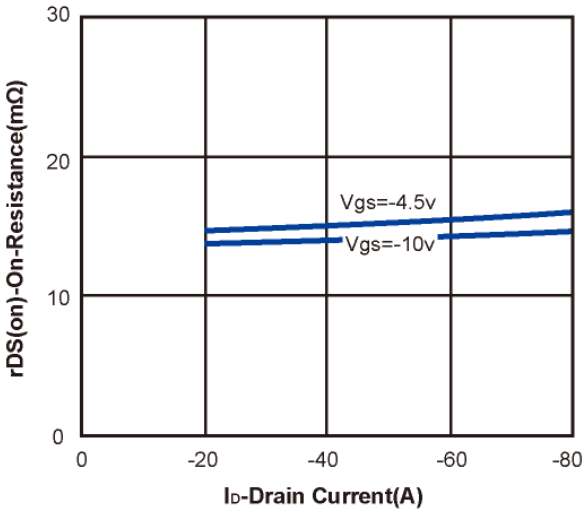
Typical Characteristics (T_J =25℃ Noted)

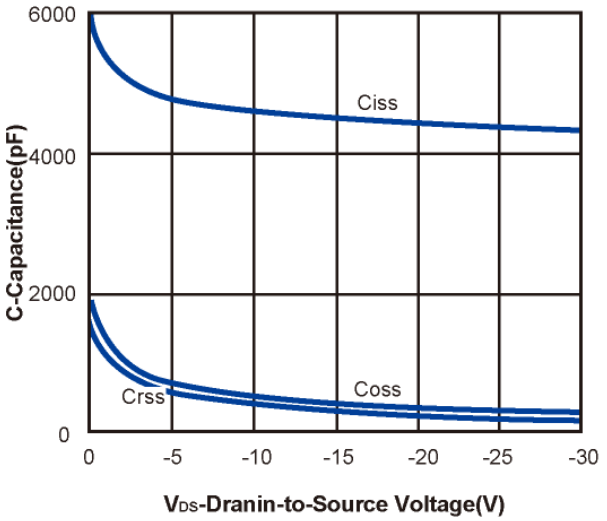
On Resistance vs. Junction Temperature



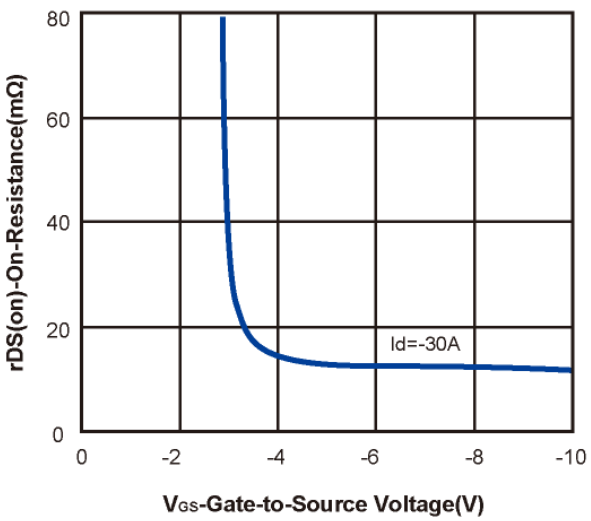
On Resistance vs. Drain Current



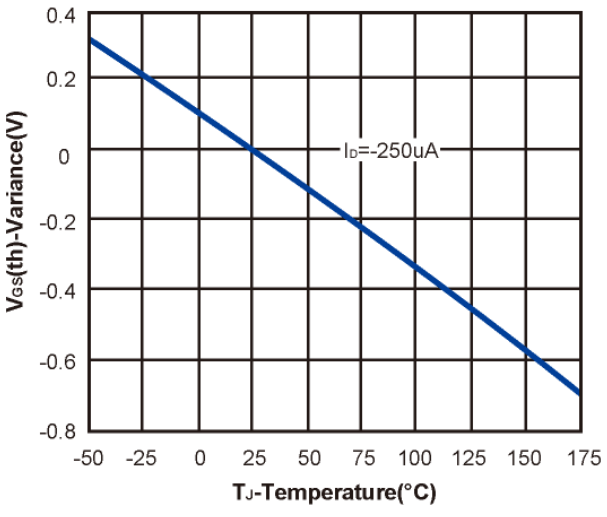
Capacitance



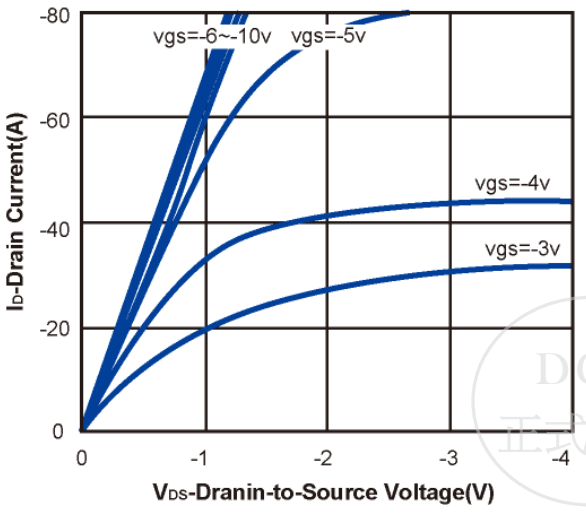
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage



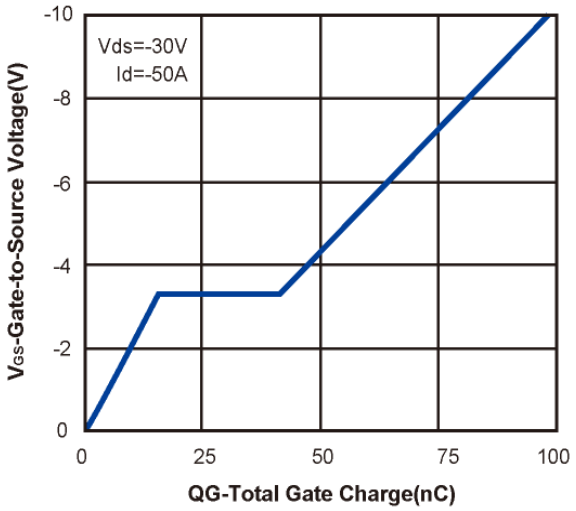
On-Region Characteristics



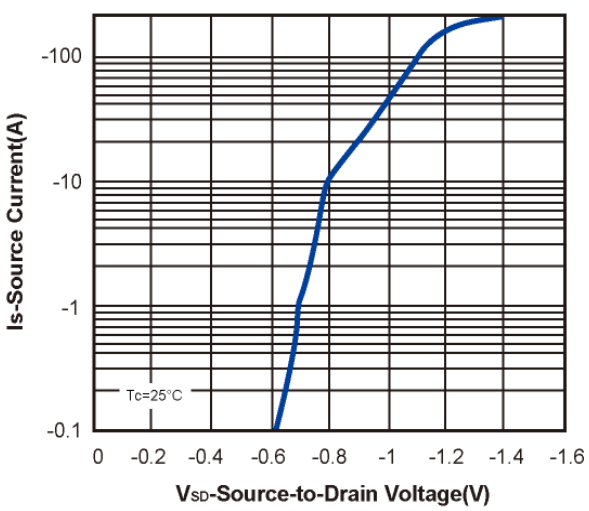
P- Channel 60-V (D-S) MOSFET

Typical Characteristics (T_J =25℃ Noted)

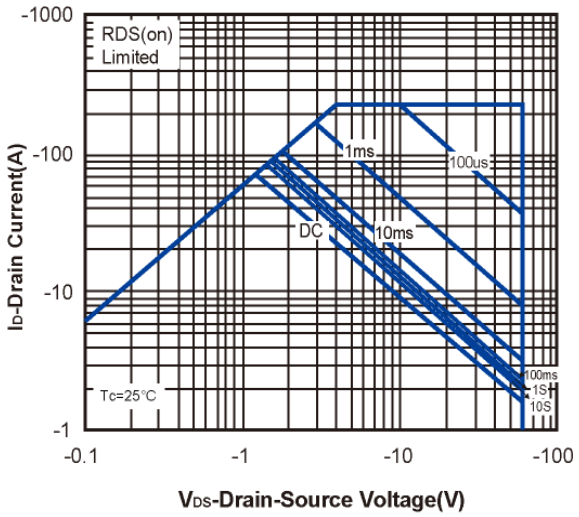
Gate Charge



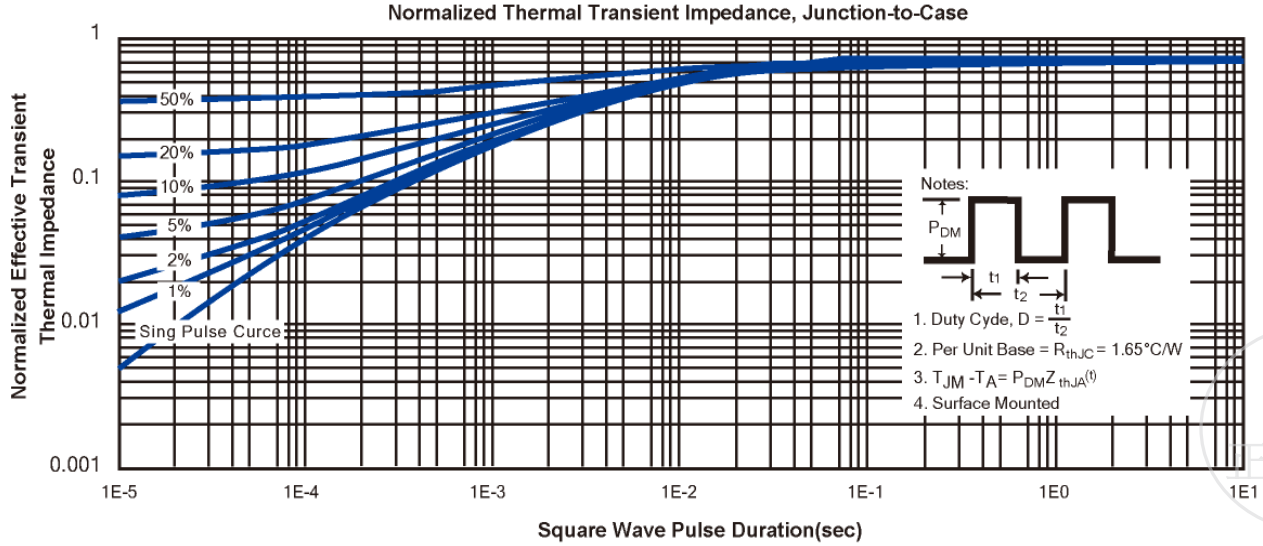
Body-diode characteristics



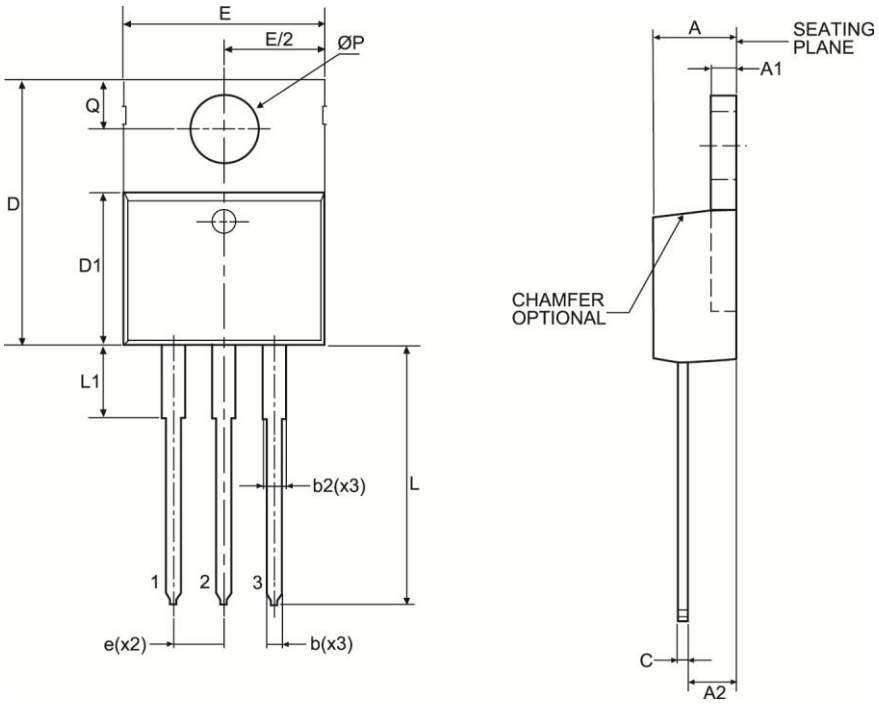
Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case



TO-220 Package Outline



Symbol	MILLIMETERS (mm)	
	MIN	MAX
A	3.50	4.90
A1	1.00	1.40
A2	2.00	3.00
b	0.70	1.40
c	0.35	0.65
D	14.00	16.50
D1	8.30	9.50
E	9.60	10.70
e	2.54 BSC	
L	12.50	15.00
ØP	3.60 TYP	
Q	2.50	3.10
b2	1.10	1.80
L1	2.40	3.20