Ordering number : ENA0368

ON Semiconductor®

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DATA SHEET

P-Channel Silicon MOSFET

6HP04MH — General-Purpose Switching Device Applications

Features

- 4V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−60	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		−120	mA
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−480	mA
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm)	0.6	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=−1mA, V_{GS}=0V	−60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−60V, V_{GS}=0V			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=−10V, I_D=−100μA	−1.2		−2.6	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=−10V, I_D=−60mA	100	180		mS
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=−60mA, V_{GS}=−10V		5.1	6.6	Ω
	$R_{DS}(on)2$	I_D=−30mA, V_{GS}=−4V		6.8	9.6	Ω
Input Capacitance	Ciss	V_{DS}=−20V, f=1MHz		13.5		pF
Output Capacitance	Coss	V_{DS}=−20V, f=1MHz		3.4		pF
Reverse Transfer Capacitance	Crss	V_{DS}=−20V, f=1MHz		1.3		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		36.5		ns
Rise Time	t_r	See specified Test Circuit.		38.0		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		455		ns
Fall Time	t_f	See specified Test Circuit.		160		ns

Marking : QB

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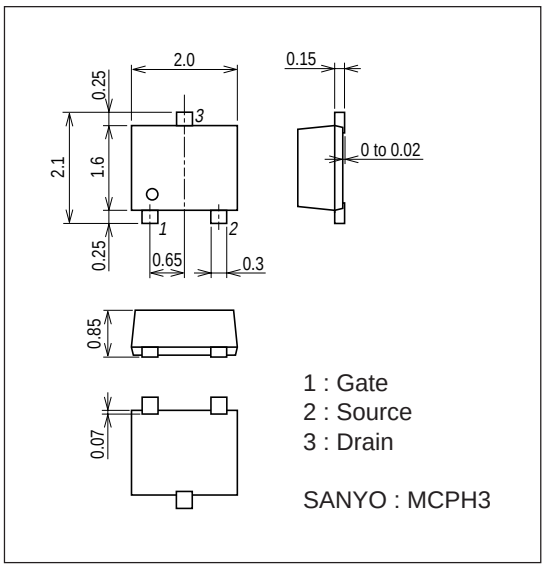
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	V_{DS}=–30V, V_{GS}=–10V, I_D=–120mA		1.6		nC
Gate-to-Source Charge	Qgs	V_{DS}=–30V, V_{GS}=–10V, I_D=–120mA		0.4		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=–30V, V_{GS}=–10V, I_D=–120mA		0.16		nC
Diode Forward Voltage	V_{SD}	I_S=–120mA, V_{GS}=0V		–0.85	–1.2	V

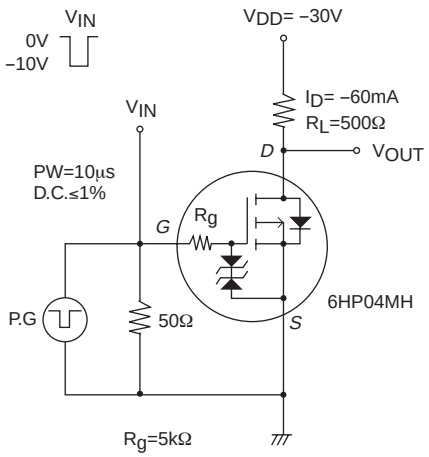
Package Dimensions

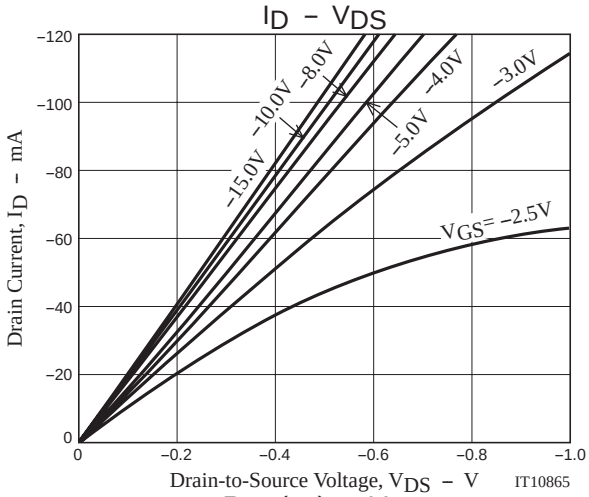
unit : mm

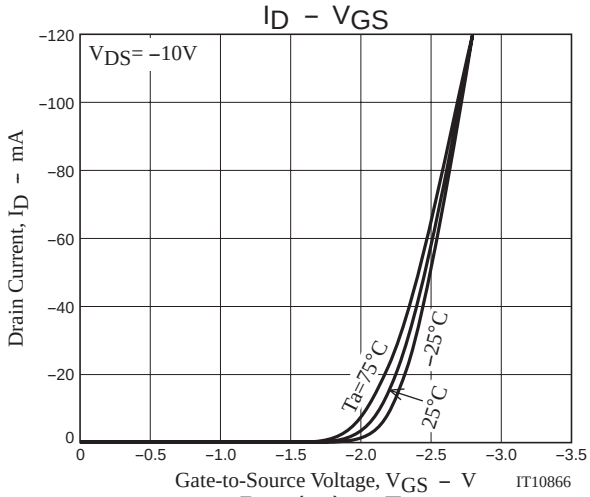
7019A-003

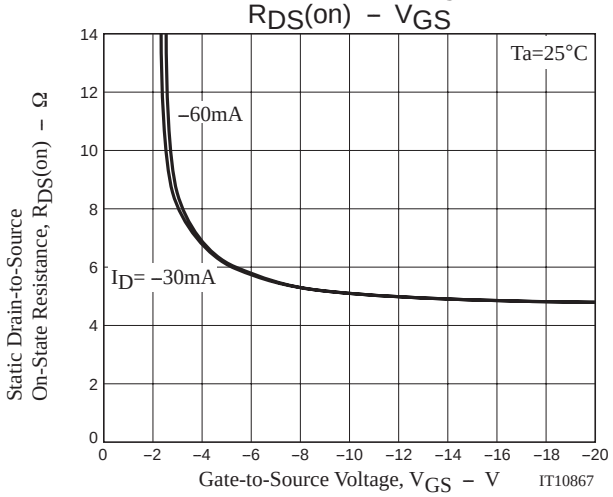


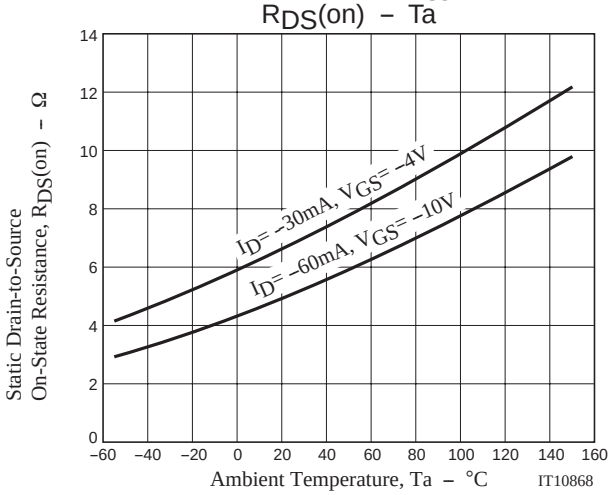
Switching Time Test Circuit

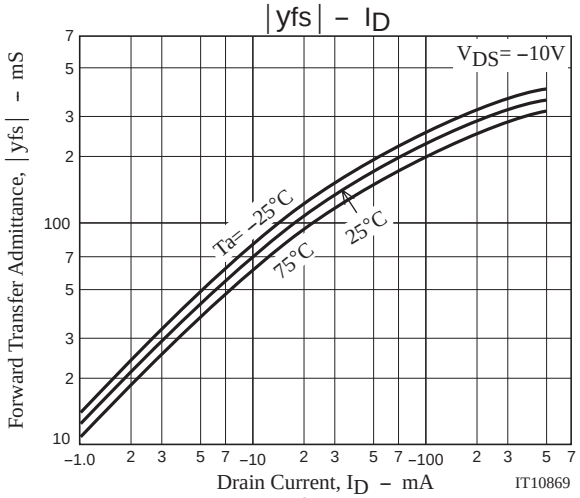


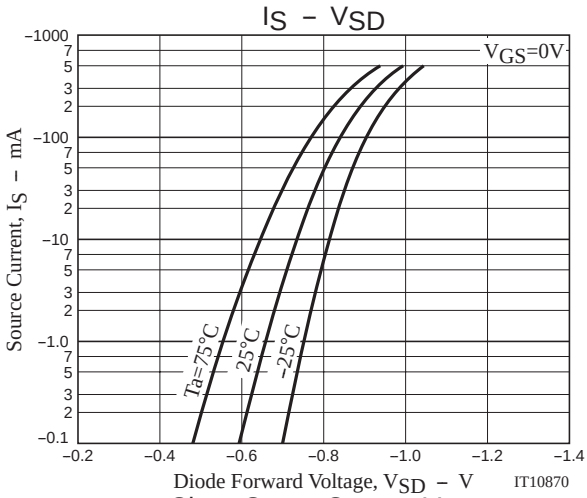


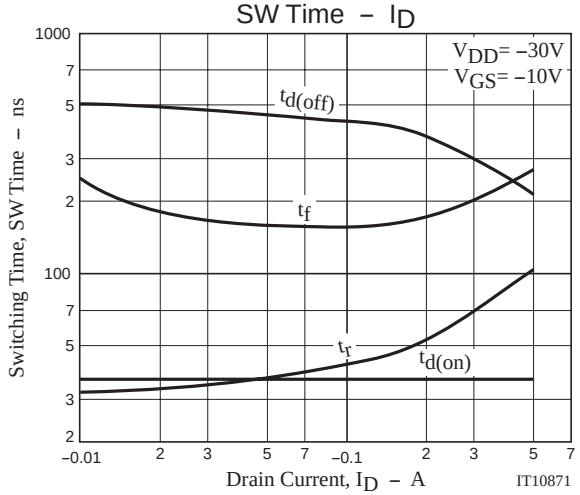


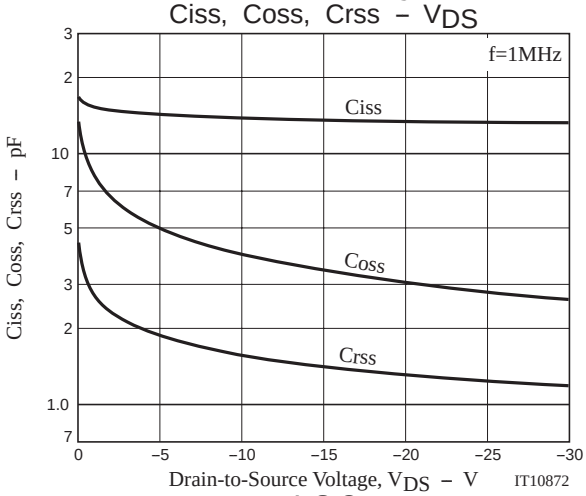


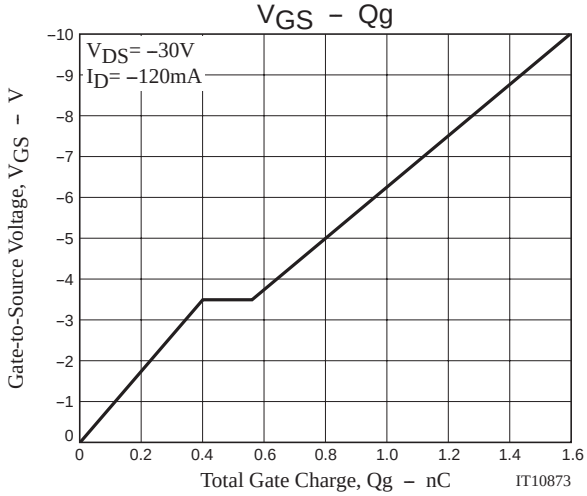


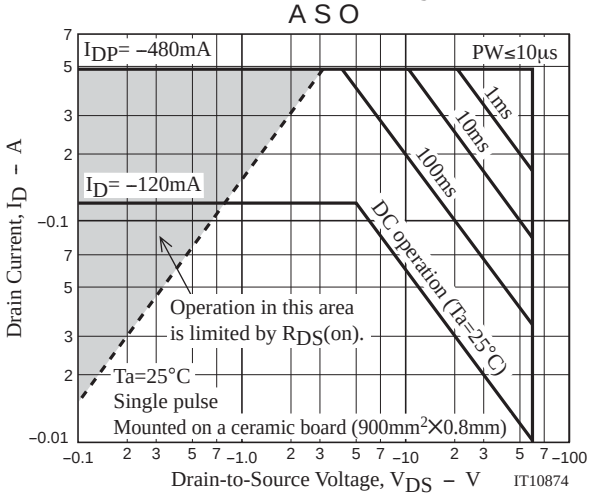

|yfs| – ID
VDS= –10V
Ta= –25°C
25°C
75°C
Forward Transfer Admittance, |yfs| – mS
Drain Current, ID – mA
IT10869

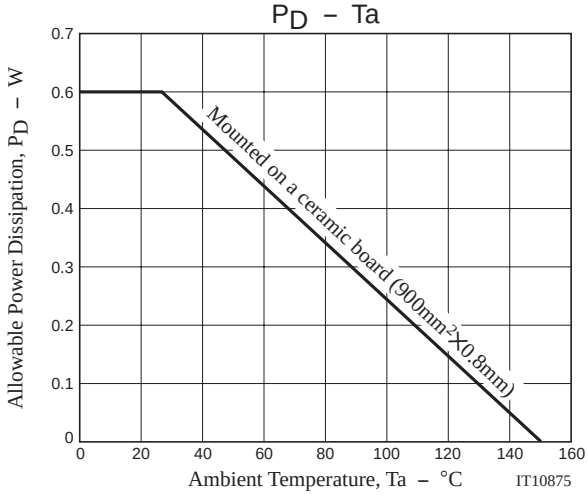

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – mA
Diode Forward Voltage, VSD – V
IT10870


SW Time – ID
VDD= –30V
VGS= –10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT10871


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT10872


VGS – Qg
VDS= –30V
ID= –120mA
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT10873


A S O
IDP= –480mA
PW≤10μs
1ms
10ms
100ms
DC operation (Ta=25°C)
ID= –120mA
Operation in this area
is limited by RDS(on).
Ta=25°C
Single pulse
Mounted on a ceramic board (900mm2×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT10874


PD – Ta
Mounted on a ceramic board (900mm2×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT10875

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