Ordering number:ENN6390

N-Channel Silicon MOSFET

FW204

Ultrahigh-Speed Switching Applications

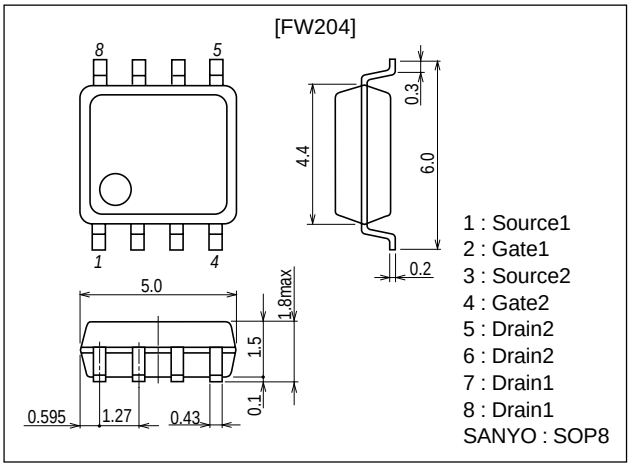
Features

- Low ON resistance.
- Ultrahigh-speed switching.
- Composite type with 2 N-channel MOSFETs driving from a 2.5V supply voltage contained in a single package, facilitating high-density mounting.
- Matched pair capability.

Package Dimensions

unit:mm

2129



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		20	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		2	A
Drain Current (pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	8	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (1200mm²×0.8mm) 1unit	1.6	W
Total Dissipation	P_T	Mounted on a ceramic board (1200mm²×0.8mm)	1.8	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}=0	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0			100	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0			±10	μA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=10V, I_D=1mA	0.5		1.5	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=1A	1.8	2.8		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=1A, V_{GS}=4V		140	200	mΩ
	$R_{DS}(on)2$	I_D=0.5A, V_{GS}=2.5V		200	320	mΩ

Marking : W204

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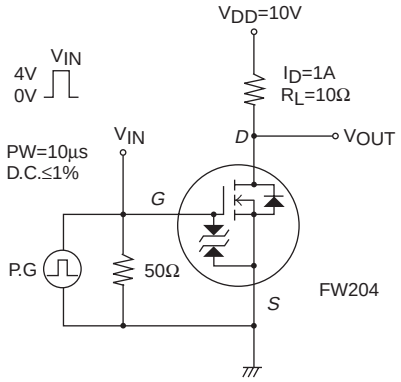
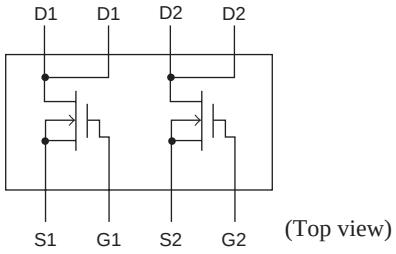
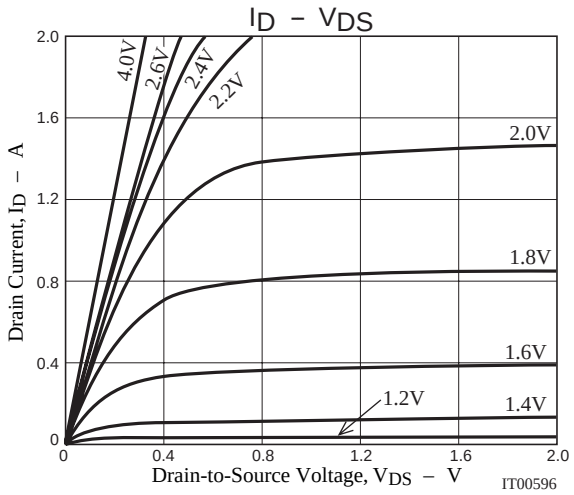
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		170		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		145		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		50		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		15		ns
Rise Time	t_r	See specified Test Circuit		20		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		50		ns
Fall Time	t_f	See specified Test Circuit		35		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=2A		7.6		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_D=2A		0.9		nC
Gate-to-Drain "Miller" Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_D=2A		1.1		nC
Diode Forward Voltage	V_{SD}	I_S=2A, V_{GS}=0		0.8	1.2	V

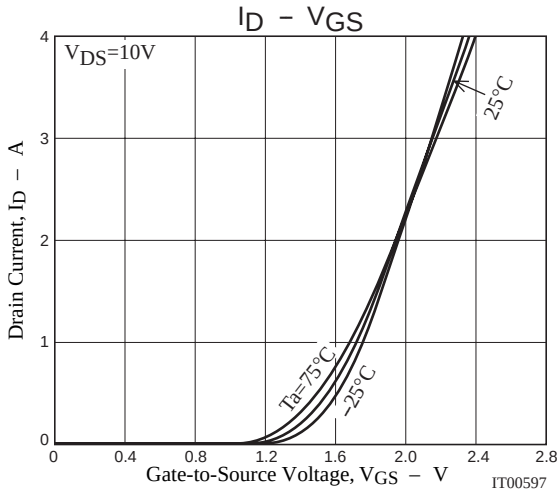
Switching Time Test Circuit

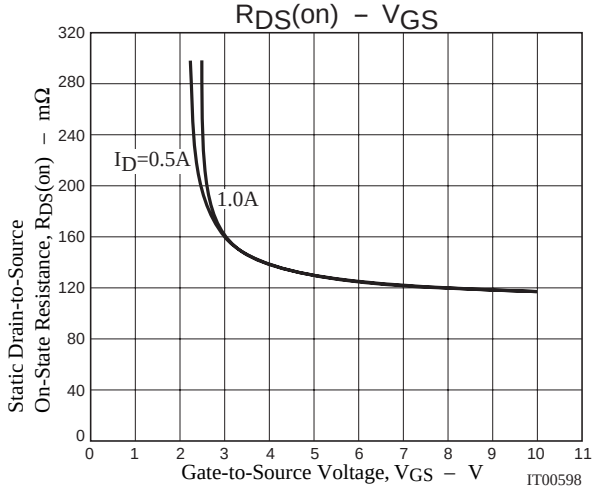


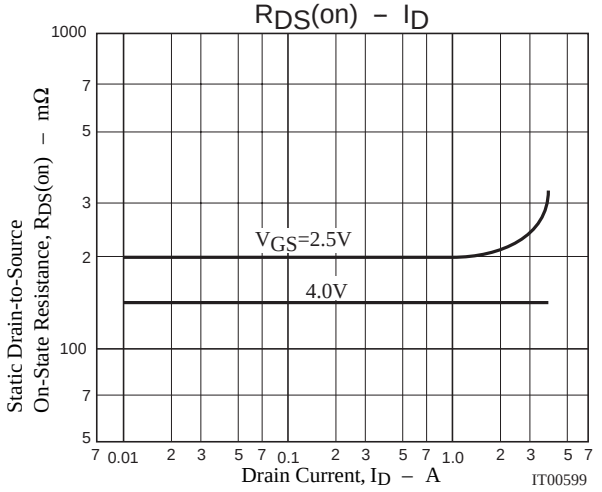
Electrical Connection

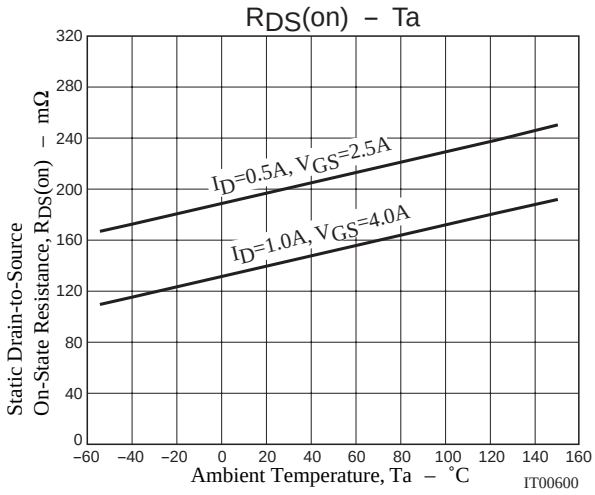


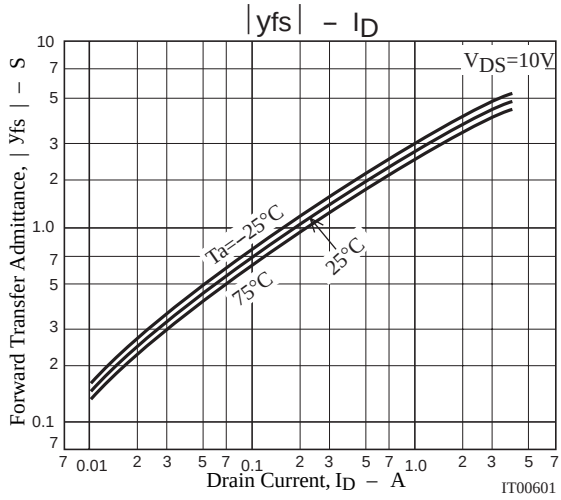


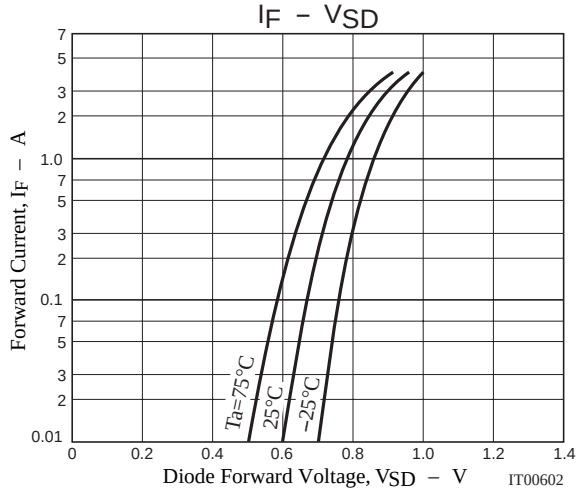


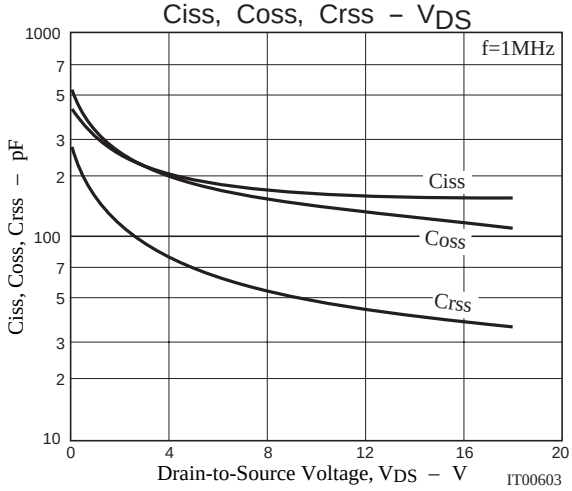


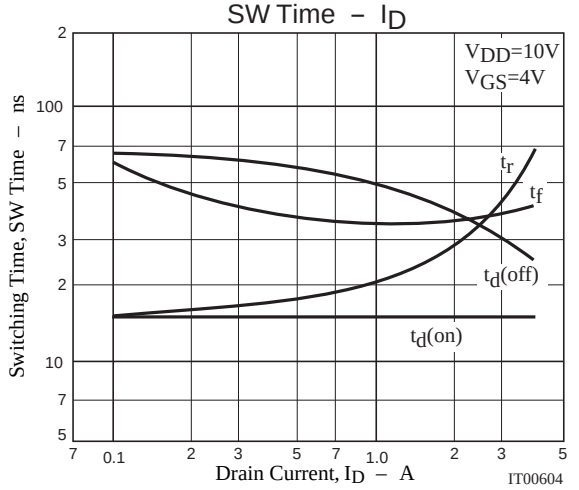


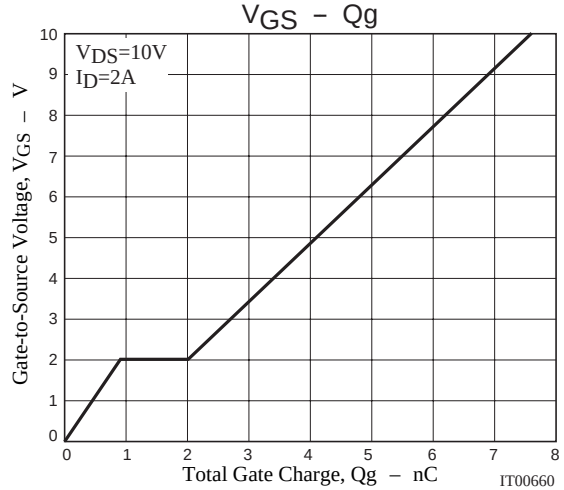

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
ID=0.5A, VGS=2.5A
ID=1.0A, VGS=4.0A
Ambient Temperature, Ta – °C
IT00600

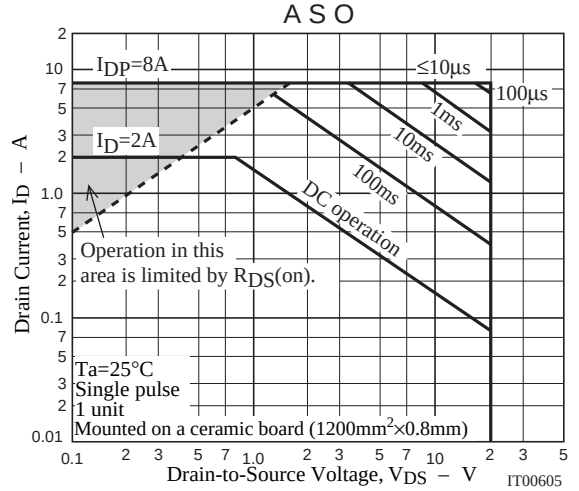

|yfs| – ID
Forward Transfer Admittance, |yfs| – S
VDS=10V
Ta=–25°C
25°C
75°C
Drain Current, ID – A
IT00601

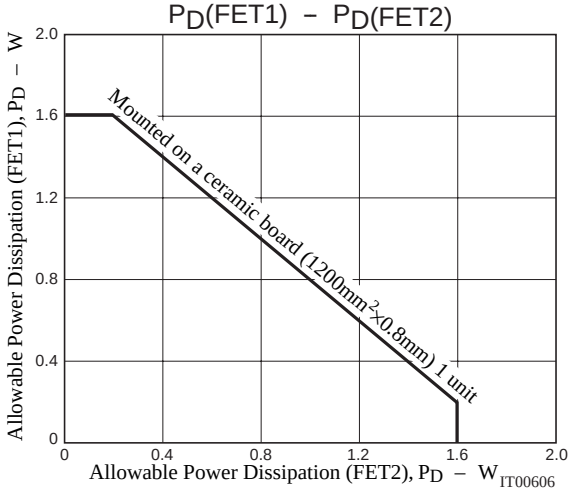

IF – VSD
Forward Current, IF – A
Ta=75°C
25°C
–25°C
Diode Forward Voltage, VSD – V
IT00602


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
f=1MHz
Ciss
Coss
Crss
Drain-to-Source Voltage, VDS – V
IT00603


SW Time – ID
Switching Time, SW Time – ns
VDD=10V
VGS=4V
tr
tf
td(off)
td(on)
Drain Current, ID – A
IT00604


VGS – Qg
Gate-to-Source Voltage, VGS – V
VDS=10V
ID=2A
Total Gate Charge, Qg – nC
IT00660


A S O
Drain Current, ID – A
IDP=8A
≤10μs
100μs
1ms
10ms
100ms
DC operation
ID=2A
Operation in this area is limited by RDS(on).
Ta=25°C
Single pulse
1 unit
Mounted on a ceramic board (1200mm²×0.8mm)
Drain-to-Source Voltage, VDS – V
IT00605


PD(FET1) – PD(FET2)
Allowable Power Dissipation (FET1), PD – W
Mounted on a ceramic board (1200mm²×0.8mm) 1 unit
Allowable Power Dissipation (FET2), PD – W
IT00606