



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

N-Channel and P-Channel Silicon MOSFETs

## FW906 — General-Purpose Switching Device Applications

### Features

- ON-resistance Nch:  $R_{DS(on)1}=18m\Omega$ (typ.), Pch:  $R_{DS(on)1}=31m\Omega$ (typ.)
- 4V drive
- N-channel MOSFET + P-channel MOSFET

### Specifications

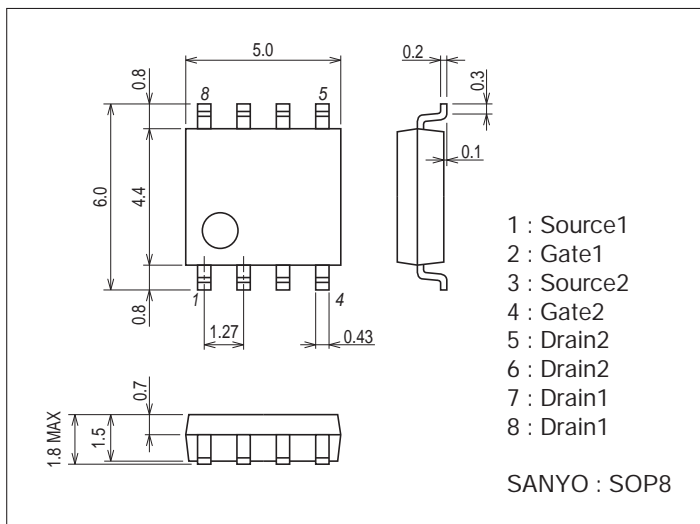
Absolute Maximum Ratings at  $T_a=25^\circ C$

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	$V_{DSS}$		30	-30	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	$\pm 20$	V
Drain Current (DC)	$I_D$		8	-6	A
Drain Current ( $PW \leq 10s$ )	$I_D$	Duty cycle $\leq 1\%$	9	-7	A
Drain Current ( $PW \leq 100ms$ )	$I_D$	Duty cycle $\leq 1\%$	20	-15	A
Drain Current ( $PW \leq 10\mu s$ )	$I_{DP}$	Duty cycle $\leq 1\%$	52	-52	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (2000mm <sup>2</sup> ×0.8mm) 1unit, $PW \leq 10s$	2.3		W
Total Dissipation	$P_T$	When mounted on ceramic substrate (2000mm <sup>2</sup> ×0.8mm), $PW \leq 10s$	2.5		W
Channel Temperature	$T_{ch}$		150		$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150		$^\circ C$

### Package Dimensions

unit : mm (typ)

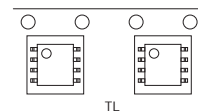
7005A-003



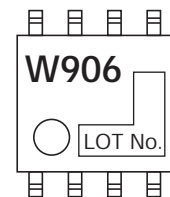
### Product & Package Information

- Package : SOP8
- JEITA, JEDEC : SC-87, SOT96
- Minimum Packing Quantity : 1,000 pcs./reel

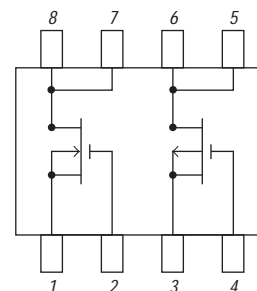
### Packing Type : TL



### Marking



### Electrical Connection



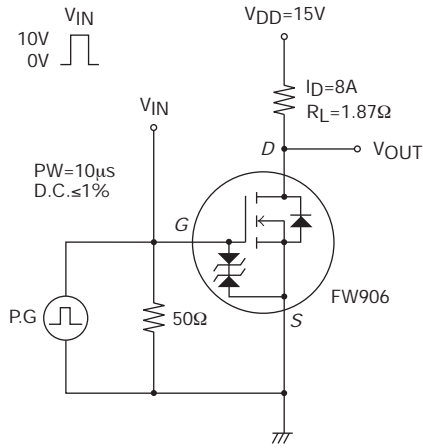
# FW906

## Electrical Characteristics at Ta=25°C

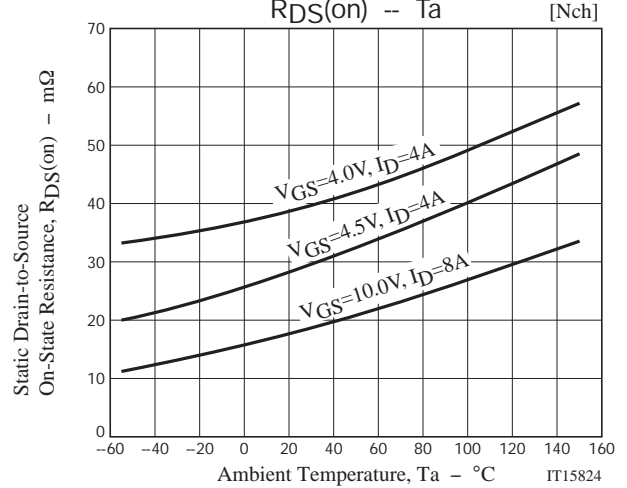
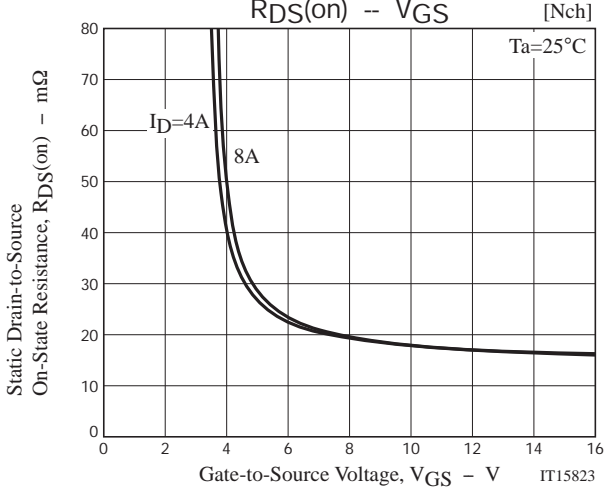
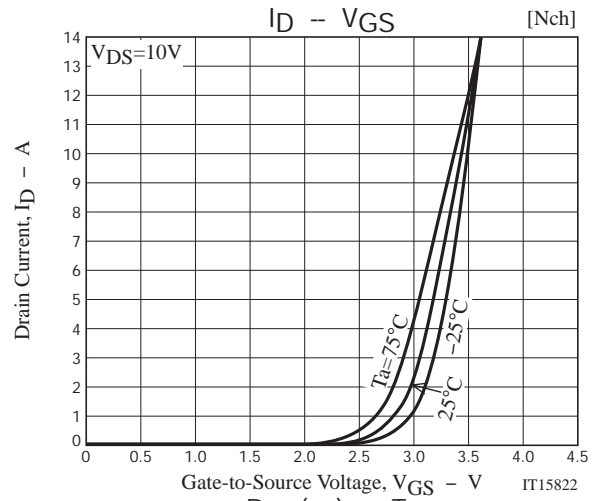
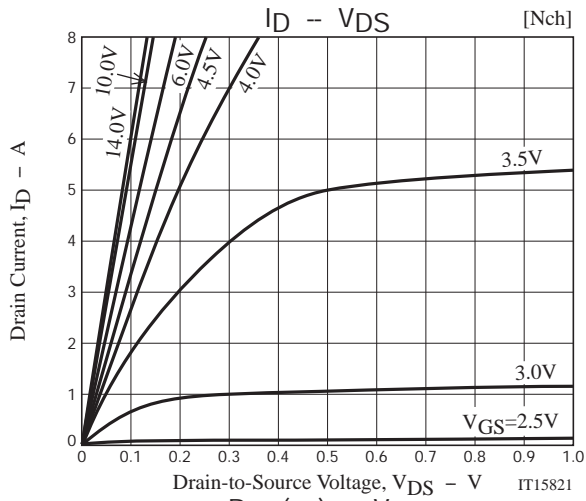
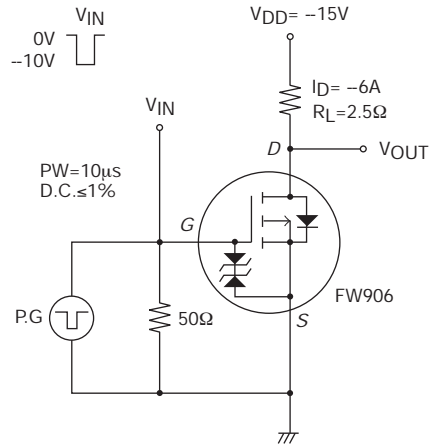
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=30V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=8A		4.5		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=8A, VGS=10V		18	24	mΩ
	RDS(on)2	ID=4A, VGS=4.5V		29	41	mΩ
	RDS(on)3	ID=4A, VGS=4V		39	55	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		690		pF
Output Capacitance	Coss	VDS=10V, f=1MHz		120		pF
Reverse Transfer Capacitance	Crss	VDS=10V, f=1MHz		75		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		9.2		ns
Rise Time	tr	See specified Test Circuit.		44		ns
Turn-OFF Delay Time	td(off)	See specified Test Circuit.		41		ns
Fall Time	tf	See specified Test Circuit.		26		ns
Total Gate Charge	Qg	VDS=15V, VGS=10V, ID=8A		12		nC
Gate-to-Source Charge	Qgs	VDS=15V, VGS=10V, ID=8A		2.5		nC
Gate-to-Drain "Miller" Charge	Qgd	VDS=15V, VGS=10V, ID=8A		1.9		nC
Diode Forward Voltage	VSD	IS=8A, VGS=0V		0.81	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0V	-30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-30V, VGS=0V			-1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=-10V, ID=-1mA	-1.2		-2.6	V
Forward Transfer Admittance	yfs	VDS=-10V, ID=-6A		8.5		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-6A, VGS=-10V		31	41	mΩ
	RDS(on)2	ID=-3A, VGS=-4.5V		49	69	mΩ
	RDS(on)3	ID=-3A, VGS=-4V		57	80	mΩ
Input Capacitance	Ciss	VDS=-10V, f=1MHz		600		pF
Output Capacitance	Coss	VDS=-10V, f=1MHz		160		pF
Reverse Transfer Capacitance	Crss	VDS=-10V, f=1MHz		120		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		6.6		ns
Rise Time	tr	See specified Test Circuit.		37		ns
Turn-OFF Delay Time	td(off)	See specified Test Circuit.		63		ns
Fall Time	tf	See specified Test Circuit.		48		ns
Total Gate Charge	Qg	VDS=-15V, VGS=-10V, ID=-6A		12		nC
Gate-to-Source Charge	Qgs	VDS=-15V, VGS=-10V, ID=-6A		1.9		nC
Gate-to-Drain "Miller" Charge	Qgd	VDS=-15V, VGS=-10V, ID=-6A		2.7		nC
Diode Forward Voltage	VSD	IS=-6A, VGS=0V		-0.83	-1.2	V

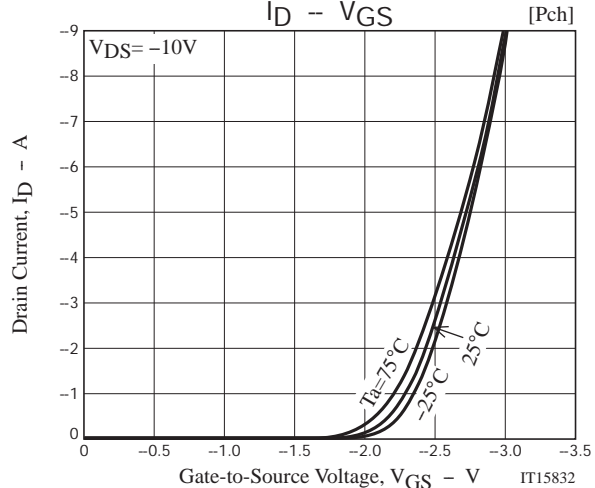
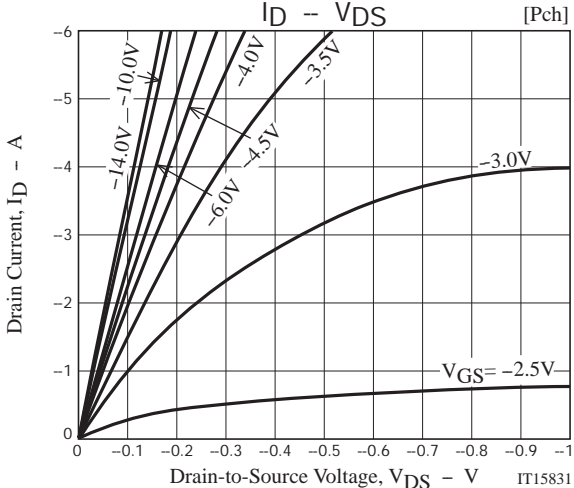
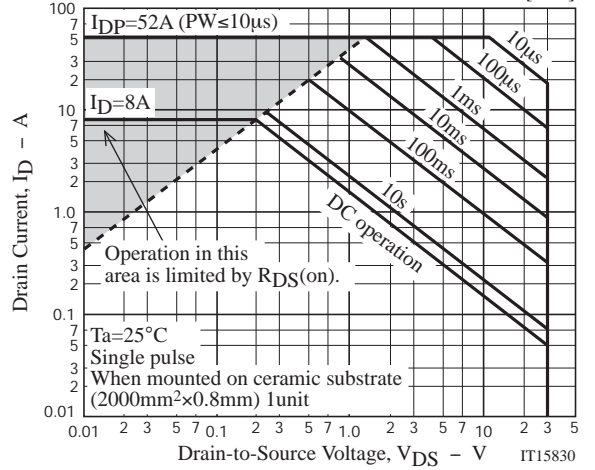
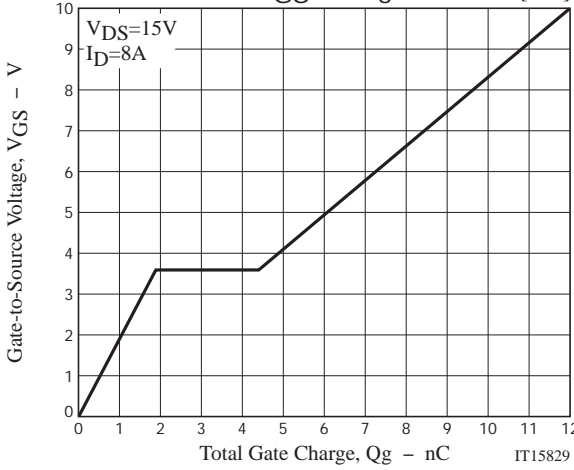
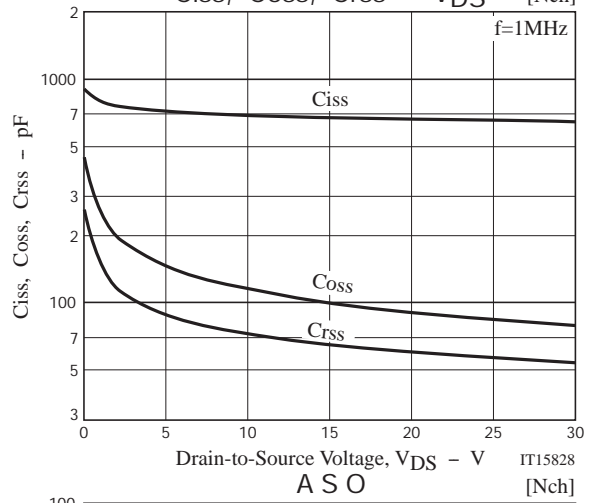
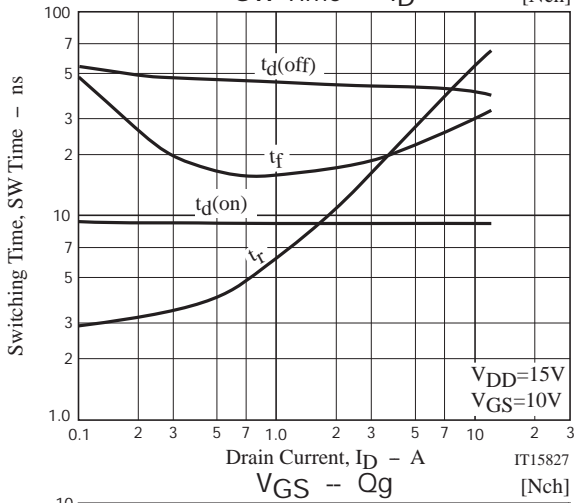
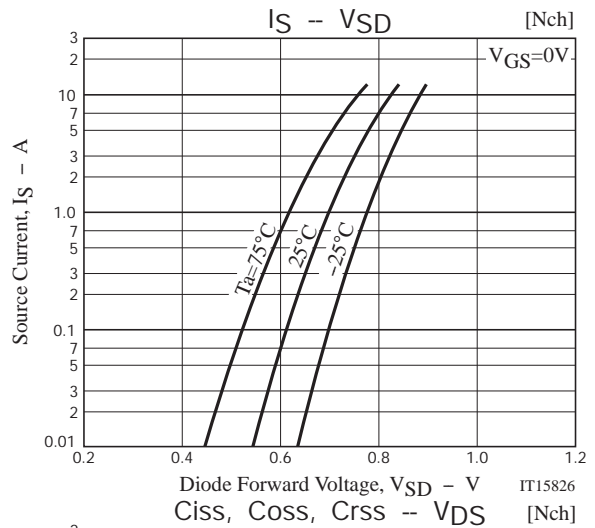
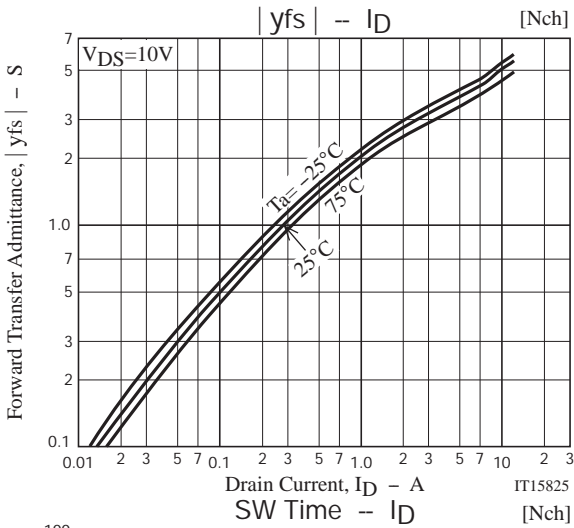
Switching Time Test Circuit

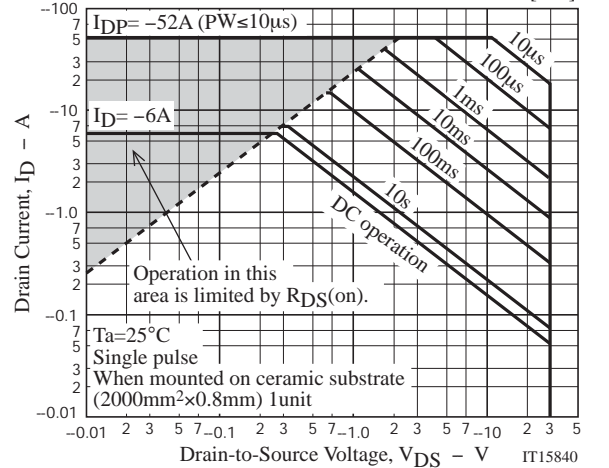
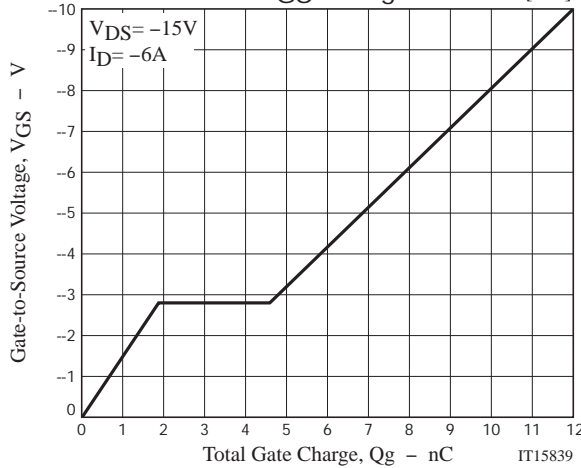
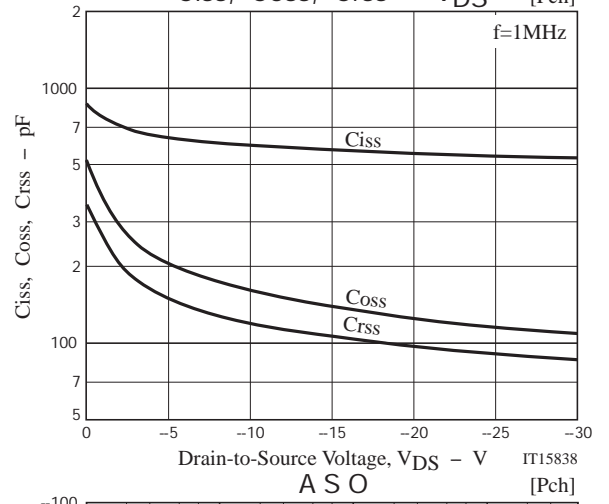
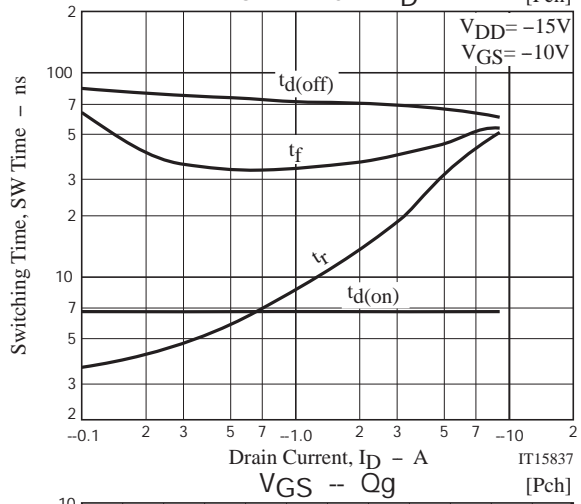
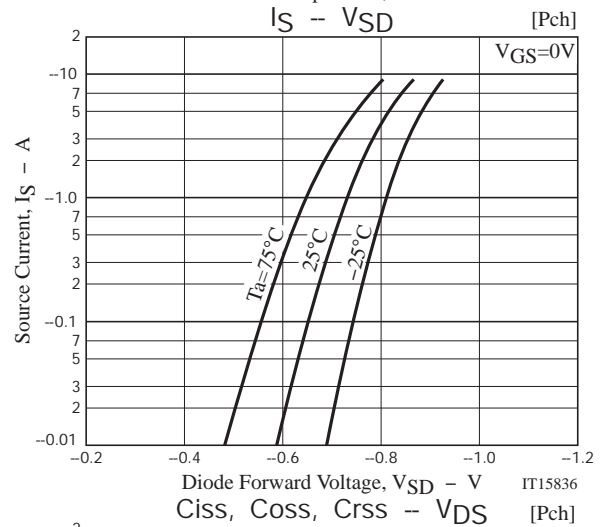
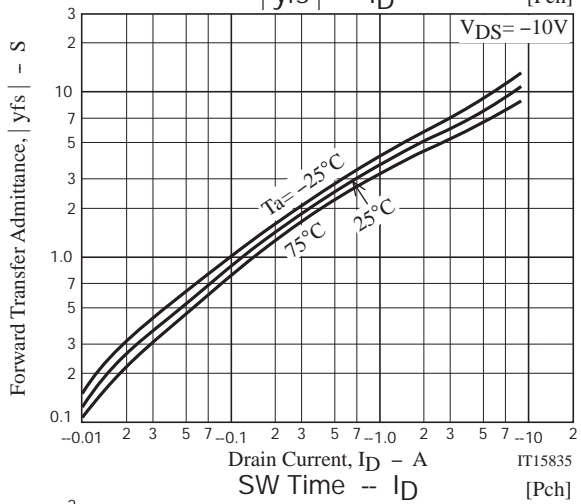
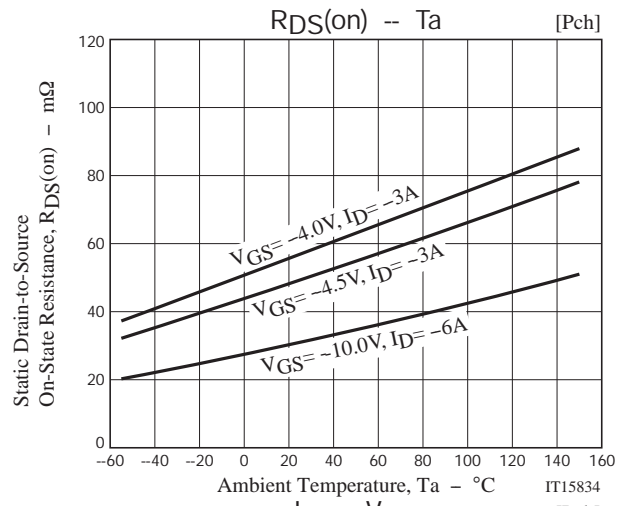
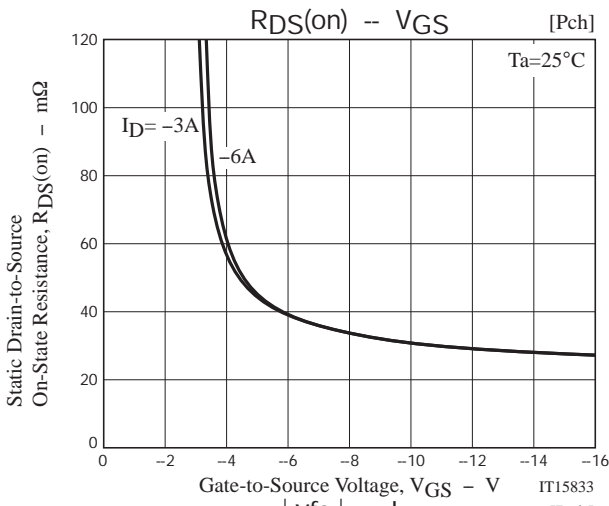
[N-channel]

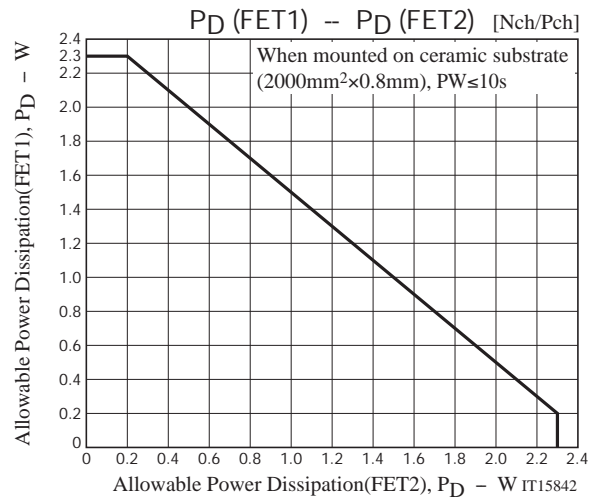
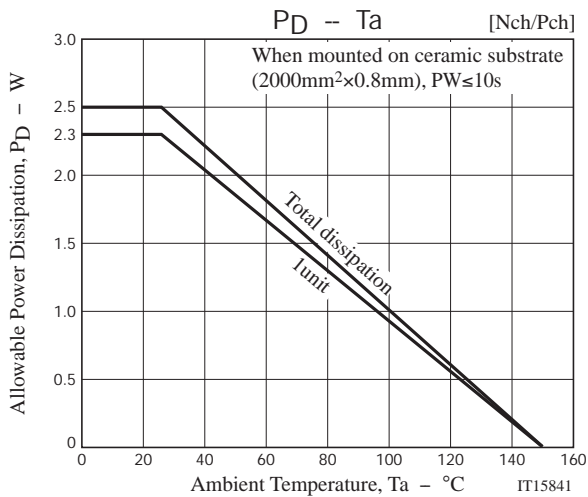


[P-channel]









Note on usage : Since the FW906 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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