



# FW343

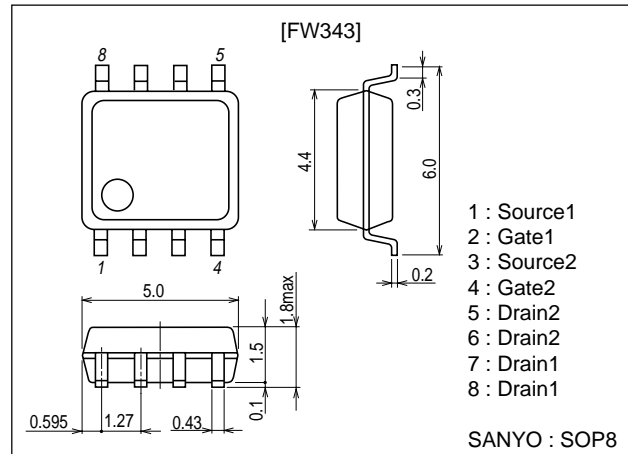
## Motor Driver Applications

### Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- Composite type with an N-channel MOSFET and a P-channel MOSFET driving from a 4V supply voltage contained in a single package.
- High-density mounting.

### Package Dimensions

unit : mm  
2129



### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings		Unit
			N-channel	P-channel	
Drain-to-Source Voltage	V <sub>DSS</sub>		30	-30	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±20	±20	V
Drain Current (DC)	I <sub>D</sub>		5	-4	A
Drain Current (PW≤10s)	I <sub>D</sub>	duty cycle≤1%	5.5	-4.5	A
Drain Current (PW≤100ms)	I <sub>D</sub>	duty cycle≤1%	7	-6.5	A
Drain Current (PW≤10μs)	I <sub>DP</sub>	duty cycle≤1%	20	-16	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (2000mm <sup>2</sup> X0.8mm)1unit, PW≤10s	1.8		W
Total Dissipation	P <sub>T</sub>	Mounted on a ceramic board (2000mm <sup>2</sup> X0.8mm),PW≤10s	2.2		W
Channel Temperature	T <sub>ch</sub>		150		°C
Storage Temperature	T <sub>stg</sub>		-55 to +150		°C

### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	I <sub>D</sub> =1mA, V <sub>GS</sub> =0	30			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±16V, V <sub>DS</sub> =0			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	1.2		2.6	V

Marking : W343

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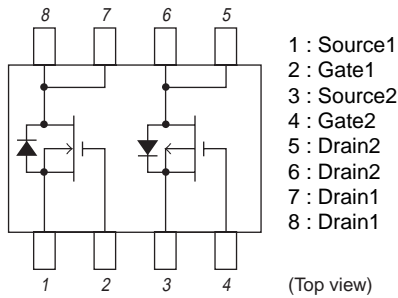
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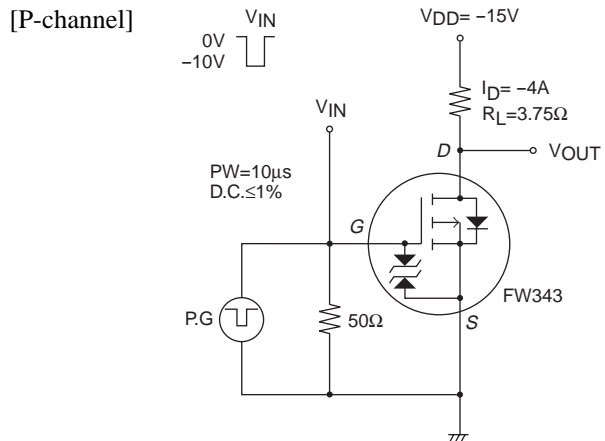
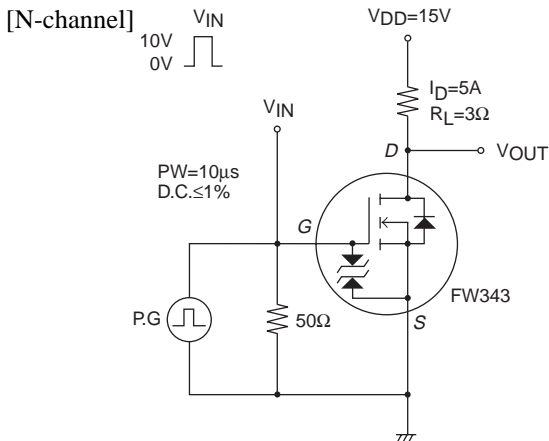
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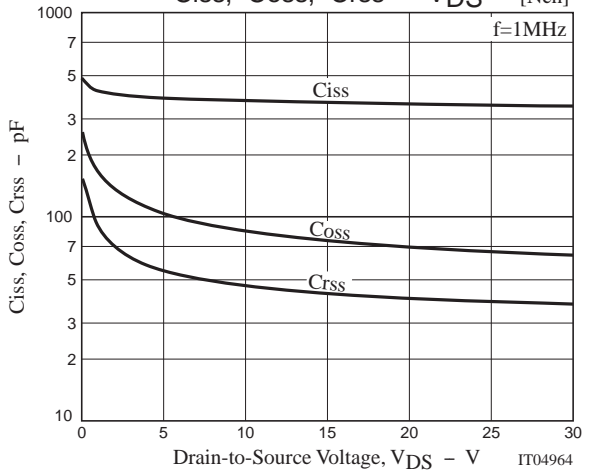
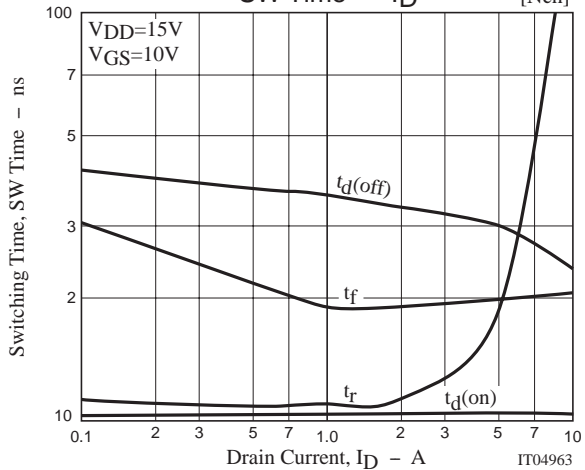
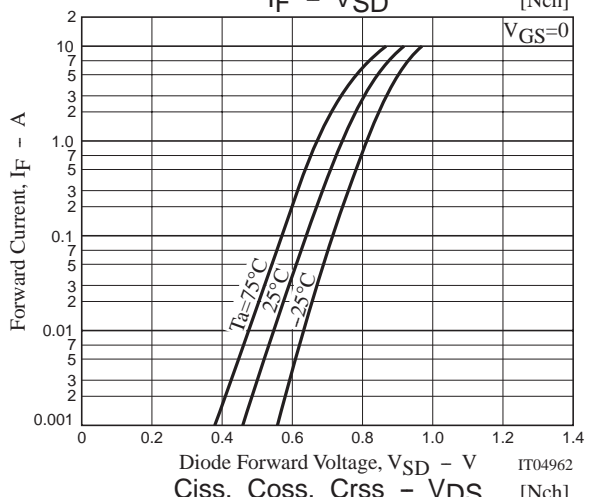
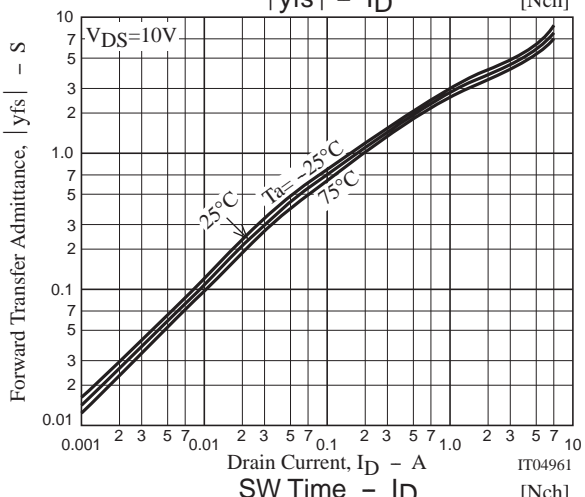
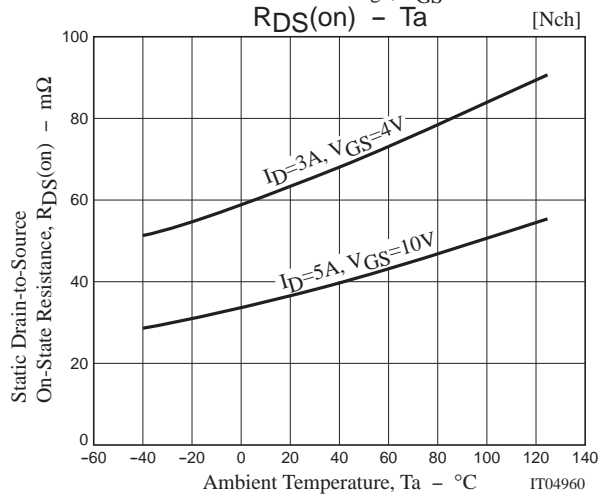
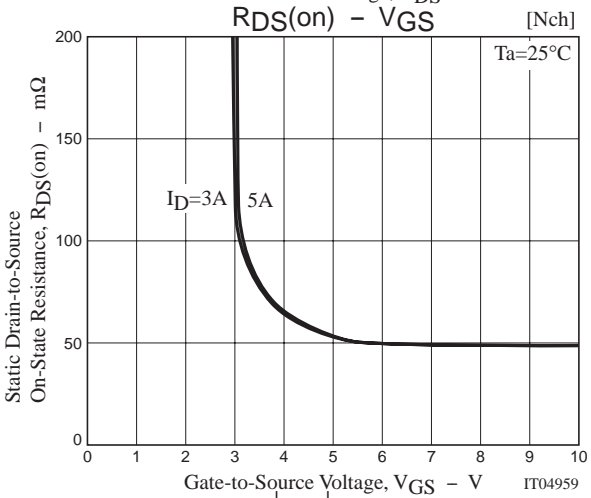
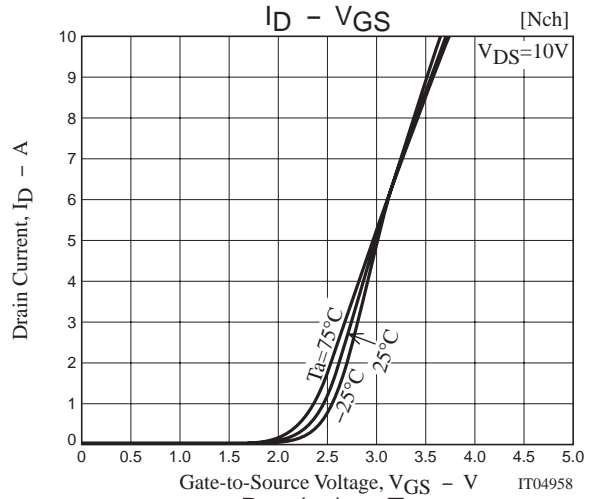
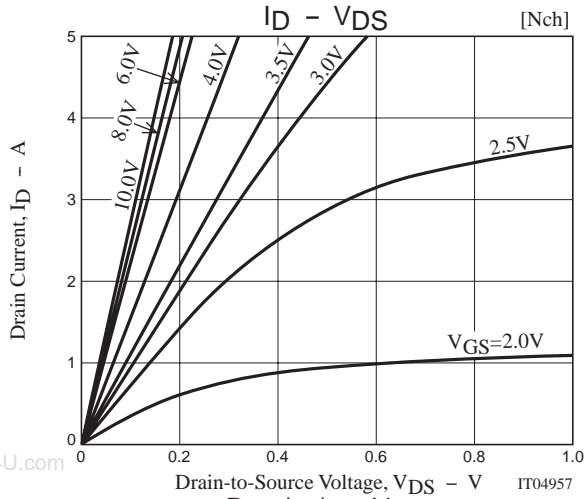
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=5A$	3.9	5.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=5A, V_{GS}=10V$		37	48	$m\Omega$
	$R_{DS(on)2}$	$I_D=3A, V_{GS}=4V$		64	83	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10V, f=1MHz$		460		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10V, f=1MHz$		95		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10V, f=1MHz$		75		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		11		ns
Rise Time	$t_r$	See specified Test Circuit.		20		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		30		ns
Fall Time	$t_f$	See specified Test Circuit.		20		ns
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=10V, I_D=5A$		8.6		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=10V, I_D=5A$		2.0		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=10V, I_D=5A$		1.6		nC
Diode Forward Voltage	$V_{SD}$	$I_S=5A, V_{GS}=0$		0.9	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0$	-30			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0$			-1	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16V, V_{DS}=0$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-1.2		-2.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-4A$	3.5	5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-4A, V_{GS}=-10V$		53	69	$m\Omega$
	$R_{DS(on)2}$	$I_D=-2A, V_{GS}=-4V$		105	147	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-10V, f=1MHz$		510		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-10V, f=1MHz$		115		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-10V, f=1MHz$		78		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		11		ns
Rise Time	$t_r$	See specified Test Circuit.		55		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		35		ns
Fall Time	$t_f$	See specified Test Circuit.		40		ns
Total Gate Charge	$Q_g$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-4A$		11		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-4A$		2.4		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-4A$		1.7		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-4A, V_{GS}=0$	-0.9		-1.5	V

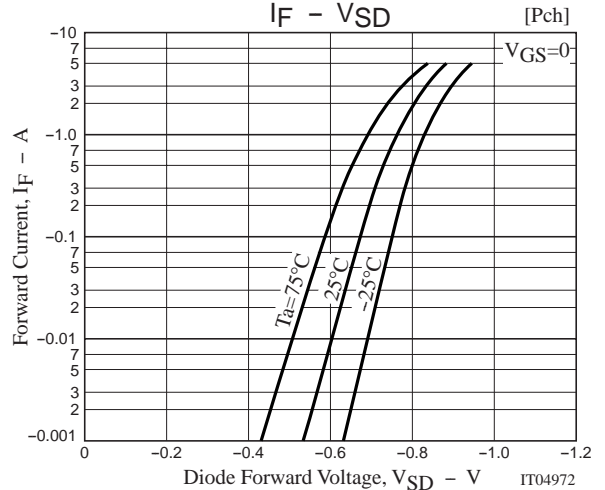
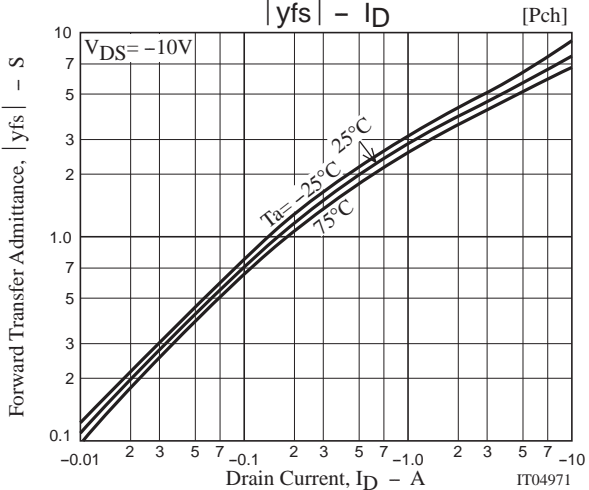
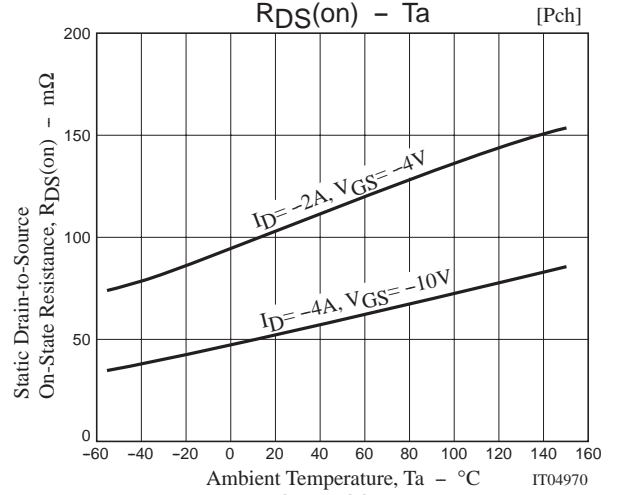
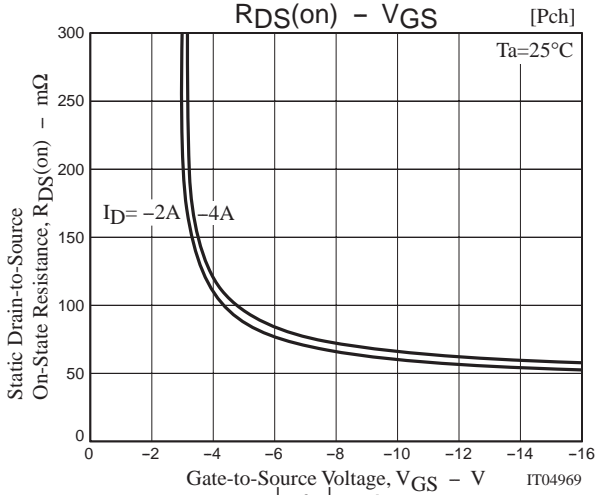
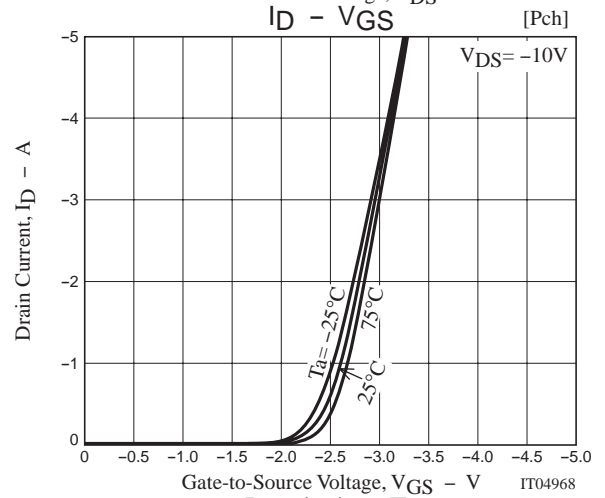
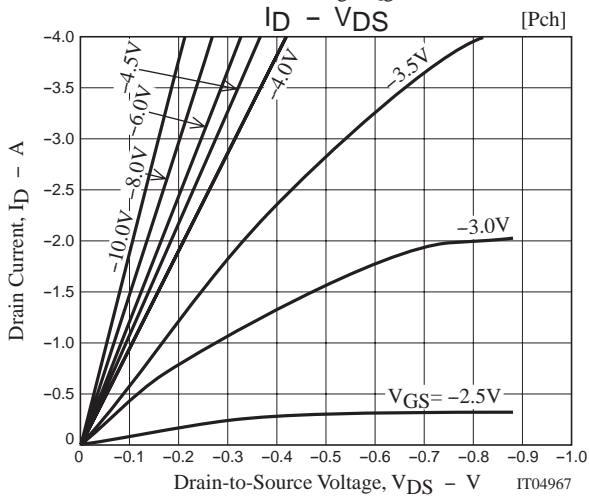
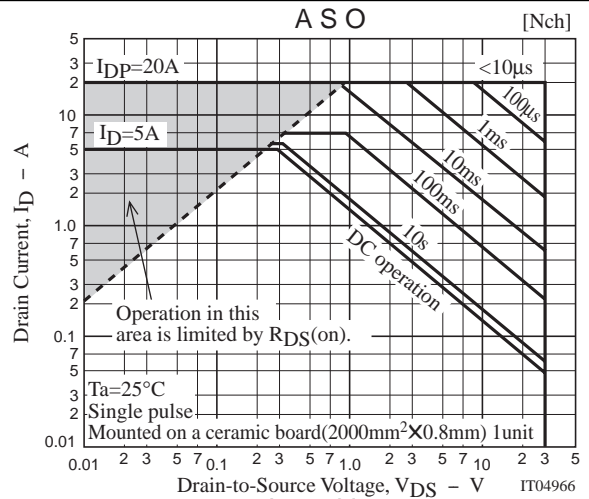
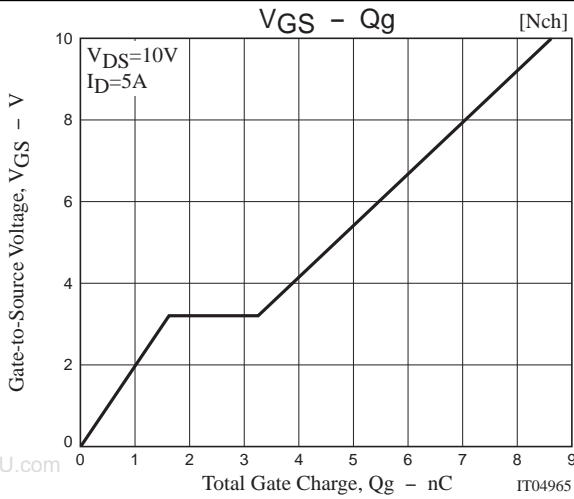
## Electrical Connection

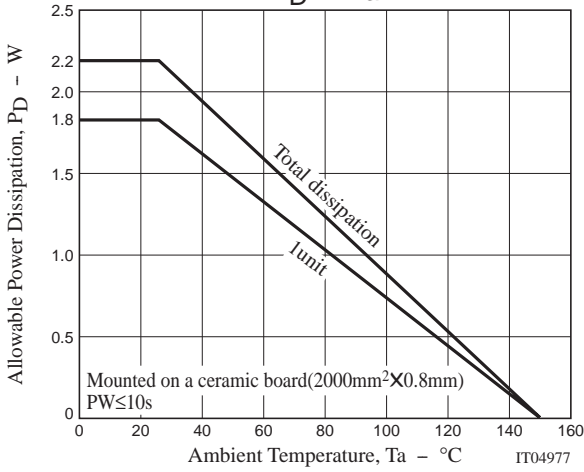
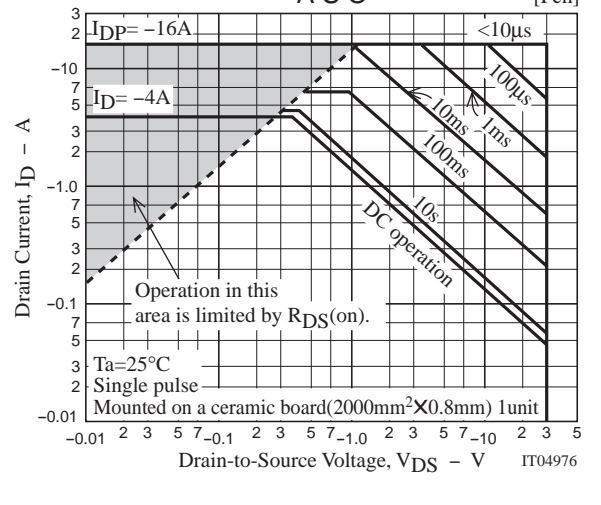
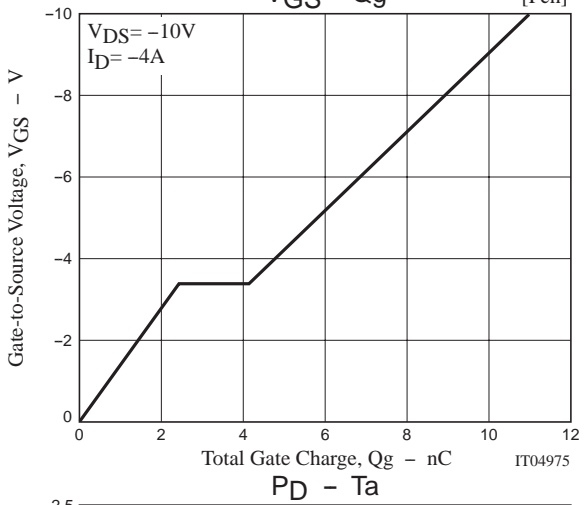
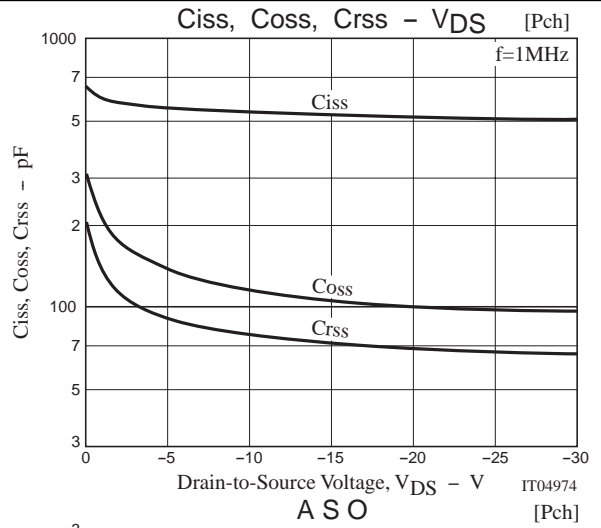
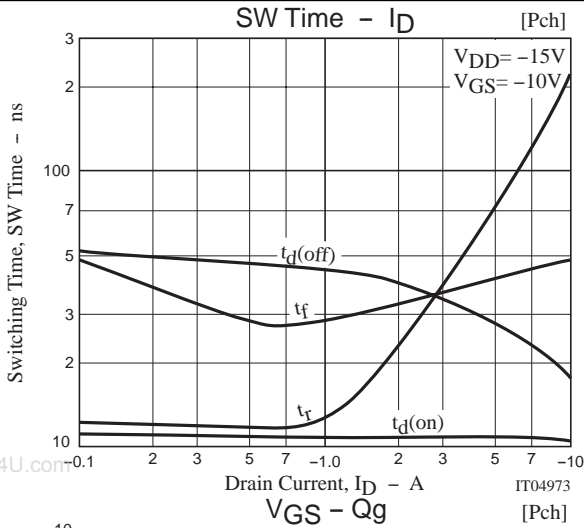


## Switching Time Test Circuit









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