

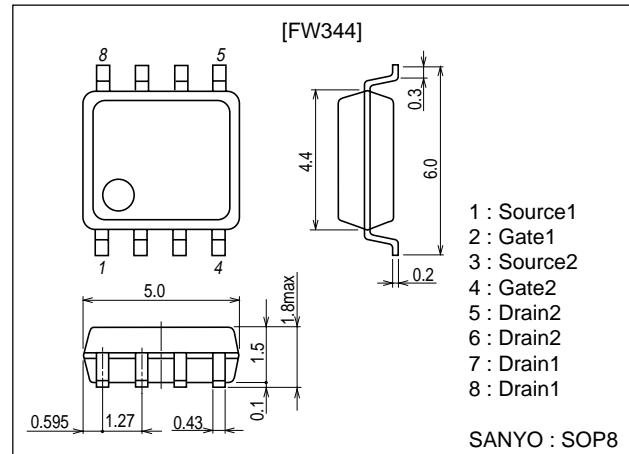
**FW344****Motor Driver Applications****Features**

- 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 _{DSS}		30	-30	V
Gate-to-Source Voltage	V _{GSS}		±20	±20	V
Drain Current (DC)	I _D		3.5	-4	A
Drain Current (PW≤10s)	I _D	duty cycle≤1%	4	-4.5	A
Drain Current (PW≤100ms)	I _D	duty cycle≤1%	6	-6.5	A
Drain Current (PW≤10μs)	I _{DP}	duty cycle≤1%	14	-16	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (2000mm ² ×0.8mm)1unit	1.4		W
Total Dissipation	P _T	Mounted on a ceramic board (2000mm ² ×0.8mm)	1.7		W
Channel Temperature	T _{ch}		150		°C
Storage Temperature	T _{stg}		-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 _D =1mA, V _{GS} =0	30			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	1.2		2.6	V

Marking : W344

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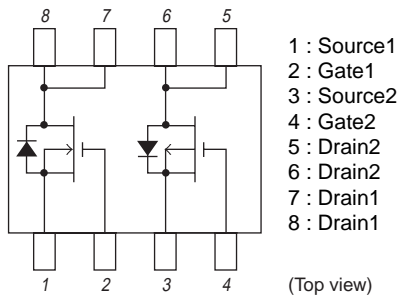
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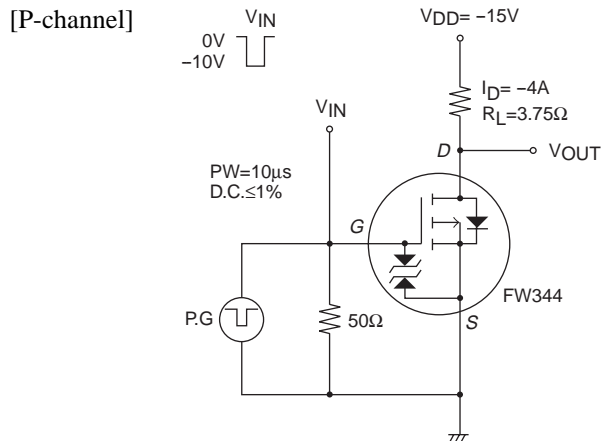
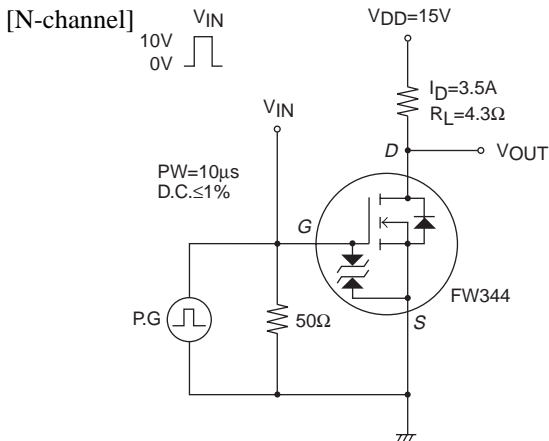
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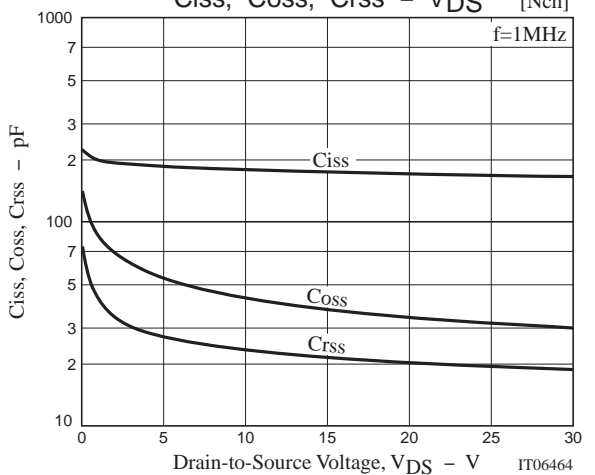
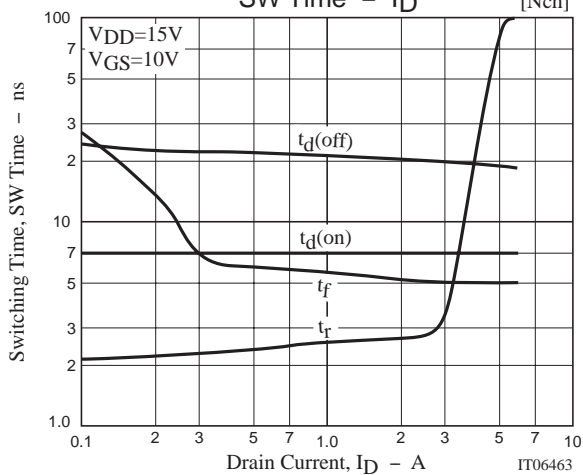
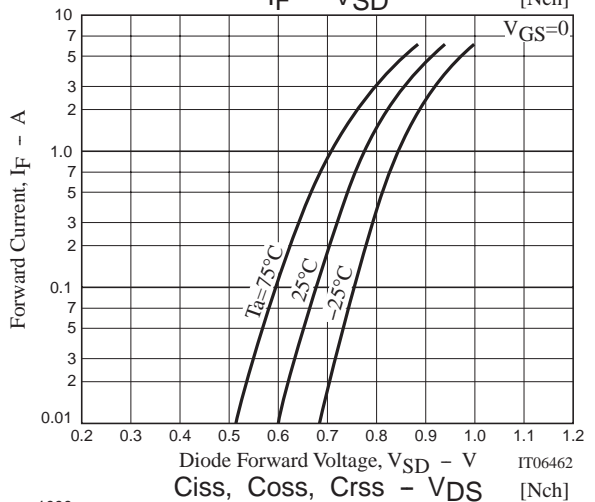
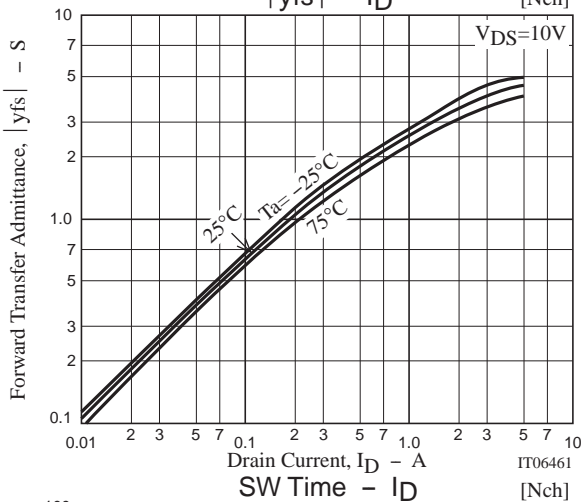
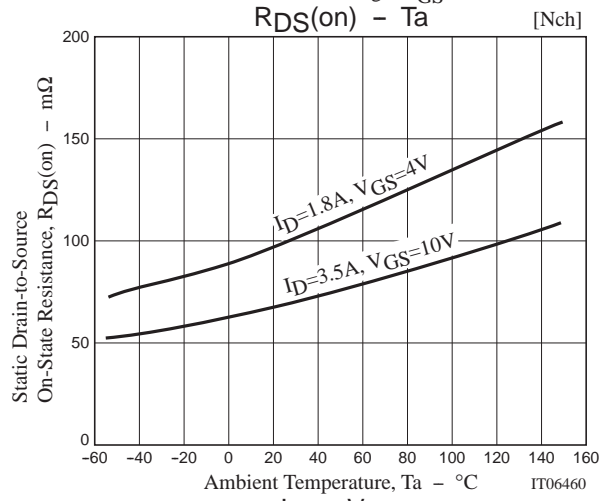
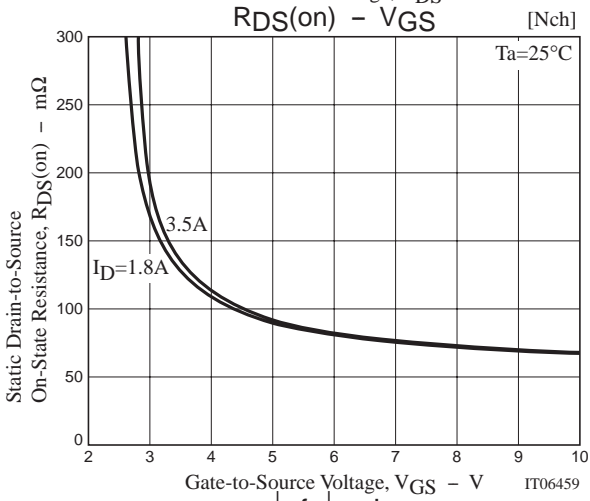
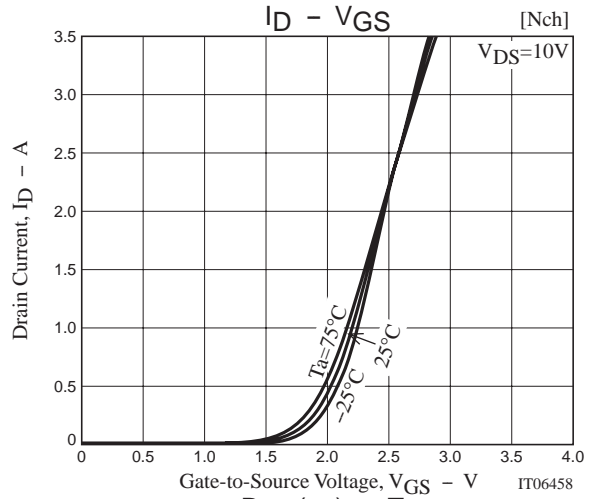
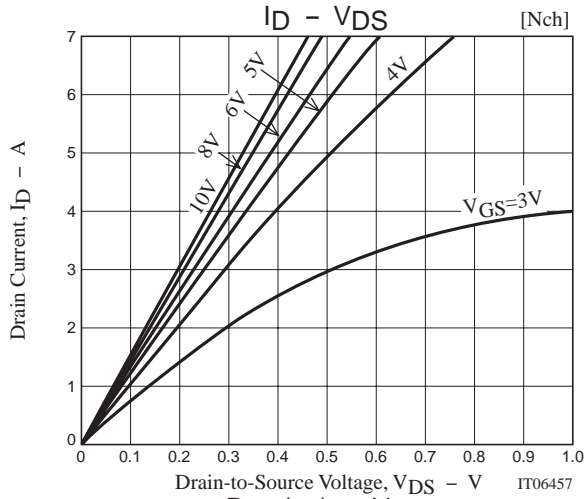
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=3.5A$	3.0	5.3		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=3.5A, V_{GS}=10V$		64	84	m Ω
	$R_{DS(on)2}$	$I_D=1.8A, V_{GS}=4V$		105	150	m Ω
Input Capacitance	C_{iss}	$V_{DS}=10V, f=1MHz$		180		pF
Output Capacitance	C_{oss}	$V_{DS}=10V, f=1MHz$		42		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10V, f=1MHz$		25		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		7		ns
Rise Time	t_r	See specified Test Circuit.		15		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		19		ns
Fall Time	t_f	See specified Test Circuit.		5		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=10V, I_D=3.5A$		5.0		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=10V, I_D=3.5A$		0.9		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=10V, I_D=3.5A$		0.6		nC
Diode Forward Voltage	V_{SD}	$I_S=3.5A, V_{GS}=0$		0.88	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	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V, V_{DS}=0$			± 10	μA
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	$R_{DS(on)1}$	$I_D=-4A, V_{GS}=-10V$		58	78	m Ω
	$R_{DS(on)2}$	$I_D=-2A, V_{GS}=-4V$		105	147	m Ω
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

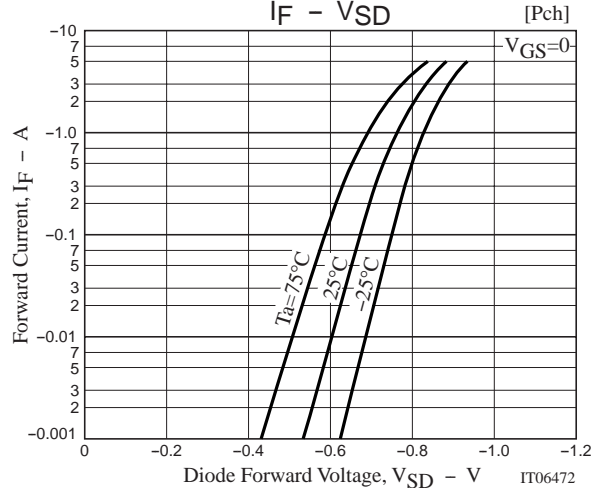
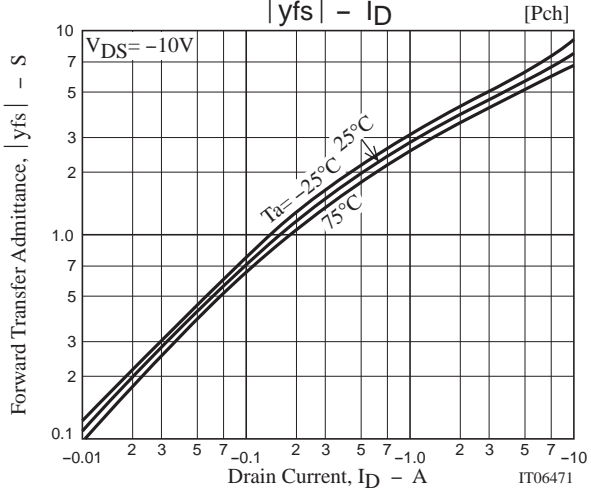
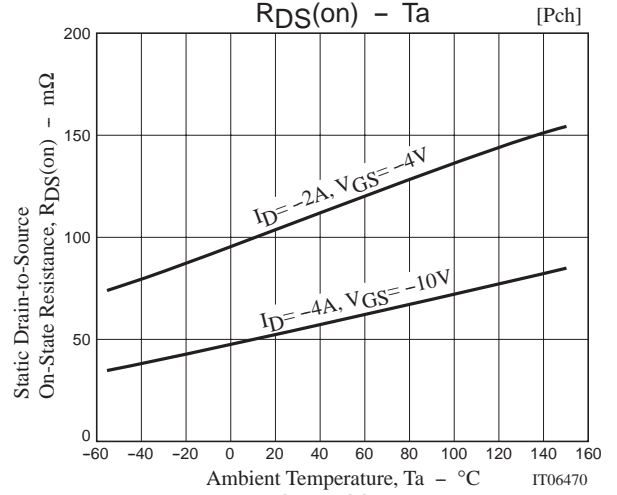
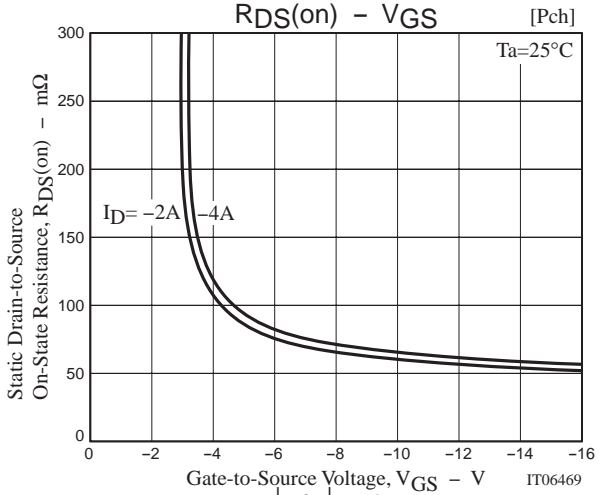
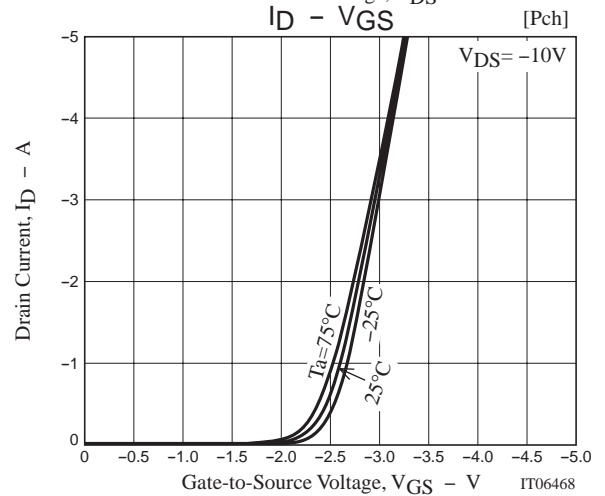
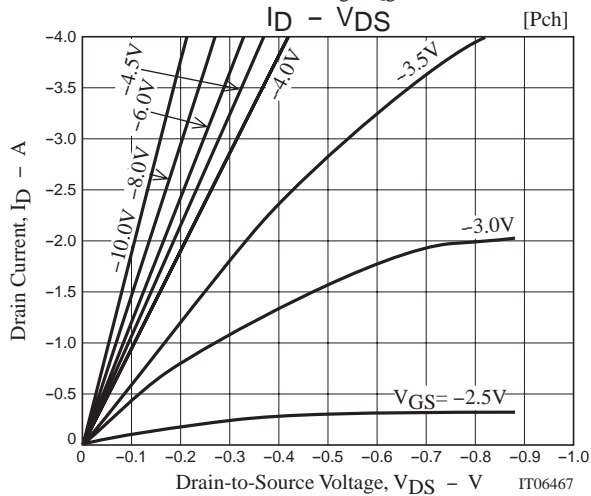
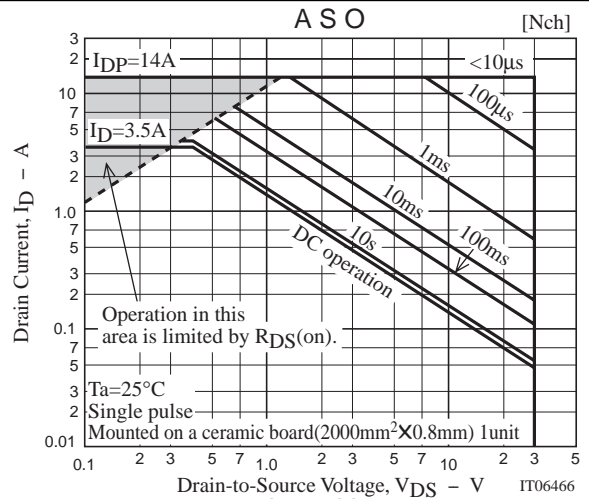
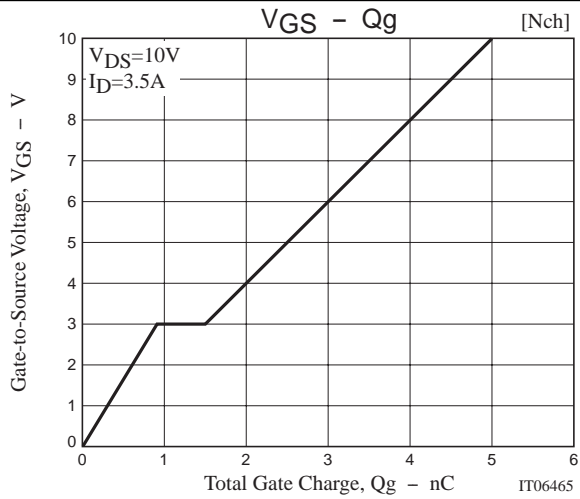
Electrical Connection



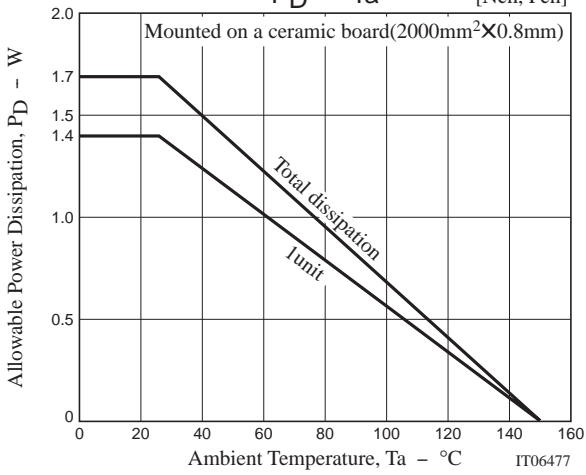
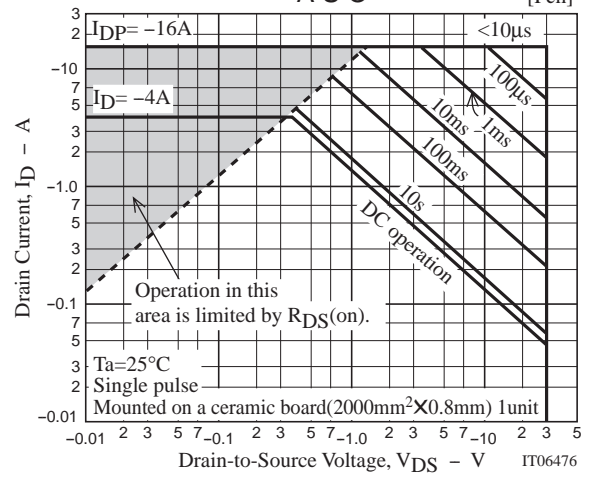
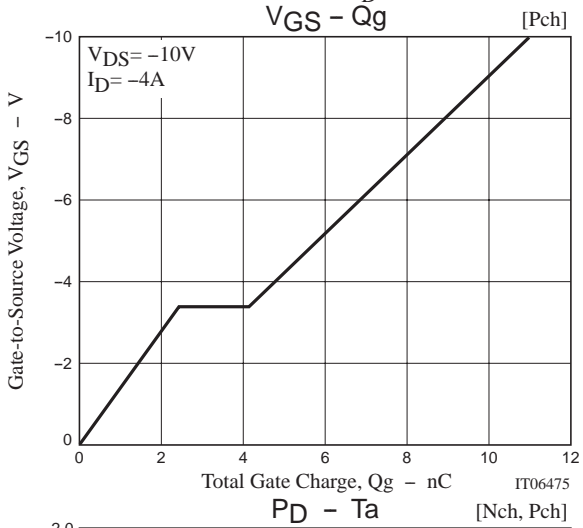
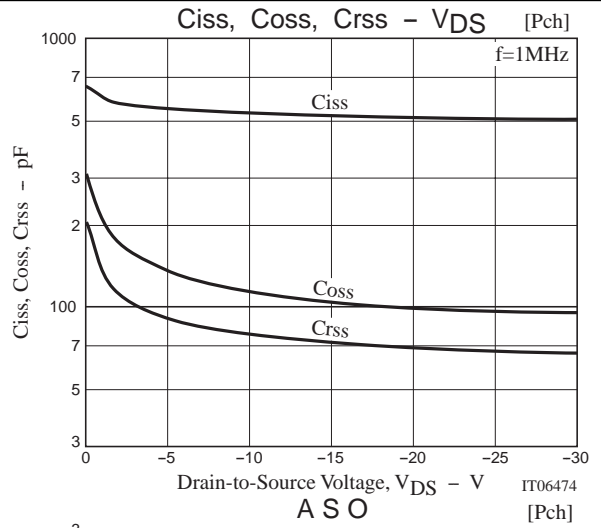
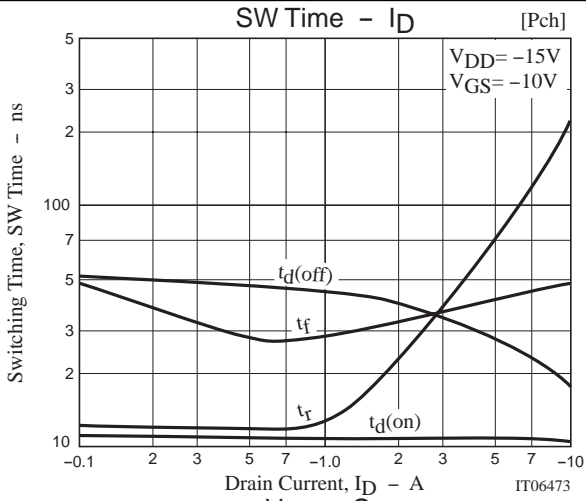
Switching Time Test Circuit







FW344



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