



# FW342 — N-Channel and P-Channel Silicon MOSFETs

## General-Purpose Switching Device Applications

### Features

- For motor drives, inverters.
- 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.

### Specifications

**Absolute Maximum Ratings** at Ta=25°C

Parameter	Symbol	Conditions	N-channel	P-channel	Unit
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>		6	-5	A
Drain Current (PW≤10s)	I <sub>D</sub>	duty cycle≤1%	7	-5.5	A
Drain Current (PW≤100ms)	I <sub>D</sub>	duty cycle≤1%	10	-9	A
Drain Current (PW≤10μs)	I <sub>DP</sub>	duty cycle≤1%	24	-20	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (1500mm <sup>2</sup> ×0.8mm)1unit, PW≤10s	1.8		W
Total Dissipation	P <sub>T</sub>	Mounted on a ceramic board (1500mm <sup>2</sup> ×0.8mm), 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 <sub>(BR)DSS</sub>	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
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =6A	4.6	7.8		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =6A, V <sub>GS</sub> =10V		25	33	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =3A, V <sub>GS</sub> =4.5V		35	49	mΩ
	R <sub>DS(on)3</sub>	I <sub>D</sub> =3A, V <sub>GS</sub> =4V		37	52	mΩ

Marking : W342

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# FW342

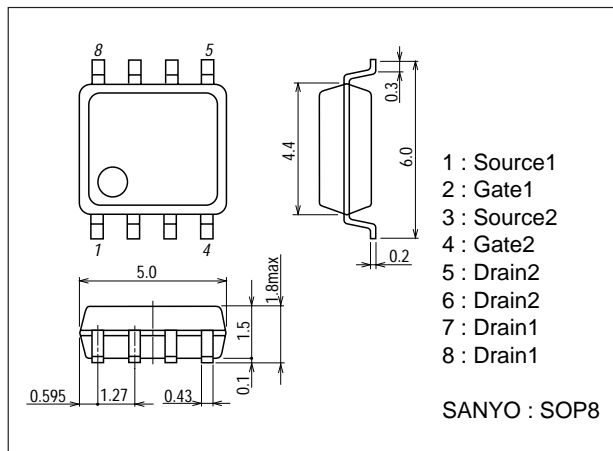
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V <sub>DS</sub> =10V, f=1MHz		850		pF
Output Capacitance	Coss	V <sub>DS</sub> =10V, f=1MHz		170		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =10V, f=1MHz		125		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		12.5		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		108		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		77		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		61		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V, I <sub>D</sub> =6A		16		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V, I <sub>D</sub> =6A		3.4		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =10V, I <sub>D</sub> =6A		2.4		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =6A, V <sub>GS</sub> =0		0.84	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	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
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-5A	4.5	7.5		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =-5A, V <sub>GS</sub> =-10V		41	53	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =-3A, V <sub>GS</sub> =-4.5V		62	87	mΩ
	R <sub>DS(on)3</sub>	I <sub>D</sub> =-3A, V <sub>GS</sub> =-4V		70	98	mΩ
Input Capacitance	Ciss	V <sub>DS</sub> =-10V, f=1MHz		1000		pF
Output Capacitance	Coss	V <sub>DS</sub> =-10V, f=1MHz		195		pF
Reverse Transfer Capacitance	Crss	V <sub>DS</sub> =-10V, f=1MHz		150		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		13		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		82		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		87		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		55		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-5A		16.5		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-5A		2.5		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-5A		2.5		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-5A, V <sub>GS</sub> =0		-0.85	-1.5	V

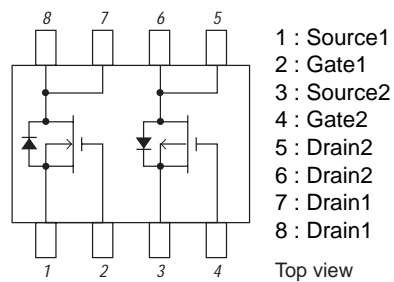
## Package Dimensions

unit : mm

2129

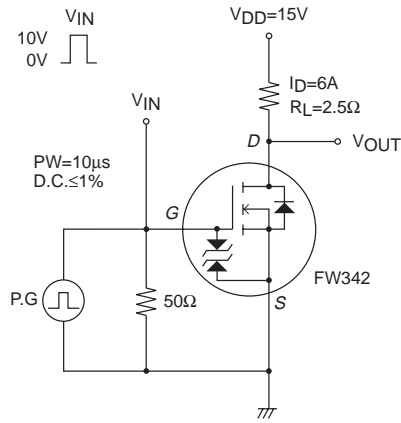


## Electrical Connection

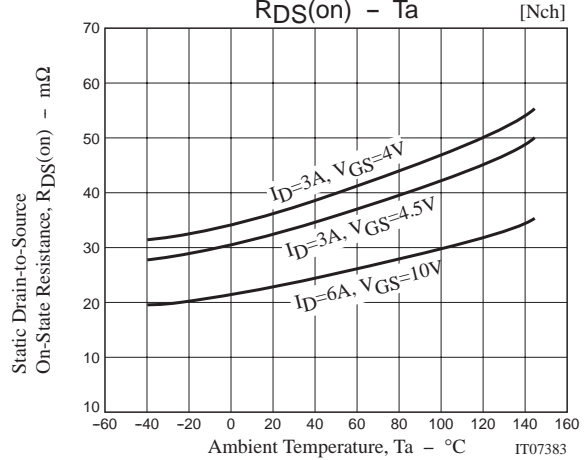
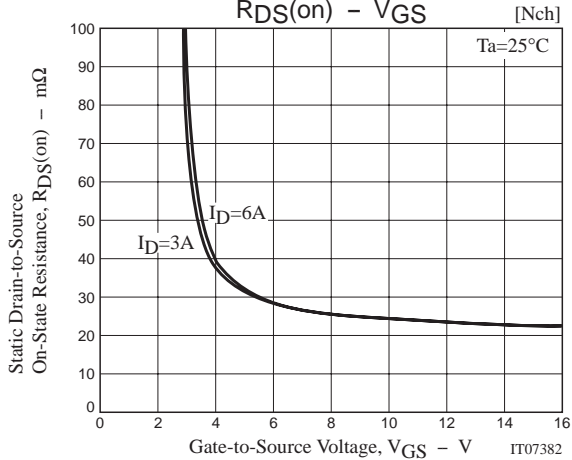
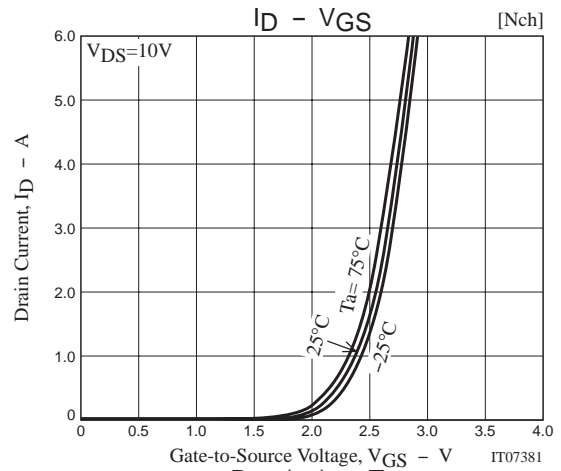
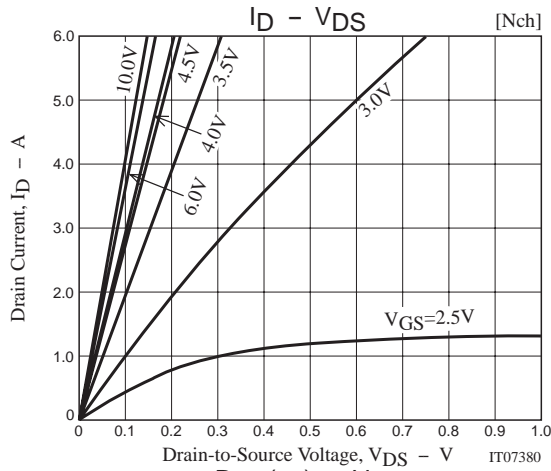
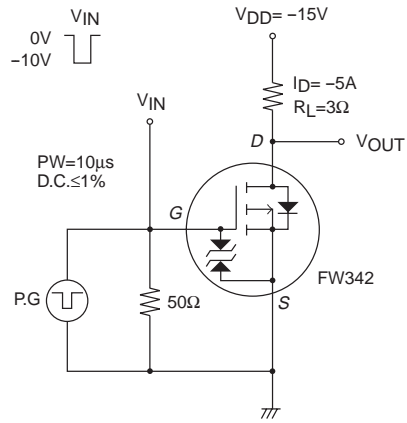


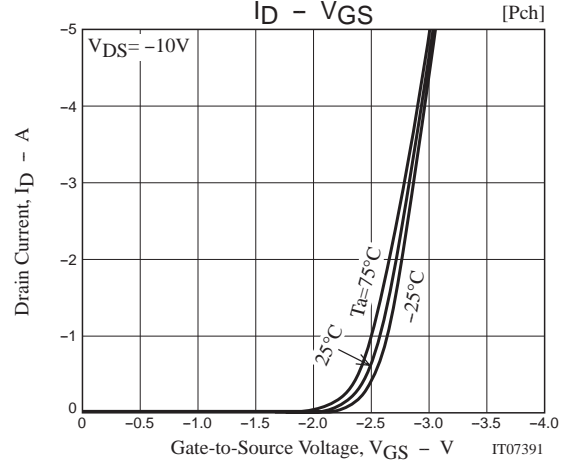
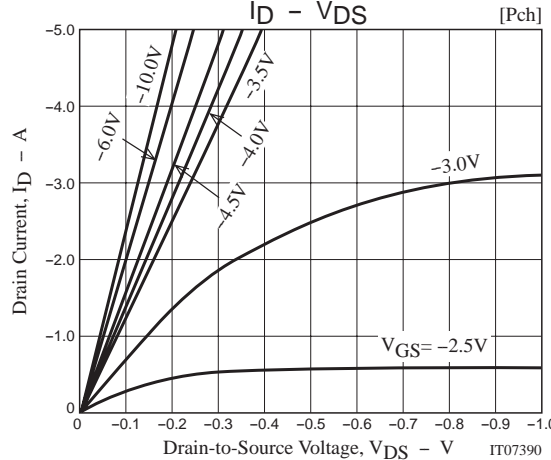
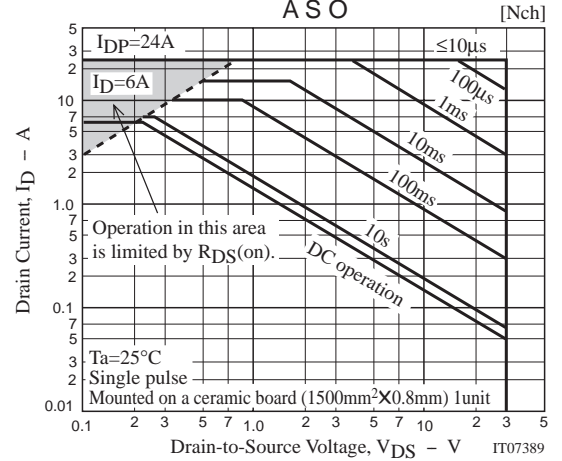
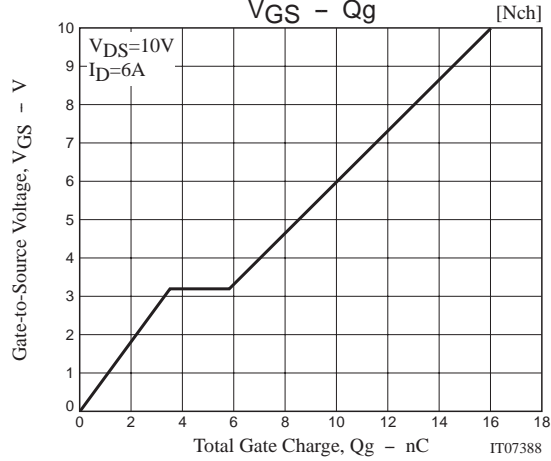
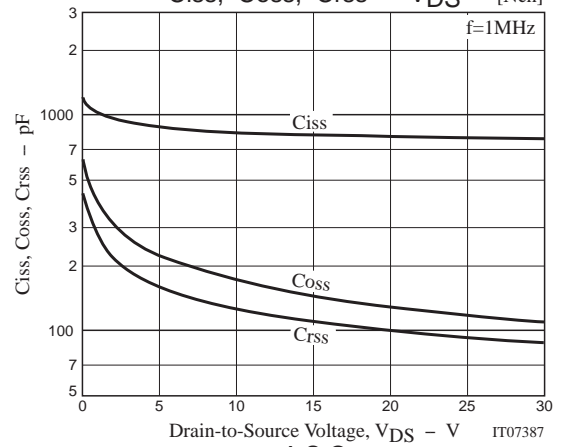
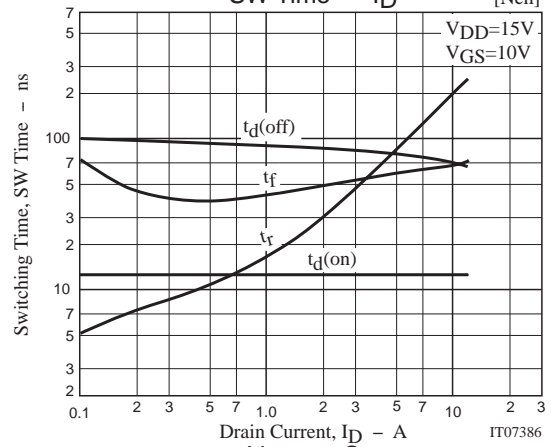
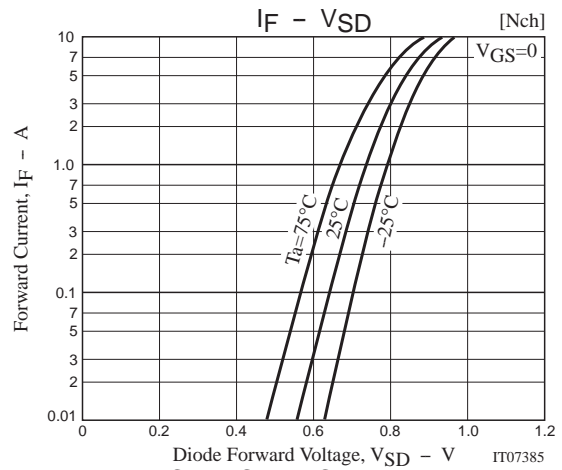
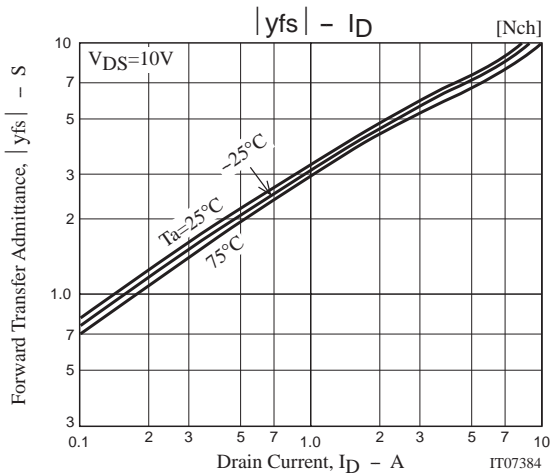
Switching Time Test Circuit

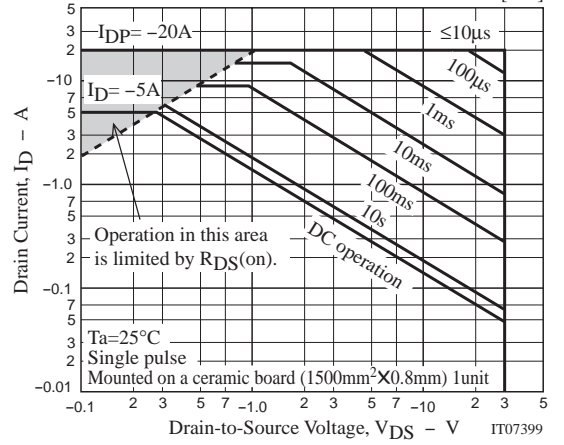
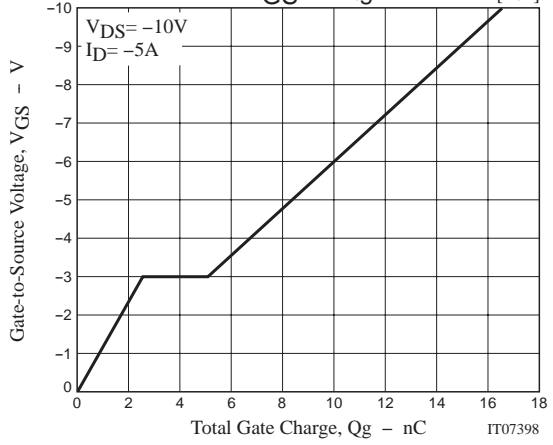
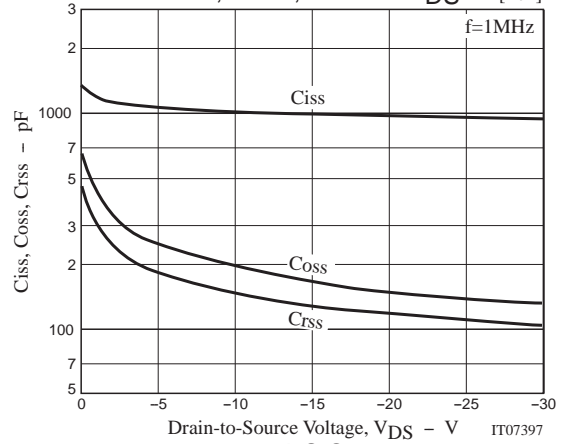
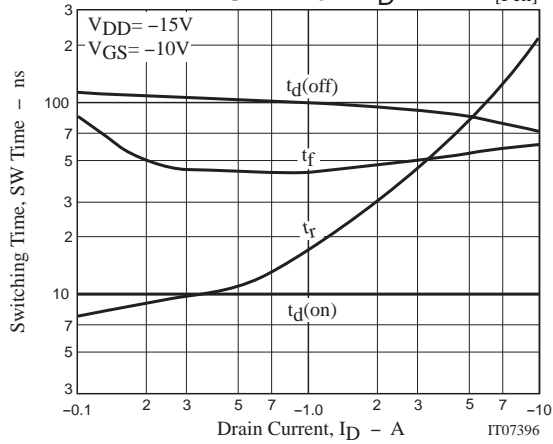
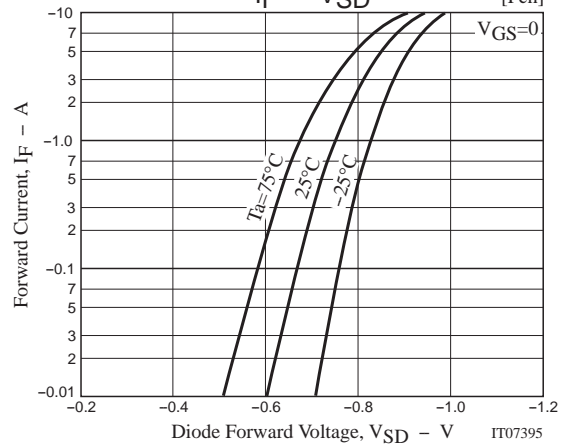
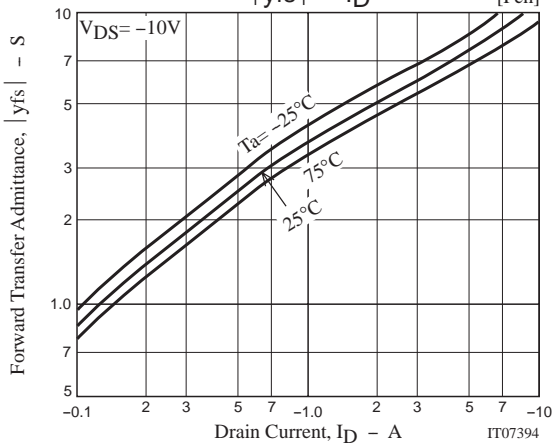
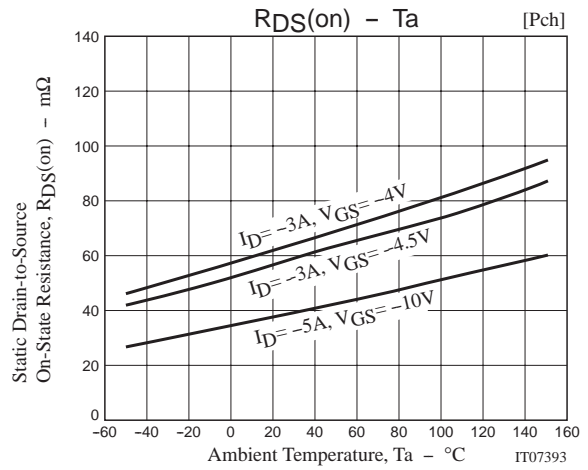
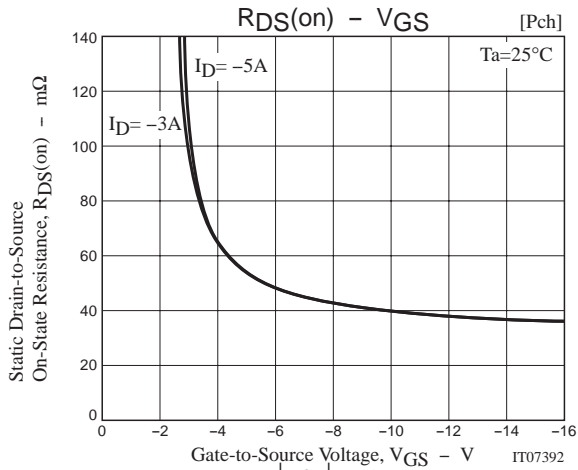
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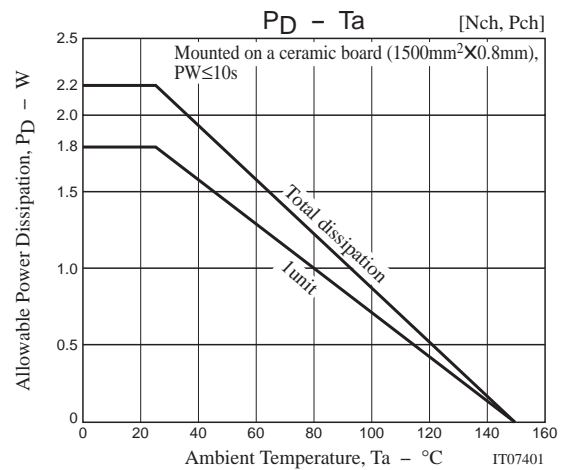
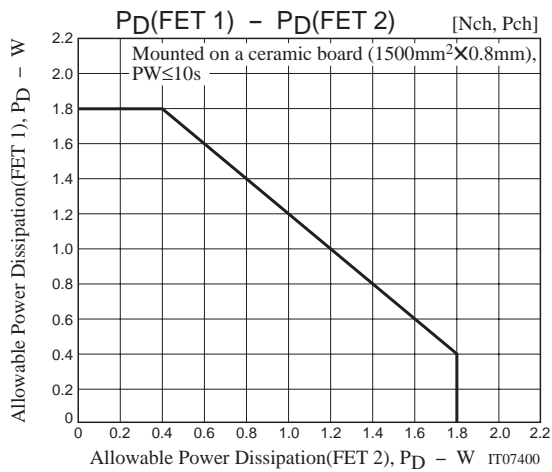


[P-channel]









Note on usage : Since the FW342 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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