

FX6KMJ-2

High-Speed Switching Use Pch Power MOS FET

REJ03G0262-0100

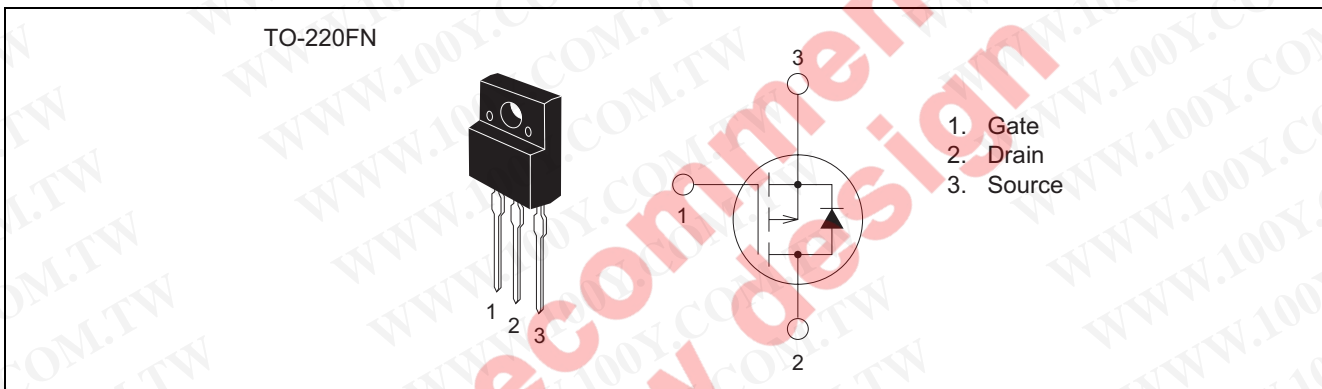
Rev.1.00

Aug.20.2004

Features

- Drive voltage : 4 V
- V_{DSS} : -100 V
- $r_{DS(ON)(max)}$: 0.58 Ω
- I_D : -6 A
- Recovery Time of the Integrated Fast Recovery Diode (TYP.) : 80 ns

Outline



Applications

Motor control, lamp control, solenoid control, DC-DC converters, etc.

Maximum Ratings

($T_c = 25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit	Conditions
Drain-source voltage	V_{DSS}	-100	V	$V_{GS} = 0\text{ V}$
Gate-source voltage	V_{GSS}	± 20	V	$V_{DS} = 0\text{ V}$
Drain current	I_D	-6	A	
Drain current (Pulsed)	I_{DM}	-24	A	
Avalanche current (Pulsed)	I_{DA}	-6	A	$L = 100\ \mu\text{H}$
Source current	I_S	-6	A	
Source current (Pulsed)	I_{SM}	-24	A	
Maximum power dissipation	P_D	20	W	
Channel temperature	T_{ch}	-55 to +150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$	
Isolation voltage	Viso	2000	V	AC 1 minute, Terminal to case
Mass	—	2.0	g	Typical value

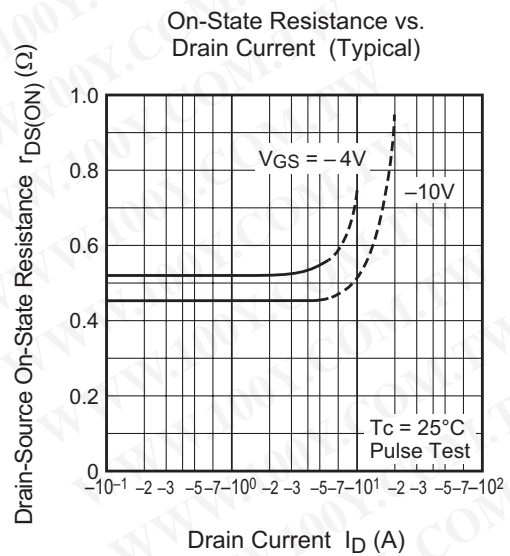
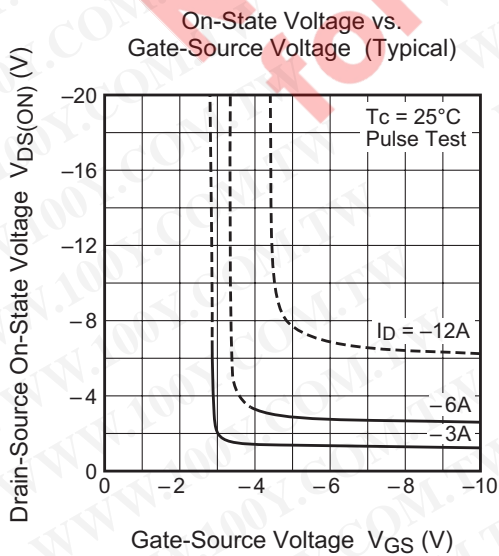
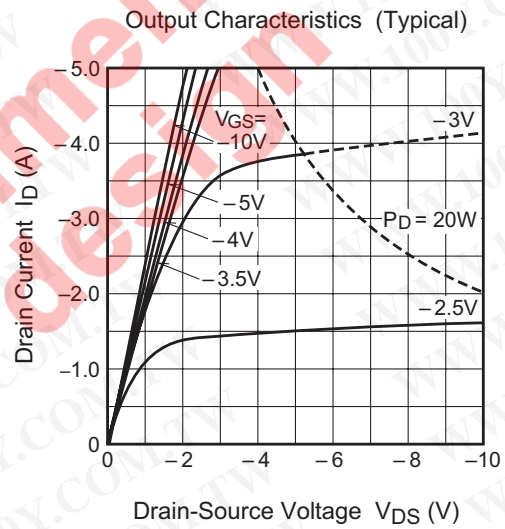
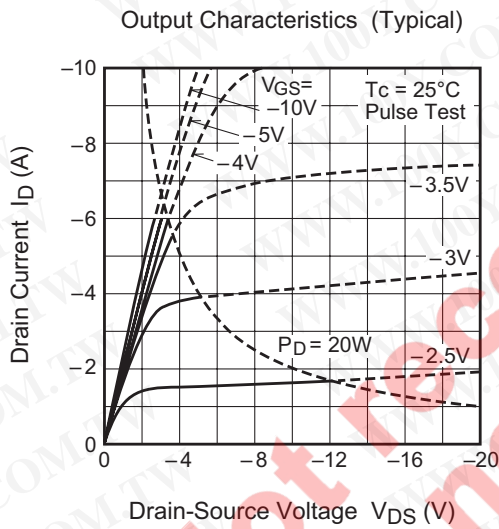
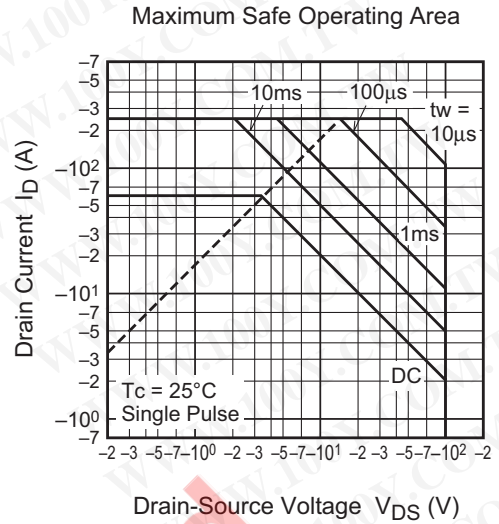
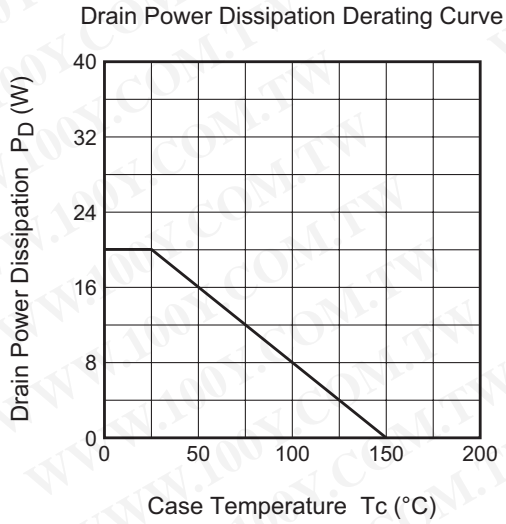
Electrical Characteristics

(T_{ch} = 25°C)

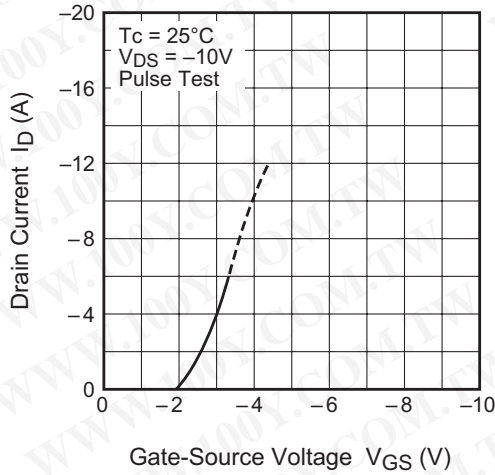
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-source breakdown voltage	V _{(BR)DSS}	-100	—	—	V	I _D = -1 mA, V _{GS} = 0 V
Gate-source leakage current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±20 V, V _{DS} = 0 V
Drain-source leakage current	I _{DSS}	—	—	-0.1	mA	V _{DS} = -100 V, V _{GS} = 0 V
Gate-source threshold voltage	V _{GS(th)}	-1.0	-1.5	-2.0	V	I _D = -1 mA, V _{DS} = -10 V
Drain-source on-state resistance	r _{DS(ON)}	—	0.46	0.58	Ω	I _D = -3 A, V _{GS} = -10 V
Drain-source on-state resistance	r _{DS(ON)}	—	0.55	0.72	Ω	I _D = -3 A, V _{GS} = -4 V
Drain-source on-state voltage	V _{DS(ON)}	—	-1.38	-1.74	V	I _D = -3 A, V _{GS} = -10 V
Forward transfer admittance	y _{fs}	—	4.7	—	S	I _D = -3 A, V _{DS} = -5 V
Input capacitance	C _{iss}	—	1110	—	pF	V _{DS} = -10 V, V _{GS} = 0 V, f = 1MHz
Output capacitance	C _{oss}	—	108	—	pF	
Reverse transfer capacitance	C _{rss}	—	44	—	pF	
Turn-on delay time	t _{d(on)}	—	9	—	ns	V _{DD} = -50 V, I _D = -3 A, V _{GS} = -10 V, R _{GEN} = R _{GS} = 50 Ω
Rise time	t _r	—	8	—	ns	
Turn-off delay time	t _{d(off)}	—	72	—	ns	
Fall time	t _f	—	33	—	ns	
Source-drain voltage	V _{SD}	—	-1.0	-1.5	V	I _S = -3 A, V _{GS} = 0 V
Thermal resistance	R _{th(ch-c)}	—	—	6.25	°C/W	Channel to case
Reverse recovery time	t _{rr}	—	80	—	ns	I _S = -6 A, dis/dt = 100 A/μs

Not recommended for new design

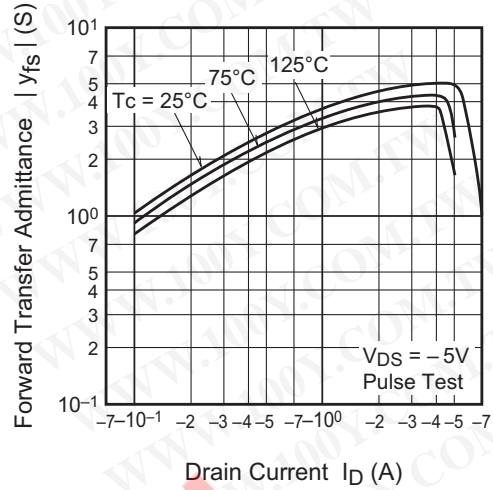
Performance Curves



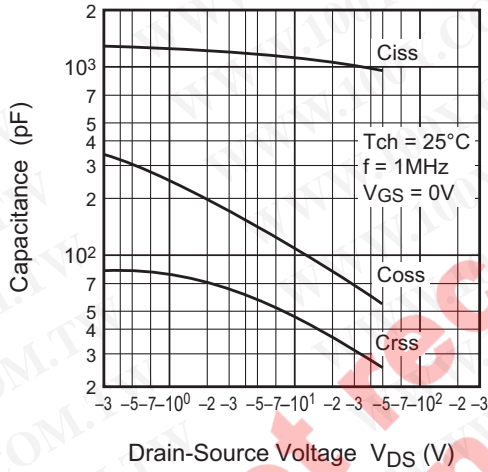
Transfer Characteristics (Typical)



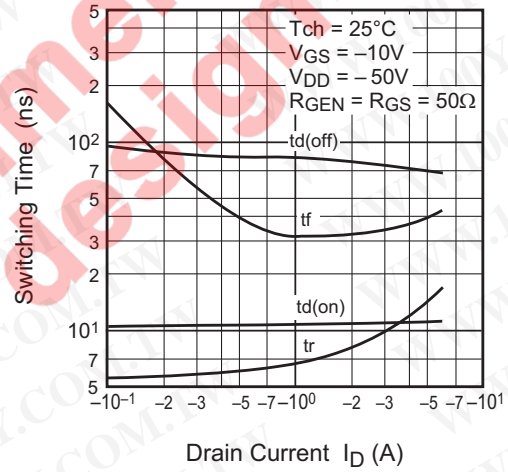
Forward Transfer Admittance vs. Drain Current (Typical)



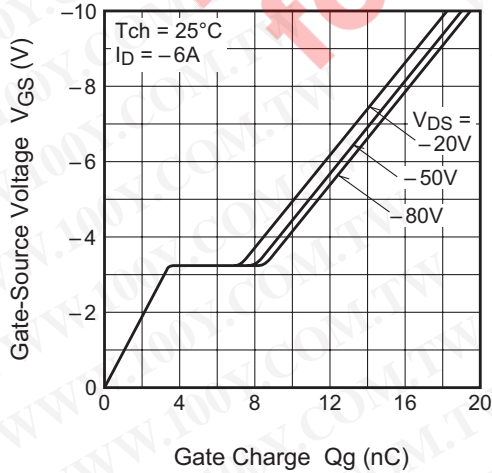
Capacitance vs. Drain-Source Voltage (Typical)



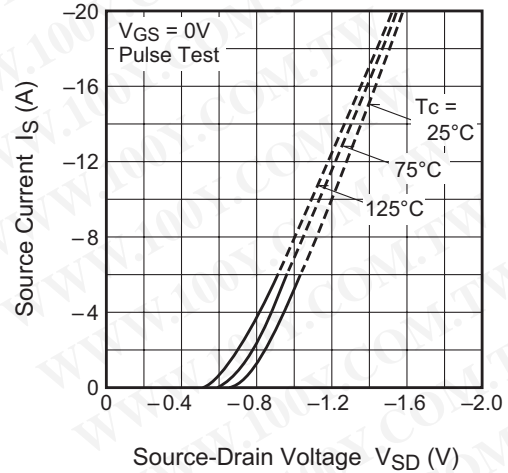
Switching Characteristics (Typical)

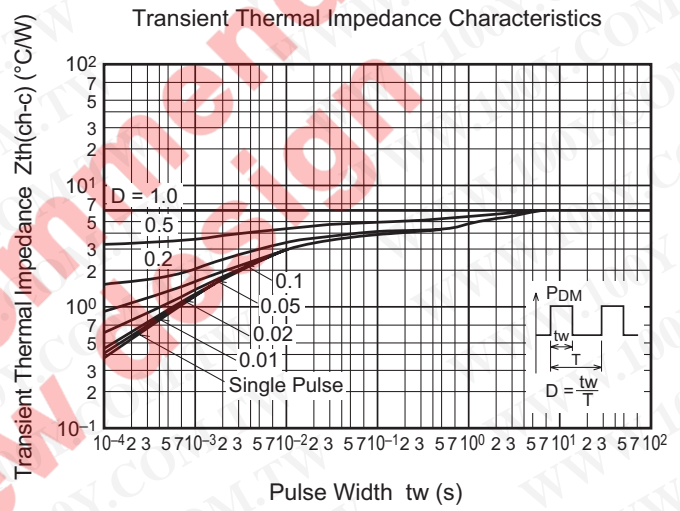
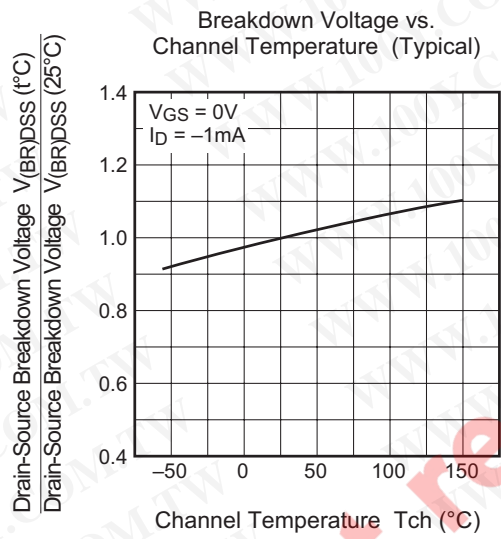
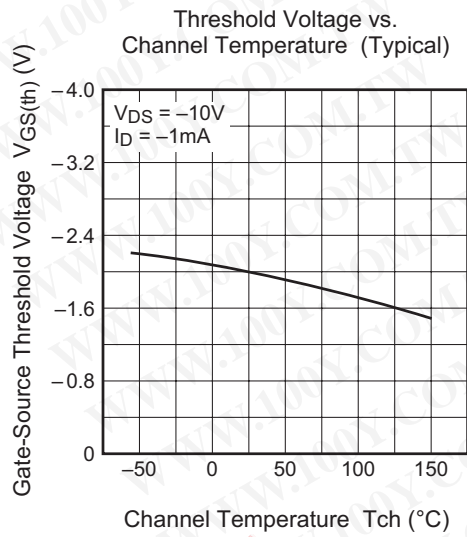
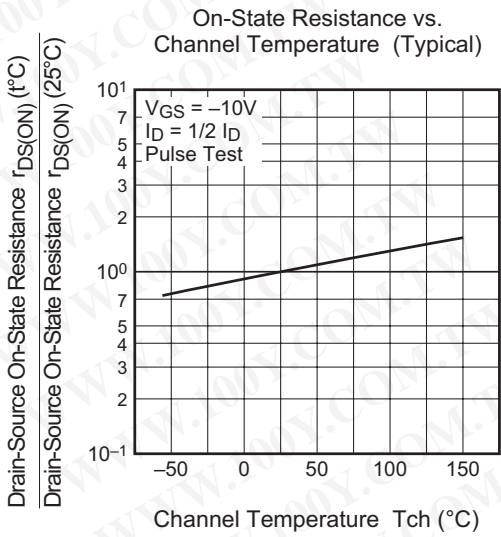


Gate-Source Voltage vs. Gate Charge (Typical)

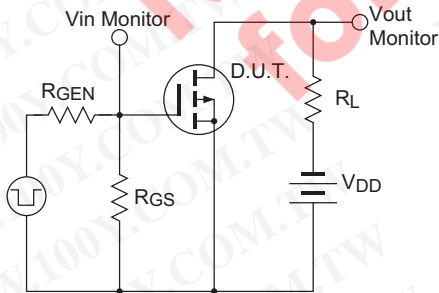


Source-Drain Diode Forward Characteristics (Typical)

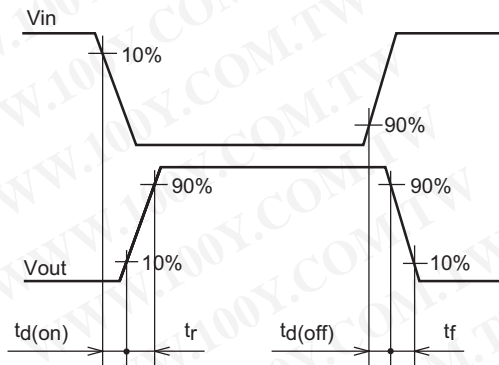




Switching Time Measurement Circuit



Switching Waveform



Package Dimensions

TO-220FN

EIAJ Package Code	JEDEC Code	Mass (g) (reference value)	Lead Material
		2.0	Cu alloy

Technical drawings showing dimensions for the TO-220FN package. Dimensions include: 10 ± 0.3, 3 ± 0.3, 15 ± 0.3, 6.5 ± 0.3, φ 3.2 ± 0.2, 1.1 ± 0.2, 1.1 ± 0.2, 0.75 ± 0.15, 2.54 ± 0.25, 2.8 ± 0.2, 0.75 ± 0.15, 14 ± 0.5, 3.6 ± 0.3, 2.6 ± 0.2, 4.5 ± 0.2, and 2.54 ± 0.25.

Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

Symbol	Dimension in Millimeters		
	Min	Typ	Max
A			
A ₁			
A ₂			
b			
D			
E			
e			
x			
y			
y ₁			
ZD			
ZE			

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Plastic Magazine (Tube)	50	Type name	FX6KMJ-2
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	FX6KMJ-2-A8

Note : Please confirm the specification about the shipping in detail.

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