

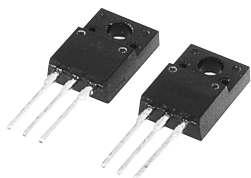
PRELIMINARY
 Notice: This is not a final specification.
 Some parametric limits are subject to change.

MITSUBISHI Pch POWER MOSFET

FX20KMJ-3

HIGH-SPEED SWITCHING USE

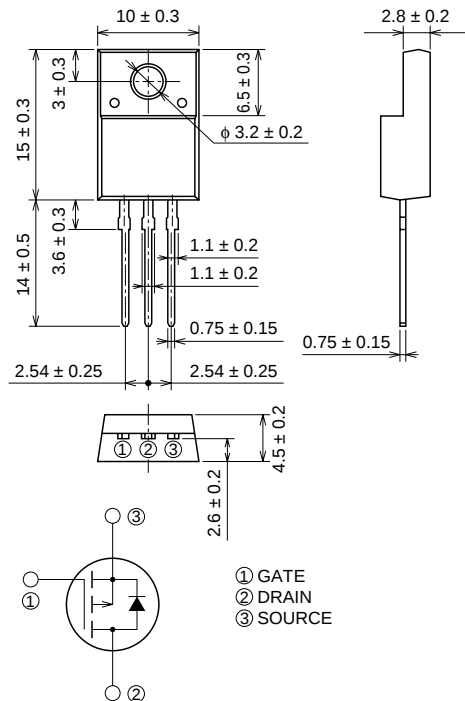
FX20KMJ-3



- 4V DRIVE
- V_{DS} -150V
- $r_{DS(ON)}(MAX)$ 0.29Ω
- I_D -20A
- Integrated Fast Recovery Diode (TYP.) 100ns
- V_{iso} 2000V

OUTLINE DRAWING

Dimensions in mm



TO-220FN

APPLICATION

Motor control, Lamp control, Solenoid control
 DC-DC converter, etc.

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

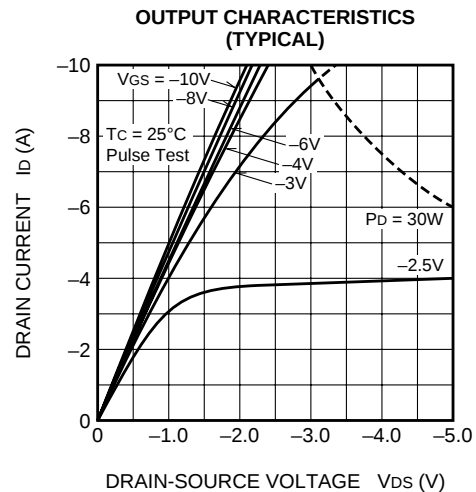
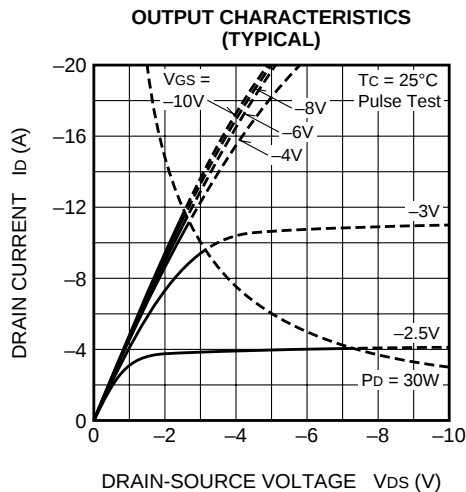
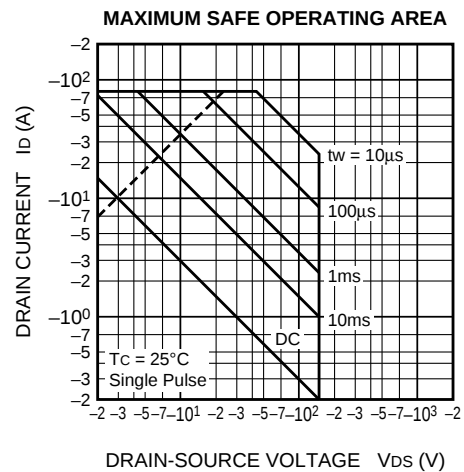
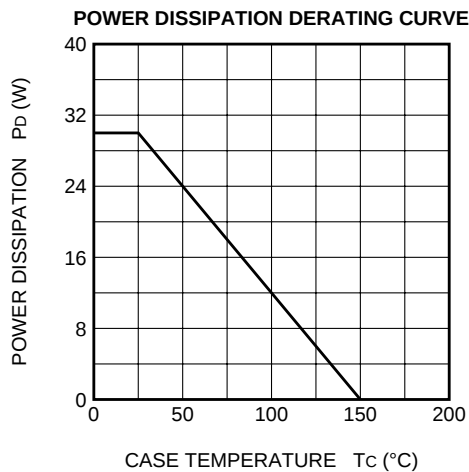
Symbol	Parameter	Conditions	Ratings	Unit
V_{DS}	Drain-source voltage	$V_{GS} = 0V$	-150	V
V_{GS}	Gate-source voltage	$V_{DS} = 0V$	± 20	V
I_D	Drain current		-20	A
I_{DM}	Drain current (Pulsed)		-80	A
I_{DA}	Avalanche drain current (Pulsed)	$L = 30\mu H$	-20	A
I_S	Source current		-20	A
I_{SM}	Source current (Pulsed)		-80	A
P_D	Maximum power dissipation		30	W
T_{ch}	Channel temperature		$-55 \sim +150$	$^\circ\text{C}$
T_{stg}	Storage temperature		$-55 \sim +150$	$^\circ\text{C}$
V_{iso}	Isolation voltage	AC for 1minute, Terminal to case	2000	V
—	Weight	Typical value	2.0	g

Jan.1999

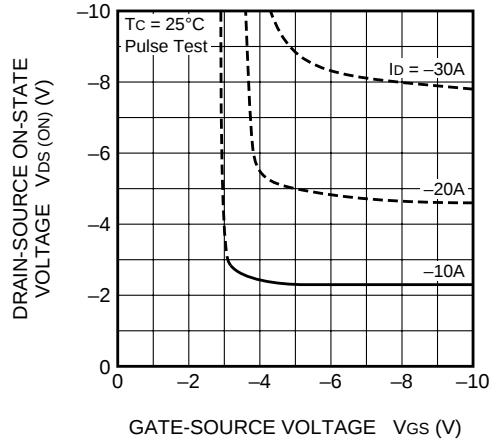
ELECTRICAL CHARACTERISTICS (Tch = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	Id = -1mA, Vgs = 0V	-150	—	—	V
IGSS	Gate-source leakage current	Vgs = ±20V, Vds = 0V	—	—	±0.1	μA
IDSS	Drain-source leakage current	Vds = -150V, Vgs = 0V	—	—	-0.1	mA
VGS (th)	Gate-source threshold voltage	Id = -1mA, Vds = -10V	-1.0	-1.5	-2.0	V
rDS (ON)	Drain-source on-state resistance	Id = -10A, Vgs = -10V	—	0.23	0.29	Ω
rDS (ON)	Drain-source on-state resistance	Id = -10A, Vgs = -4V	—	0.25	0.32	Ω
VDS (ON)	Drain-source on-state voltage	Id = -10A, Vgs = -10V	—	-2.3	-2.9	V
yfs	Forward transfer admittance	Id = -10A, Vds = -10V	—	17.5	—	S
Ciss	Input capacitance	Vds = -10V, Vgs = 0V, f = 1MHz	—	4470	—	pF
Coss	Output capacitance		—	248	—	pF
Crss	Reverse transfer capacitance		—	115	—	pF
td (on)	Turn-on delay time	VDD = -80V, Id = -10A, Vgs = -10V, RGEN = RGS = 50Ω	—	15	—	ns
tr	Rise time		—	42	—	ns
td (off)	Turn-off delay time		—	273	—	ns
tf	Fall time		—	114	—	ns
VSD	Source-drain voltage	Is = -10A, Vgs = 0V	—	-1.0	-1.5	V
Rth (ch-c)	Thermal resistance	Channel to case	—	—	4.17	°C/W
trr	Reverse recovery time	Is = -20A, dis/dt = 100A/μs	—	100	—	ns

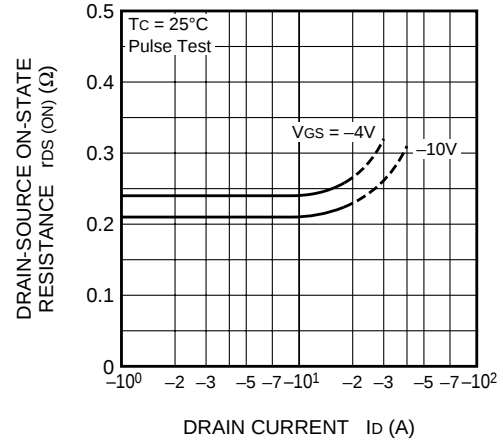
PERFORMANCE CURVES



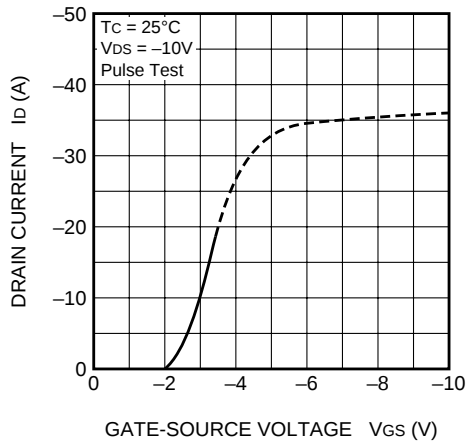
**ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)**



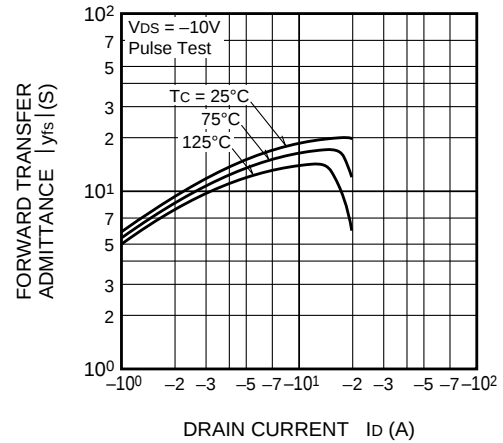
**ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)**



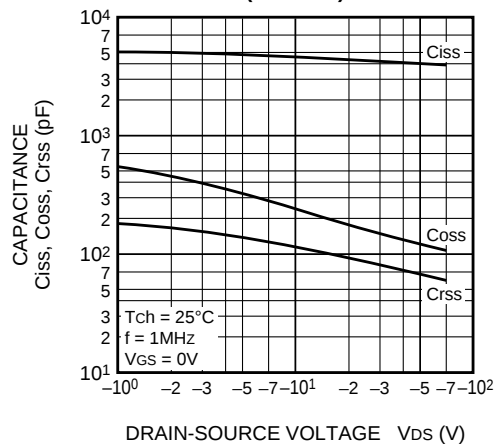
**TRANSFER CHARACTERISTICS
(TYPICAL)**



**FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)**



**CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE
(TYPICAL)**



**SWITCHING CHARACTERISTICS
(TYPICAL)**

