FS50KMJ-03F

HIGH-SPEED SWITCHING USE
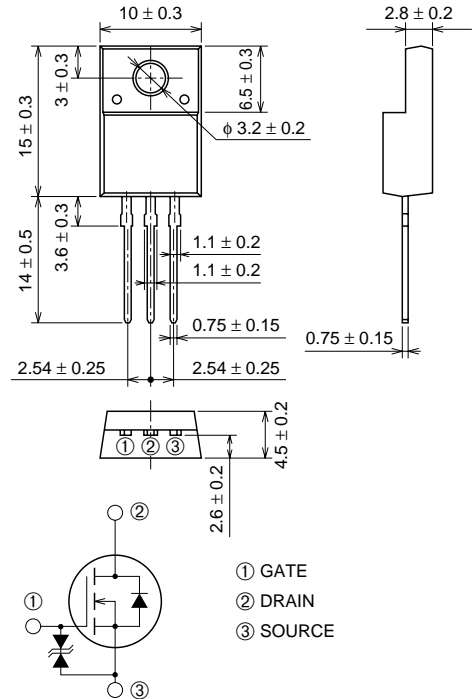
FS50KMJ-03F

- 4V DRIVE
- V_{DSS} 30V
- r_{DS} (ON) (MAX) 12.2mΩ
- I_D 50A
- Integrated Fast Recovery Diode (TYP.) 50ns

OUTLINE DRAWING   Dimensions in mm

① GATE
② DRAIN
③ SOURCE

TO-220FN

APPLICATION

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

MAXIMUM RATINGS (Tc = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DSS}	Drain-source voltage	V_{GS} = 0V	30	V
V_{GSS}	Gate-source voltage	V_{DS} = 0V	±20	V
I_D	Drain current		50	A
I_{DM}	Drain current (Pulsed)		200	A
I_{DA}	Avalanche current (Pulsed)	L = 6µH	50	A
I_S	Source current		50	A
I_{SM}	Source current (Pulsed)		200	A
P_D	Maximum power dissipation		25	W
T_{ch}	Channel temperature		−55 ~ +150	°C
T_{stg}	Storage temperature		−55 ~ +150	°C
V_{iso}	Isolation voltage	AC for 1 minute, Terminal to case	2000	V
—	Weight	Typical value	2.0	g

Mar. 2002

MITSUBISHI ELECTRIC

ELECTRICAL CHARACTERISTICS (Tch = 25°C)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V (BR) DSS	Drain-source breakdown voltage	ID = 1mA, VGS = 0V	30	—	—	V
V (BR) GSS	Gate-source breakdown voltage	IG = ±100µA, VDS = 0V	±20	—	—	V
IDSS	Drain-source leakage current	VDS = 30V, VGS = 0V	—	—	100	µA
IGSS	Gate-source leakage current	VGS = ±20V, VDS = 0V	—	—	±10	µA
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 = 25A, VGS = 10V	—	9.2	12.2	mΩ
rDS (ON)	Drain-source on-state resistance	ID = 25A, VGS = 4V	—	13	19	mΩ
VDS (ON)	Drain-source on-state voltage	ID = 25A, VGS = 10V	—	0.23	0.31	V
|yfs|	Forward transfer admittance	ID = 25A, VDS = 10V	—	45	—	S
Ciss	Input capacitance	VDS = 10V, VGS = 0V, f = 1MHz	—	2100	—	pF
Coss	Output capacitance		—	690	—	pF
Crss	Reverse transfer capacitance		—	340	—	pF
td (on)	Turn-on delay time	VDD = 15V, ID = 25A, VGS = 10V, RGEN = RGS = 50Ω	—	16	—	ns
tr	Rise time		—	90	—	ns
td (off)	Turn-off delay time		—	130	—	ns
tf	Fall time		—	85	—	ns
VSD	Source-drain voltage	IS = 25A, VGS = 0V	—	1.0	1.5	V
Rth (ch-c)	Thermal resistance	Channel to case	—	—	5.00	°C/W
trr	Reverse recovery time	IS = 25A, dis/dt = −50A/µs	—	50	—	ns

MITSUBISHI ELECTRIC