MITSUBISHI Nch POWER MOSFET

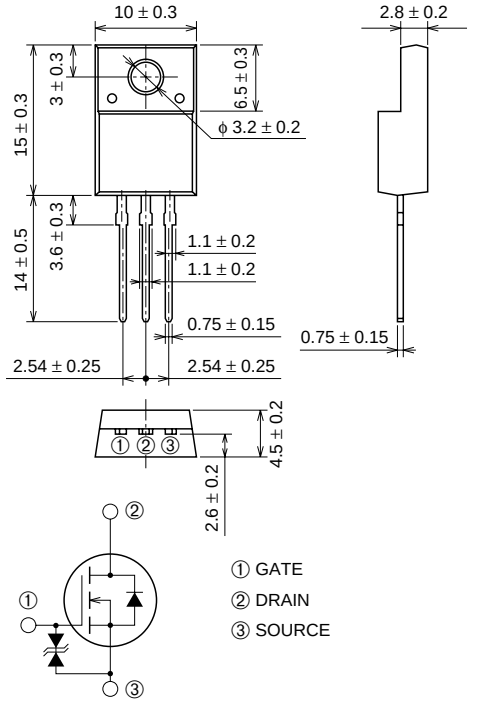
FS50KMJ-06F

HIGH-SPEED SWITCHING USE

FS50KMJ-06F

- 4V DRIVE
- V_{DSS} 60V
- $r_{DS\ (ON)\ (MAX)}$ 14mΩ
- I_D 50A
- Integrated Fast Recovery Diode (TYP.) 50ns

OUTLINE DRAWING Dimensions in mm



TO-220FN

APPLICATION

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

MAXIMUM RATINGS (T_C = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DSS}	Drain-source voltage	V_{GS} = 0V	60	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 = 10μH	50	A
I_S	Source current		50	A
I_{SM}	Source current (Pulsed)		200	A
P_D	Maximum power dissipation		30	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

MITSUBISHI ELECTRIC

ELECTRICAL CHARACTERISTICS (Tch = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{(BR)DSS}$	Drain-source breakdown voltage	I_D = 1mA, V_{GS} = 0V	60	—	—	V
$V_{(BR)GSS}$	Gate-source breakdown voltage	I_G = ±100μA, V_{DS} = 0V	±20	—	—	V
I_{DSS}	Drain-source leakage current	V_{DS} = 60V, V_{GS} = 0V	—	—	100	μA
I_{GSS}	Gate-source leakage current	V_{GS} = ±20V, V_{DS} = 0V	—	—	±10	μA
$V_{GS(th)}$	Gate-source threshold voltage	I_D = 1mA, V_{DS} = 10V	1.0	1.5	2.0	V
$r_{DS(ON)}$	Drain-source on-state resistance	I_D = 25A, V_{GS} = 10V	—	12	14	mΩ
$r_{DS(ON)}$	Drain-source on-state resistance	I_D = 25A, V_{GS} = 4V	—	14	18	mΩ
$V_{DS(ON)}$	Drain-source on-state voltage	I_D = 25A, V_{GS} = 10V	—	0.30	0.35	V
$\|y_{fs}\|$	Forward transfer admittance	I_D = 25A, V_{DS} = 10V	—	60	—	S
C_{iss}	Input capacitance	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz	—	3850	—	pF
C_{oss}	Output capacitance		—	580	—	pF
C_{rss}	Reverse transfer capacitance		—	320	—	pF
$t_{d(on)}$	Turn-on delay time	V_{DD} = 30V, I_D = 25A, V_{GS} = 10V, R_{GEN} = R_{GS} = 50Ω	—	19	—	ns
t_r	Rise time		—	80	—	ns
$t_{d(off)}$	Turn-off delay time		—	360	—	ns
t_f	Fall time		—	160	—	ns
V_{SD}	Source-drain voltage	I_S = 25A, V_{GS} = 0V	—	1.0	1.5	V
$R_{th(ch-c)}$	Thermal resistance	Channel to case	—	—	4.17	°C/W
t_{rr}	Reverse recovery time	I_S = 50A, dis/dt = –100A/μs	—	50	—	ns