MITSUBISHI Nch POWER MOSFET

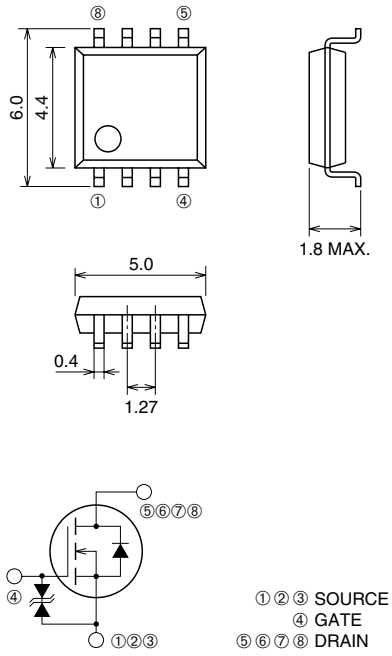
FY12AAJ-03F

HIGH-SPEED SWITCHING USE

FY12AAJ-03F

- 4V DRIVE
- V_{DSS} 30V
- r_{DS} (ON) (MAX) 11.5mΩ
- I_D 12A

OUTLINE DRAWING Dimensions in mm



SOP-8

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	30	V
V_{GSS}	Gate-source voltage	V_{DS} = 0V	±20	V
I_D	Drain current		12	A
I_{DM}	Drain current (Pulsed)		84	A
I_{DA}	Avalanche drain current (Pulsed)	L = 10μH	12	A
I_S	Source current		1.8	A
I_{SM}	Source current (Pulsed)		7.2	A
P_D	Maximum power dissipation		2.0	W
T_{ch}	Channel temperature		–55~+150	°C
T_{stg}	Storage temperature		–55~+150	°C
—	Weight	Typical value	0.07	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	30	—	—	V
$V_{(BR)GSS}$	Gate-source breakdown voltage	I_G = ±100μA, V_{GS} = 0V	±20	—	—	V
I_{DSS}	Drain-source leakage current	V_{DS} = 30V, V_{GS} = 0V	—	—	0.1	mA
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 = 12A, V_{GS} = 10V	—	9.0	11.5	mΩ
$r_{DS\ (ON)}$	Drain-source on-state resistance	I_D = 6A, V_{GS} = 4.5V	—	12.5	17.5	mΩ
$r_{DS\ (ON)}$	Drain-source on-state resistance	I_D = 6A, V_{GS} = 4V	—	14.5	20.0	mΩ
$V_{DS\ (ON)}$	Drain-source on-state voltage	I_D = 12A, V_{GS} = 10V	—	0.108	0.138	V
$\lvert y_{fs} \rvert$	Forward transfer admittance	I_D = 12A, V_{DS} = 10V	—	25	—	S
C_{iss}	Input capacitance	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz	—	1800	—	pF
C_{oss}	Output capacitance		—	500	—	pF
C_{rss}	Reverse transfer capacitance		—	230	—	pF
$t_{d\ (on)}$	Turn-on delay time	V_{DD} = 15V, I_D = 6A, V_{GS} = 10V, R_G = 5Ω	—	18	—	ns
t_r	Rise time		—	20	—	ns
$t_{d\ (off)}$	Turn-off delay time		—	50	—	ns
t_f	Fall time		—	17	—	ns
Q_g	Total gate charge	V_{DD} = 15V, V_{GS} = 10V, I_D = 12A	—	35	—	nC
Q_{gs}	Gate-source charge		—	4	—	nC
Q_{gd}	Gate-drain charge		—	10	—	nC
V_{SD}	Source-drain voltage	I_S = 1.8A, V_{GS} = 0V	—	0.75	1.10	V
$R_{th\ (ch-a)}$	Thermal resistance	Channel to air	—	—	62.5	°C/W
t_{rr}	Reverse recovery time	I_S = 1.8A, di_S/dt = –50A/μs	—	45	—	ns