


# FY10AAJ-03F

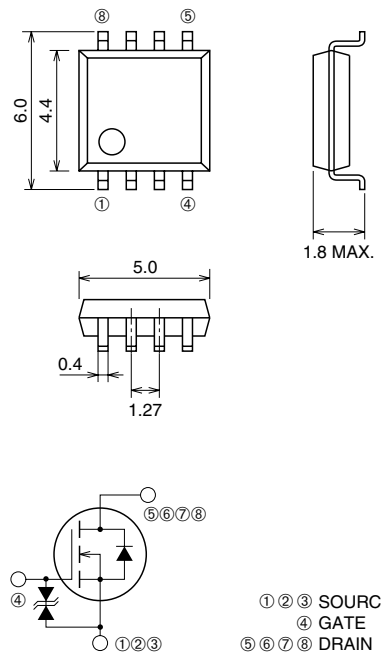
HIGH-SPEED SWITCHING USE

**FY10AAJ-03F**



- 4V DRIVE
- $V_{DSS}$  ..... 30V
- $r_{DS(ON)}(MAX)$  ..... 18m $\Omega$
- $I_D$  ..... 10A

**OUTLINE DRAWING** Dimensions in mm



① ② ③ SOURCE  
④ GATE  
⑤ ⑥ ⑦ ⑧ DRAIN

**SOP-8**

**APPLICATION**

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

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

Symbol	Parameter	Conditions	Ratings	Unit
$V_{DSS}$	Drain-source voltage	$V_{GS} = 0V$	30	V
$V_{GSS}$	Gate-source voltage	$V_{DS} = 0V$	$\pm 20$	V
$I_D$	Drain current		10	A
$I_{DM}$	Drain current (Pulsed)		70	A
$I_{DA}$	Avalanche drain current (Pulsed)	$L = 10\mu\text{H}$	10	A
$I_S$	Source current		1.7	A
$I_{SM}$	Source current (Pulsed)		6.8	A
$P_D$	Maximum power dissipation		1.9	W
$T_{ch}$	Channel temperature		$-55 \sim +150$	$^\circ\text{C}$
$T_{stg}$	Storage temperature		$-55 \sim +150$	$^\circ\text{C}$
—	Weight	Typical value	0.07	g

**ELECTRICAL CHARACTERISTICS** (T<sub>ch</sub> = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR)DSS	Drain-source breakdown voltage	I <sub>D</sub> = 1mA, V <sub>GS</sub> = 0V	30	—	—	V
V (BR)GSS	Gate-source breakdown voltage	I <sub>G</sub> = ±100μA, V <sub>GS</sub> = 0V	±20	—	—	V
I <sub>DSS</sub>	Drain-source leakage current	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V	—	—	0.1	mA
I <sub>GSS</sub>	Gate-source leakage current	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	—	—	±10	μA
V <sub>GS</sub> (th)	Gate-source threshold voltage	I <sub>D</sub> = 1mA, V <sub>DS</sub> = 10V	1.0	1.5	2.0	V
r <sub>DS</sub> (ON)	Drain-source on-state resistance	I <sub>D</sub> = 10A, V <sub>GS</sub> = 10V	—	14	18	mΩ
r <sub>DS</sub> (ON)	Drain-source on-state resistance	I <sub>D</sub> = 5A, V <sub>GS</sub> = 4.5V	—	19	26	mΩ
r <sub>DS</sub> (ON)	Drain-source on-state resistance	I <sub>D</sub> = 5A, V <sub>GS</sub> = 4V	—	20	28	mΩ
V <sub>DS</sub> (ON)	Drain-source on-state voltage	I <sub>D</sub> = 10A, V <sub>GS</sub> = 10V	—	0.140	0.180	V
y <sub>fs</sub>	Forward transfer admittance	I <sub>D</sub> = 10A, V <sub>DS</sub> = 10V	—	20	—	S
C <sub>iss</sub>	Input capacitance	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1MHz	—	1200	—	pF
C <sub>oss</sub>	Output capacitance		—	350	—	pF
C <sub>rss</sub>	Reverse transfer capacitance		—	160	—	pF
t <sub>d</sub> (on)	Turn-on delay time	V <sub>DD</sub> = 15V, I <sub>D</sub> = 5A, V <sub>GS</sub> = 10V, R <sub>G</sub> = 5Ω	—	15	—	ns
t <sub>r</sub>	Rise time		—	18	—	ns
t <sub>d</sub> (off)	Turn-off delay time		—	40	—	ns
t <sub>f</sub>	Fall time		—	10	—	ns
Q <sub>g</sub>	Total gate charge	V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A	—	24	—	nC
Q <sub>gs</sub>	Gate-source charge		—	2.8	—	nC
Q <sub>gd</sub>	Gate-drain charge		—	6.8	—	nC
V <sub>SD</sub>	Source-drain voltage	I <sub>S</sub> = 1.7A, V <sub>GS</sub> = 0V	—	0.75	1.10	V
R <sub>th</sub> (ch-a)	Thermal resistance	Channel to air	—	—	65.8	°C/W
t <sub>rr</sub>	Reverse recovery time	I <sub>S</sub> = 1.7A, di <sub>s</sub> /dt = -50A/μs	—	50	—	ns