AUK Semiconductor

STK0380P

Advanced Power MOSFET

SWITCHING REGULATOR APPLICATIONS

Features

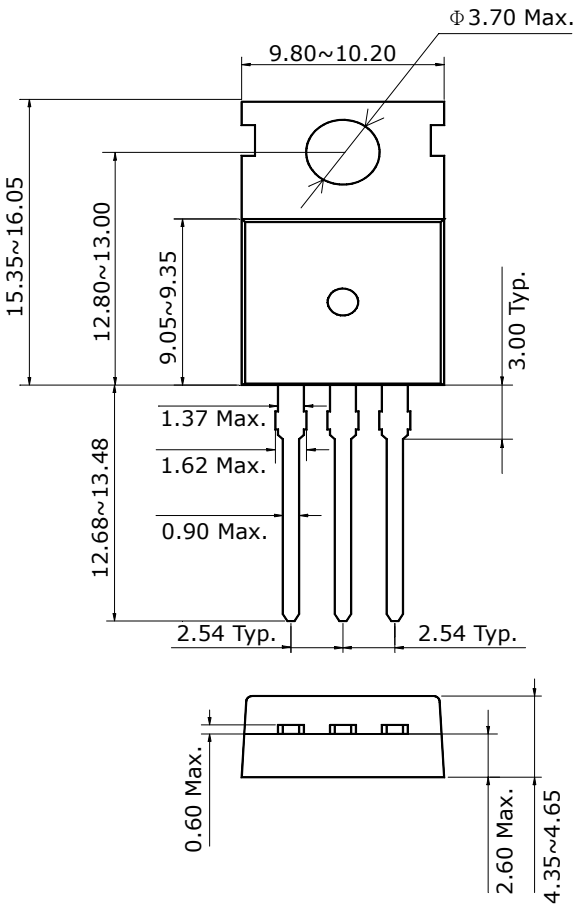
- High Voltage: BV_{DSS}=800V(Min.)
- Low C_{rss} : C_{rss}=5.0F(Typ.)
- Low gate charge : Qg=18nC(Typ.)
- Low $R_{DS(on)}$:$R_{DS(on)}$=4.8Ω(Max.)

Ordering Information

Type NO.	Marking	Package Code
STK0380P	STK0380	TO-220AB-3L

Outline Dimensions

unit : mm



PIN Connections
1. Gate
2. Drain
3. Source

Absolute maximum ratings

(Tc=25°C)

Characteristic	Symbol		Rating	Unit
Drain-source voltage	V_{DSS}		800	V
Gate-source voltage	V_{GSS}		±30	V
Drain current (DC)	I_D	T_C=25℃	3.0	A
		T_C=100℃	1.9	A
Drain current (Pulsed) *	I_{DM}		12	A
Drain power dissipation	P_D		107	W
Avalanche current (Single) ②	I_{AS}		3	A
Single pulsed avalanche energy ②	E_{AS}		320	mJ
Avalanche current (Repetitive) ①	I_{AR}		12	A
Repetitive avalanche energy ①	E_{AR}		10.7	mJ
Junction temperature	T_J		150	°C
Storage temperature range	T_{stg}		-55~150	°C

* Limited by maximum junction temperature

Characteristic		Symbol	Typ.	Max	Unit
Thermal resistance	Junction-case	$R_{th(J-C)}$	-	1.17	℃/W
	Junction-ambient	$R_{th(J-A)}$	-	62.5	

Electrical Characteristics

(Tc=25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=250 μA, V_{GS}=0V	800	-	-	V
Gate threshold voltage	$V_{GS(th)}$	I_D=250 μA, V_{GS}= V_{DS}	3.0	-	5.0	V
Drain-source cut-off current	I_{DSS}	V_{DS}=800V, V_{GS}=0V	-	-	10	μA
Gate leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±30V	-	-	±100	nA
Drain-source on-resistance ④	$R_{DS(on)}$	V_{GS}=10V, I_D=1.5A	-	4.0	4.8	Ω
Forward transfer conductance ④	g_{fs}	V_{DS}=50V, I_D=1.5A	-	3	-	S
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V f=1 MHz	-	562	705	pF
Output capacitance	C_{oss}		-	50	70	
Reverse transfer capacitance	C_{rss}		-	5.0	7.5	
Turn-on delay time	$t_{d(on)}$	V_{DD}=400V, I_D=3.0A R_G=25Ω ③④	-	15	40	ns
Rise time	t_r		-	43.5	95	
Turn-off delay time	$t_{d(off)}$		-	22.5	55	
Fall time	t_f		-	32	75	
Total gate charge	Q_g	V_{DS}=640V, V_{GS}=10V I_D=3.0A ③④	-	18	21.5	nC
Gate-source charge	Q_{gs}		-	3.4	-	
Gate-drain charge	Q_{gd}		-	5.9	-	

Source-Drain Diode Ratings and Characteristics

(Tc=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Source current (DC)	I_S	Integral reverse diode in the MOSFET	-	-	3.0	A
Source current (Pulsed) ①	I_{SP}		-	-	12	
Forward voltage ④	V_{SD}	V_{GS}=0V, I_S=3.0A	-	-	1.4	V
Reverse recovery time	t_{rr}	I_S=3.0A, V_{GS}=0V dI_S/dt=100A/μs	-	642	-	ns
Reverse recovery charge	Q_{rr}		-	4.0	-	μC

Note ;

① Repetitive rating : Pulse width limited by maximum junction temperature

② L=67mH, I_{AS}=3.0A, V_{DD}=50V, R_G=25Ω

③ Pulse Test : Pulse width≤ 300 μs, Duty cycle≤ 2%

④ Essentially independent of operating temperature

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