

SWITCHING REGULATOR APPLICATIONS

Features

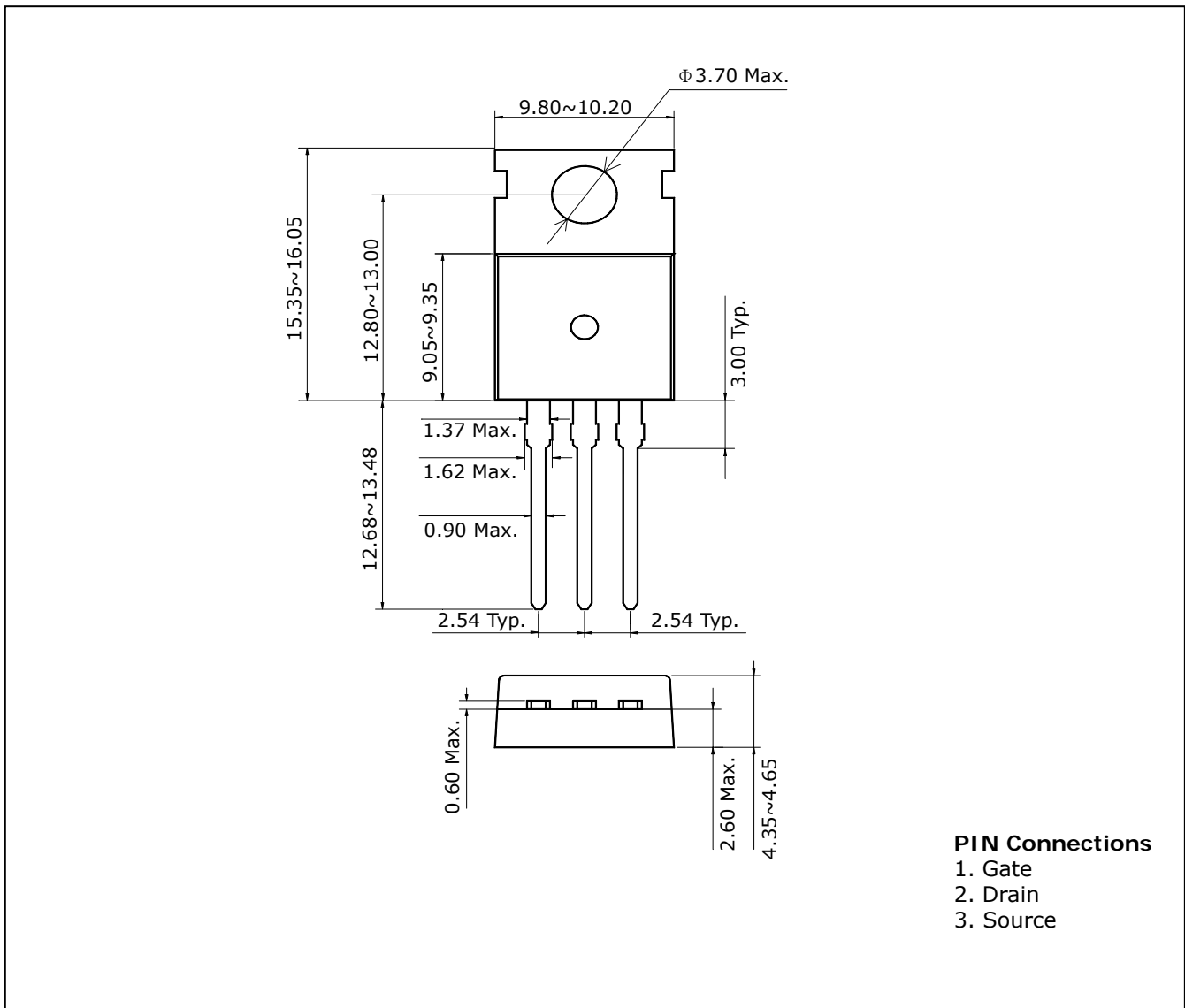
- High Voltage: $BV_{DSS}=900V(\text{Min.})$
- Low C_{RSS} : $C_{RSS}=5.0F(\text{Typ.})$
- Low gate charge : $Qg=18.2nC(\text{Typ.})$
- Low $R_{DS(on)}$: $R_{DS(on)}=7.2\Omega(\text{Max.})$

Ordering Information

Type NO.	Marking	Package Code
STK0290P	STK0290	TO-220AB-3L

Outline Dimensions

unit : mm



Absolute maximum ratings

(T_c=25°C)

Characteristic	Symbol	Rating	Unit	
Drain-source voltage	V _{DSS}	900	V	
Gate-source voltage	V _{GSS}	±30	V	
Drain current (DC)	I _D	T _C =25°C	2.2	A
		T _C =100°C	1.39	A
Drain current (Pulsed) *	I _{DM}	8.8	A	
Drain power dissipation	P _D	85	W	
Avalanche current (Single) ②	I _{AS}	2.2	A	
Single pulsed avalanche energy ②	E _{AS}	170	mJ	
Avalanche current (Repetitive) ①	I _{AR}	8.8	A	
Repetitive avalanche energy ①	E _{AR}	8.5	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)}	-	1.47	°C/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	$V_{(BR)DSS}$	$I_D=250\ \mu A, V_{GS}=0V$	900	-	-	V	
Gate threshold voltage	$V_{GS(th)}$	$I_D=250\ \mu A, V_{GS}=V_{DS}$	3.0	-	5.0	V	
Drain-source cut-off current	I_{DSS}	$V_{DS}=900V, V_{GS}=0V$	-	-	10	μA	
Gate leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$	-	-	± 100	nA	
Drain-source on-resistance ④	$R_{DS(on)}$	$V_{GS}=10V, I_D=1.1A$	-	5.6	7.2	Ω	
Forward transfer conductance ④	g_{fs}	$V_{DS}=50V, I_D=1.1A$	-	2.0	-	S	
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V$ $f=1\ MHz$	-	560	675	pF	
Output capacitance	C_{oss}		-	50	65		
Reverse transfer capacitance	C_{rss}		-	5.0	7.0		
Turn-on delay time	$t_{d(on)}$	$V_{DD}=450V, I_D=2.2A$ $R_G=25\ \Omega$	-	15	40	ns	
Rise time	t_r		-	35	80		
Turn-off delay time	$t_{d(off)}$		③④	-	20		50
Fall time	t_f		-	30	70		
Total gate charge	Q_g	$V_{DS}=720V, V_{GS}=10V$ $I_D=2.2A$	-	18.2	21.5	nC	
Gate-source charge	Q_{gs}		③④	-	3.8		-
Gate-drain charge	Q_{gd}		-	6.0	-		

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	-	-	2.2	A
Source current (Pulsed) ①	I_{SP}		-	-	8.8	
Forward voltage ④	V_{SD}	$V_{GS}=0V, I_S=2.2A$	-	-	1.4	V
Reverse recovery time	t_{rr}	$I_S=2.2A, V_{GS}=0V$ $dI_S/dt=100A/\mu s$	-	400	-	ns
Reverse recovery charge	Q_{rr}		-	1.6	-	μC

Note ;

- ① Repetitive rating : Pulse width limited by maximum junction temperature
- ② $L=65mH, I_{AS}=2.2A, V_{DD}=50V, R_G=25\ \Omega$
- ③ Pulse Test : Pulse width $\leq 300\ \mu s$, Duty cycle $\leq 2\%$
- ④ Essentially independent of operating temperature

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