SMK0460F

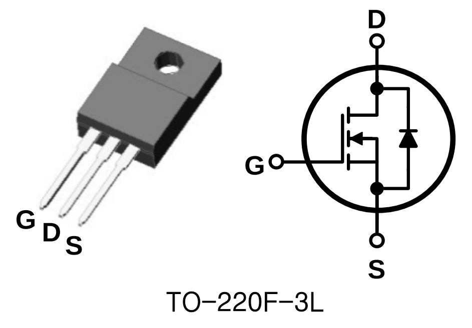
Advanced N-Ch Power MOSFET

SWITCHING REGULATOR APPLICATIONS

Features

- High Voltage : BV_{DSS}=600V(Min.)
- Low C_{rss} : C_{rss}=9.8pF(Typ.)
- Low gate charge : Qg=12nC(Typ.)
- Low $R_{DS(on)}$: $R_{DS(on)}$=2.5Ω(Max.)

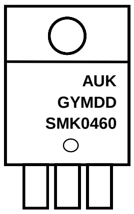
PIN Connection



Ordering Information

Type No.	Marking	Package Code
SMK0460F	SMK0460	TO-220F-3L

Marking Diagram



Column 1 : Manufacturer

Column 2 : Production Information
e.g.) GYMDD
-. G : Factory management code
-. YMDD : Date Code (year, month, date)

Column 3 : Device Code

Absolute maximum ratings (T_C=25°C unless otherwise noted)

Characteristic	Symbol		Rating	Unit
Drain-source voltage	V_{DSS}		600	V
Gate-source voltage	V_{GSS}		±30	V
Drain current (DC) *	I_D	(Tc=25℃)	4	A
		(Tc=100℃)	2.53	A
Drain current (Pulsed) *	I_{DM}		16	A
Power dissipation	P_D		30	W
Avalanche current (Single) ②	I_{AS}		4	A
Single pulsed avalanche energy ②	E_{AS}		225	mJ
Avalanche current (Repetitive) ①	I_{AR}		4	A
Repetitive avalanche energy ①	E_{AR}		10	mJ
Junction temperature	T_J		150	°C
Storage temperature range	T_{stg}		-55~150	

* Limited by maximum junction temperature

Characteristic		Symbol	Typ.	Max.	Unit
Thermal resistance	Junction-case	$R_{th(J-C)}$	-	4.16	°C/W
	Junction-ambient	$R_{th(J-A)}$	-	62.5	

Electrical Characteristics (T_C=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	BV_{DSS}	I_D=250uA, V_{GS}=0	600	-	-	V
Gate threshold voltage	$V_{GS(th)}$	I_D=250uA, V_{DS}=V_{GS}	2.0	-	4.0	V
Drain-source cut-off current	I_{DSS}	V_{DS}=600V, V_{GS}=0V	-	-	1	uA
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=2.0A	-	2.1	2.5	Ω
Forward transfer conductance ④	g_{fs}	V_{DS}=10V, I_D=2.0A	-	4.0	-	S
Input capacitance	Ciss	V_{GS}=0V, V_{DS}=25V, f=1MHz	-	670	848	pF
Output capacitance	Coss		-	57	71	
Reverse transfer capacitance	Crss		-	9.8	12.2	
Turn-on delay time	$t_{d(on)}$	V_{DD}=300V, I_D=4.0A R_G=25Ω ③④	-	10	-	ns
Rise time	t_r		-	42	-	
Turn-off delay time	$t_{d(off)}$		-	38	-	
Fall time	t_f		-	46	-	
Total gate charge	Q_g	V_{DS}=480V, V_{GS}=10V I_D=4.0A ③④	-	12	15	nC
Gate-source charge	Q_{gs}		-	4	-	
Gate-drain charge	Q_{gd}		-	3	-	

Source-Drain Diode Ratings and Characteristics (T_C=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Source current (DC)	I_S	Integral reverse diode in the MOSFET	-	-	4	A
Source current (Pulsed) ①	I_{SM}		-	-	16	
Forward voltage ④	V_{SD}	V_{GS}=0V, I_S=4.0A	-	-	1.4	V
Reverse recovery time	t_{rr}	I_S=4.0A, V_{GS}=0V dI_F/dt=100A/us	-	300	-	ns
Reverse recovery charge	Q_{rr}		-	2.2	-	uC

Note ;

① Repetitive rating : Pulse width limited by maximum junction temperature

② L=25.9mH, I_{AS}=4.0A, V_{DD}=50V, R_G=25Ω, Starting T_J=25℃

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

④ Essentially independent of operating temperature