

SWITCHING REGULATOR APPLICATIONS

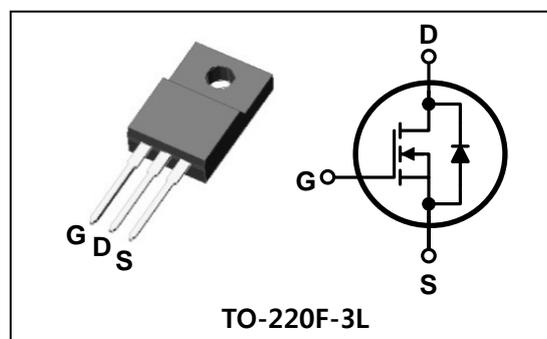
Features

- High Voltage : $V_{DSS}=600V(\text{Min.})$
- Low C_{RSS} : $C_{RSS}=18pF(\text{Typ.})$
- Low gate charge : $Qg=35nC(\text{Typ.})$
- Low $R_{DS(on)}$: $R_{DS(on)}=0.75\Omega(\text{Max.})$

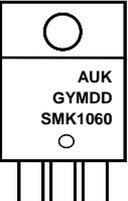
Ordering Information

Type No.	Marking	Package Code
SMK1060F	SMK1060	TO-220F-3L

PIN Connection



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 ($T_C=25^\circ\text{C}$ 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	$T_C=25^\circ\text{C}$	10	A
		$T_C=100^\circ\text{C}$	5.8	A
Drain current (Pulsed) *	I_{DM}	38	A	
Power dissipation	P_D	40	W	
Avalanche current (Single) ②	I_{AS}	10	A	
Single pulsed avalanche energy ②	E_{AS}	480	mJ	
Avalanche current (Repetitive) ①	I_{AR}	10	A	
Repetitive avalanche energy ①	E_{AR}	11.6	mJ	
Junction temperature	T_J	150	$^\circ\text{C}$	
Storage temperature range	T_{stg}	-55~150		

* Limited by maximum junction temperature

Characteristic	Symbol	Typ.	Max.	Unit
Thermal resistance	Junction-case	-	3.1	$^\circ\text{C/W}$
	Junction-ambient	-	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 =250μA, V _{GS} =0V	600	-	-	V	
Gate threshold voltage	V _{GS(th)}	I _D =250μA, V _{DS} =V _{GS}	2.0	-	4.0	V	
Drain-source cut-off current	I _{DSS}	V _{DS} =600V, V _{GS} =0V	-	-	1	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 =5.0A	-	0.60	0.75	Ω	
Forward transfer conductance ④	g _{fs}	V _{DS} =10V, I _D =5.0A	-	8.0	-	S	
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V f=1 MHz	-	2000	2350	pF	
Output capacitance	C _{oss}		-	160	215		
Reverse transfer capacitance	C _{rss}		-	18	-		
Turn-on delay time	t _{d(on)}	V _{DD} =300V, I _D =10A R _G =25Ω	-	23	-	ns	
Rise time	t _r		-	69	-		
Turn-off delay time	t _{d(off)}		③④	-	144		-
Fall time	t _f		-	77	-		
Total gate charge	Q _g	V _{DS} =480V, V _{GS} =10V I _D =10A	-	35	57	nC	
Gate-source charge	Q _{gs}		③④	-	9		-
Gate-drain charge	Q _{gd}		-	10	-		

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	-	-	10	A
Source current (Pulsed) ①	I _{SM}		-	-	40	
Forward voltage ④	V _{SD}	V _{GS} =0V, I _S =10A	-	-	1.4	V
Reverse recovery time	t _{rr}	I _S =10A, V _{GS} =0V dI _F /dt=100A/μs	-	470	-	ns
Reverse recovery charge	Q _{rr}		-	6	-	μC

Note ;

- ① Repetitive rating : Pulse width limited by maximum junction temperature
- ② L=10mH, I_{AS}=9.5A, V_{DD}=50V, R_G=25Ω, Starting T_J=25 °C
- ③ Pulse Test : Pulse width≤300μs, Duty cycle≤2%
- ④ Essentially independent of operating temperature