Product Manual

EKWIN ELECTRONICS CO.,LTD

EK 65NF06

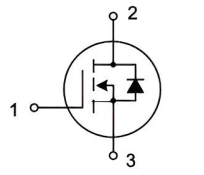
www.ekwin.net

EK65NF06

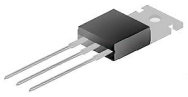
N-CHANNEL MOSFET

Product Summary :

TYPE	VDSS	RDS(on) Typ.	ID
65NF06	60V	8.5mΩ	65A



1.Gate 2.Drain 3.Source



TO-220

Features :

- 60V/65A
- Lead free and Green Device Available
- Low Rds-on to Minimize Conductive Loss
- High avalanche Current

General Description :

EK60NF06 is an N channel enhancement mode power MOS field effect transistor which is produced by EKWIN. The advanced trench technology and the improved guard ring terminal have been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

Application :

- **Power Supply**
- **UPS**
- **Battery Management System**

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

Symbol	Characteristics	Test conditions	Min	Typ	Max	Unit
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}= V_{DS}, I_D=250μA	2.0	3.0	4.0	V
$R_{DS(on)}$	Static Drain- Source On State Resistance	V_{GS}= 10V, I_D=10A	-	8.5	15	mΩ
BV_{DSS}	Drain -Source Breakdown Voltage	V_{GS}= 0V, I_D=250μA	60	-	-	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=48V, V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±25V, V_{DS}=0V	-	-	±100	nA
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V f=1.0MHZ	-	3000	-	pF
C_{oss}	Output Capacitance		-	170	-	
C_{rss}	Reverse Transfer Capacitance		-	140	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=30V,I_D=30A R_G=3Ω （Note2,3）	-	49	-	ns
t_r	Turn-on Rise Time		-	230	-	
$t_{d(off)}$	Turn-off Delay Time		-	65	-	
t_f	Turn-off Fall Time		-	110	-	
Qg	Total Gate Charge	V_{DS}=48V,I_D=30 A V_{GS}=10V （Note2,3）	-	56	-	nC
Q_{gs}	Gate-Source Charge		-	16	-	
Q_{gd}	Gate-Drain Charge		-	18	-	

Thermal Characteristics

Symbol	Characteristics	Typical	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.7	°C/W
$R_{\theta JA}$	Thermal Resistance,Junction-to-Ambient	62.5	°C/W

Absolute Maximum Ratings (TC=25℃ unless otherwise noted)

Symbol	Characteristics		Maximum		Unit
VDSS	Drain-Source Voltage		60		V
VGSS	Gate-Source Voltage		±20		V
I_D	Drain Curren	TC=25°C	65		A
		TC=100°C	50		
I_{DP}	Pulsed Drain Current (TC=25°C)		250		A
P_D	Power Dissipation(TC=25°C)		Tc=25°C	88	W
	Derate above 25°C		TC=100°C	44	W/°C
E_{AS}	Single Pulsed Avalanche Energy		240		mJ
T_J	Operation Junction Temperature Range		-55～+175		°C
T_{stg}	Storage Temperature Range		-55～+175		°C

Notes:

1. Pulse test; pulse width ≦ 300us, duty cycle ≦ 2%.
2: Guaranteed by design, not subject to production testing.
3: Package limitation current is 50A.Calculated continuous current based on maximum allowable junction temperature.
4: Repetitive rating, pulse width limited by max junction temperature.
5: Starting TJ = 25°C,L = 0.5mH,IAS = 31A.

Typical Characteristics

Figure 1 Output characteristics

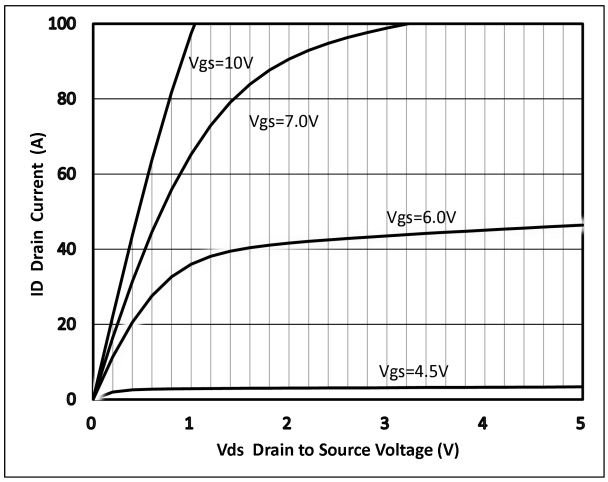


Figure 2 Transfer Characteristics

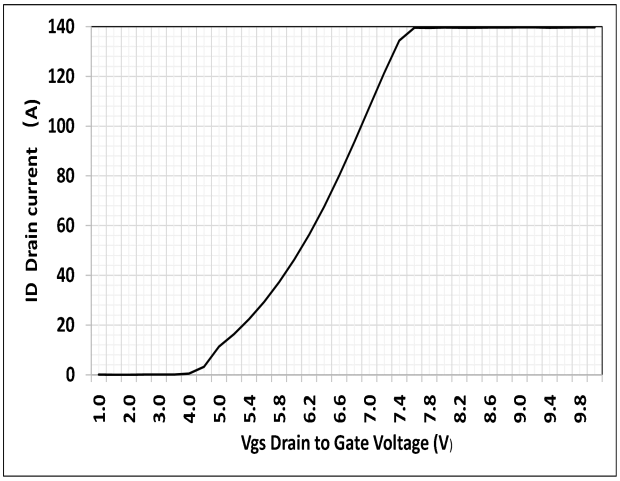


Figure 3 On-Resistance vs Id

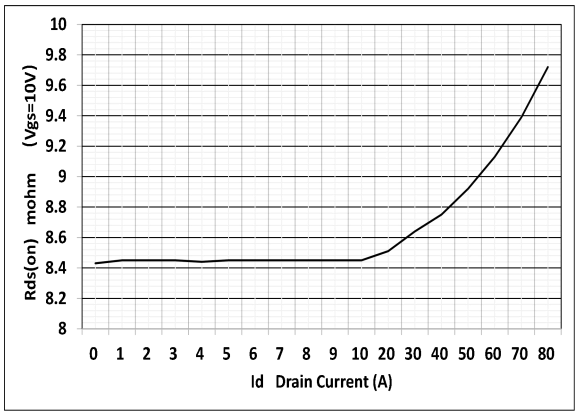


Figure 4 On-Resistance vs Vgs

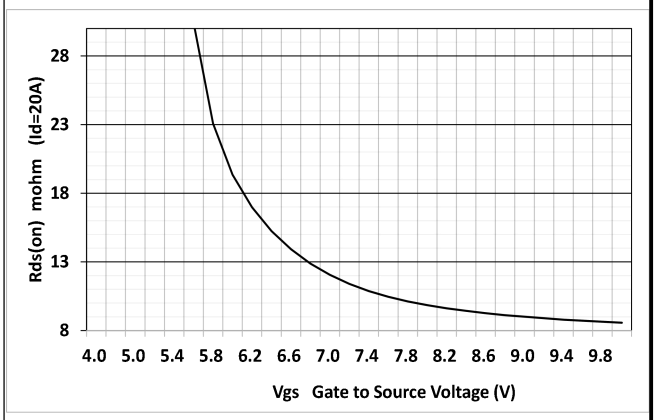


Figure 5 Body Diode Forward Voltage

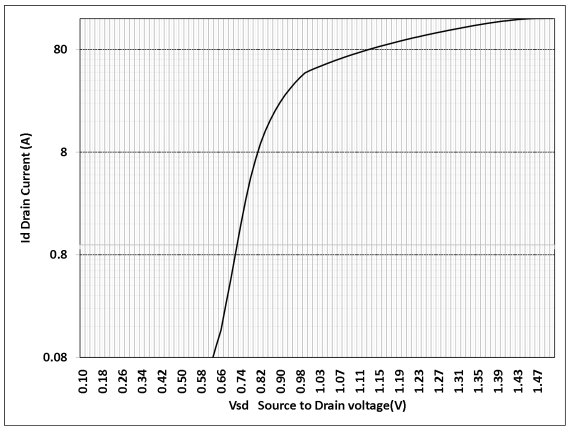
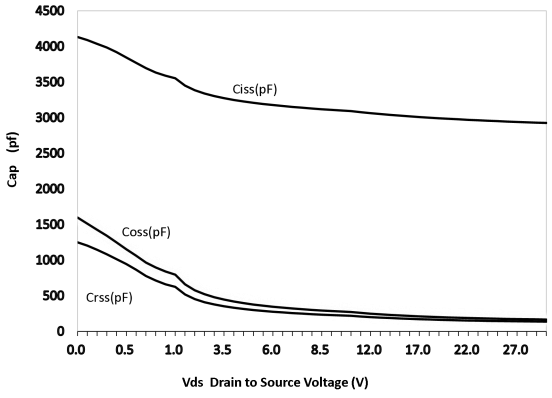
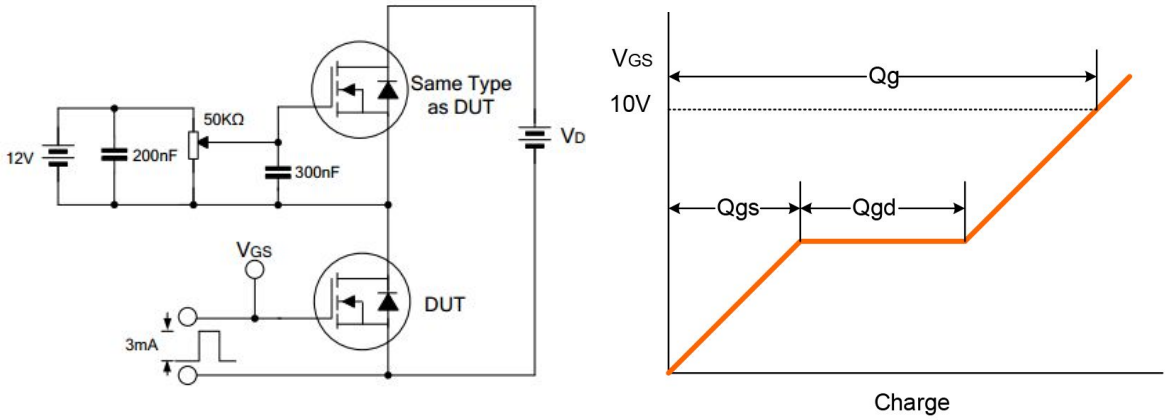


Figure 6 Capacitance Characteristics

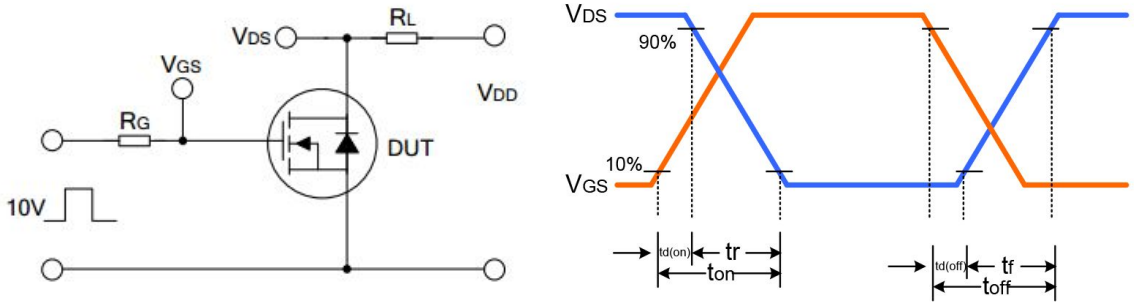


Typical Test Circuit

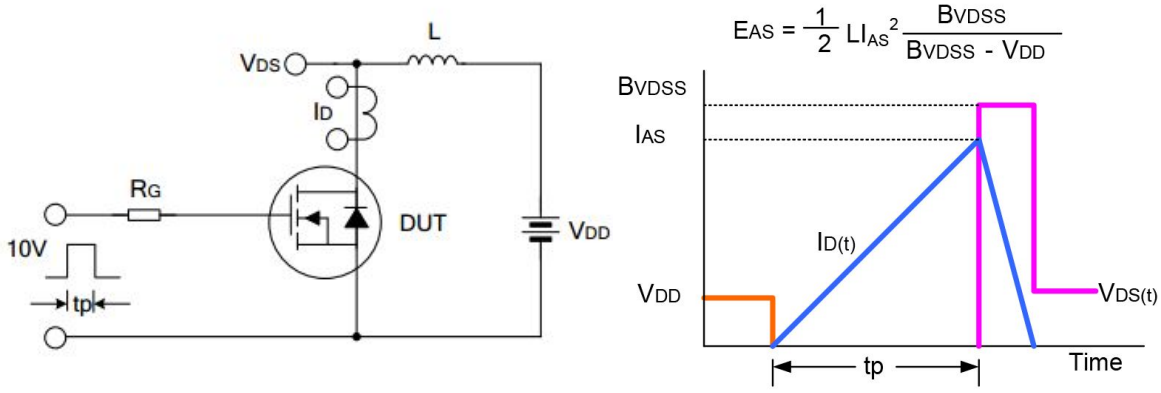
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



Unclamped Inductive Switching Test Circuit & Waveform



Package Outline TO-220

UNIT: mm