



# GLM40R30A47FD

## Silicon N-Channel Power MOSFET

### General Description

GLM40R30A47FD, the silicon N-channel Enhanced VDMOSFET, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency. The package form is TO-247, which accords with the RoHS standard.

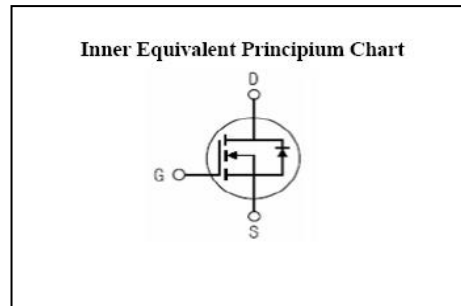
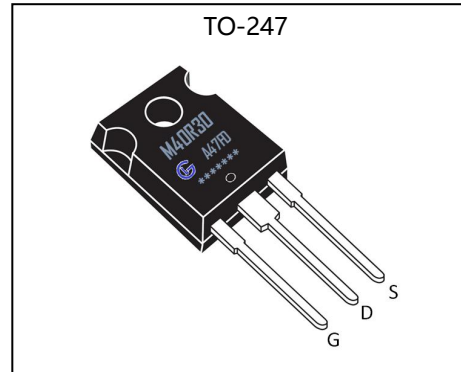
$V_{DSS}$	300	V
$I_D$	40	A
$P_D(T_C=25^\circ C)$	340	W
$R_{DS(ON).TYP.}$	110	m $\Omega$

### Features

- Fast body diode
- Low ON Resistance
- Low Gate Charge
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

### Applications

- Power switch circuit of adaptor and charger
- Motor Control applications



### Absolute (Tc=25°C unless otherwise specified)

Symbol	Parameter	Rating	Units
$V_{DSS}$	Drain-to-Source Voltage	300	V
$I_D$	Continuous Drain Current	40	A
	Continuous Drain Current $T_C=100^\circ C$	28	A
$I_{DM}^{a1}$	Pulsed Drain Current	160	A
$V_{GS}$	Gate-to-Source Voltage	$\pm 30$	V
$E_{AS}^{a2}$	Single Pulse Avalanche Energy	1200	mJ
$E_{AR}^{a1}$	Avalanche Energy ,Repetitive	100	mJ
$I_{AR}^{a1}$	Avalanche Current	6.5	A
$dv/dt^{a3}$	Peak Diode Recovery $dv/dt$	5.0	V/ns
$P_D$	Power Dissipation	340	W
	Derating Factor above 25°C	2.72	W/°C
$T_J, T_{stg}$	Operating Junction and Storage Temperature Range	150, -55 to 150	°C
$T_L$	Maximum Temperature for Soldering	300	°C

Caution Stresses greater than those in the "Absolute Maximum Ratings" may cause permanent damage to the device



# GLM40R30A47FD

## Silicon N-Channel Power MOSFET

### Thermal Characteristics

Symbol	Parameter	Rating	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.37	°C/ W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62	°C/ W

### Electrical Characteristics (Tc= 25°C unless otherwise specified)

#### OFF Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$V_{DSS}$	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	300	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	$I_D=250\mu A, \text{Reference } 25^\circ C$	--	0.2	--	V/°C
$I_{DSS}$	Drain to Source Leakage Current	$V_{DS}=300V, V_{GS}=0V, T_a=25^\circ C$	--	--	1.0	$\mu A$
		$V_{DS}=240V, V_{GS}=0V, T_a=125^\circ C$	--	--	100	
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+30V$	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-30V$	--	--	-100	nA

#### ON Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=20A$	--	110	130	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	--	5.0	V
$g_{fs}$	Forward Trans conductance	$V_{DS}=15V, I_D=20A$	--	25	--	S

Pulse width < 380μs; duty cycle < 2%.

#### Dynamic Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=25V$ $f=1.0MHz$	--	3100	--	pF
$C_{oss}$	Output Capacitance		--	320	--	
$C_{rss}$	Reverse Transfer Capacitance		--	45	--	

#### Resistive Switching Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D=40A, V_{DD}=150V$ $V_{GS}=10V, R_g=12\Omega$	--	35	--	ns
$t_r$	Rise Time		--	82	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	180	--	
$t_f$	Fall Time		--	90	--	
$Q_g$	Total Gate Charge	$I_D=40A, V_{DD}=150V$ $V_{GS}=10V$	--	65	--	nC
$Q_{gs}$	Gate to Source Charge		--	15	--	
$Q_{gd}$	Gate to Drain ( "Miller" ) Charge		--	35	--	



# GLM40R30A47FD

## Silicon N-Channel Power MOSFET

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$I_{SD}$	Continuous Source Current (Body Diode)		--	--	40	A
$I_{SM}$	Maximum Pulsed Current (Body Diode)		--	--	160	A
$V_{SD}$	Diode Forward Voltage	$I_S=40A, V_{GS}=0V$	--	--	1.5	V
$t_{rr}$	Reverse Recovery Time	$I_S=40A, T_J=25^\circ C$	--	70	--	ns
$Q_{rr}$	Reverse Recovery Charge	$di_F/dt=100A/\mu s, V_{GS}=0V$	--	1.04	--	$\mu C$

a1: Repetitive rating; pulse width limited by maximum junction temperature

a2:  $L=10mH, I_D=15.5A, Start T_J=25^\circ C$

a3:  $I_{SD}=40A, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DS}, Start T_J=25^\circ C$



# GLM40R30A47FD

Silicon N-Channel Power MOSFET

## Characteristics Curves

Fig. 1 Output Characteristics

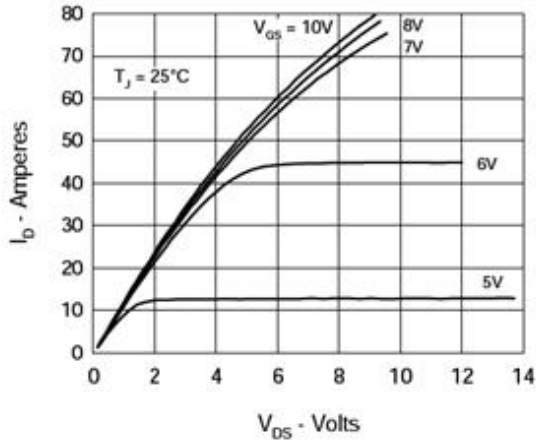


Fig. 2 Input Admittance

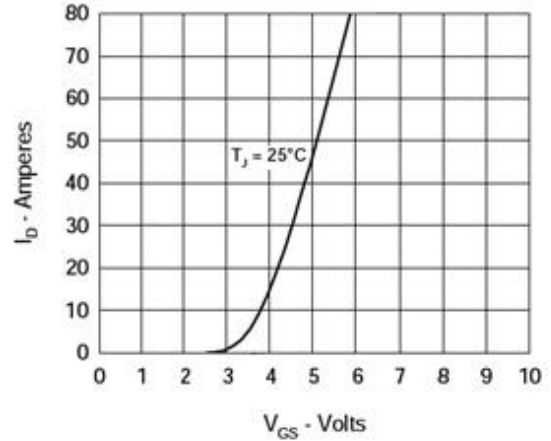


Fig. 3  $R_{DS(on)}$  vs. Drain Current

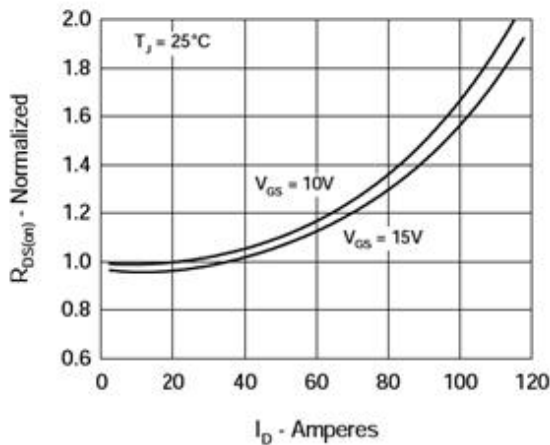


Fig. 4 Temperature Dependence of Drain to Source Resistance

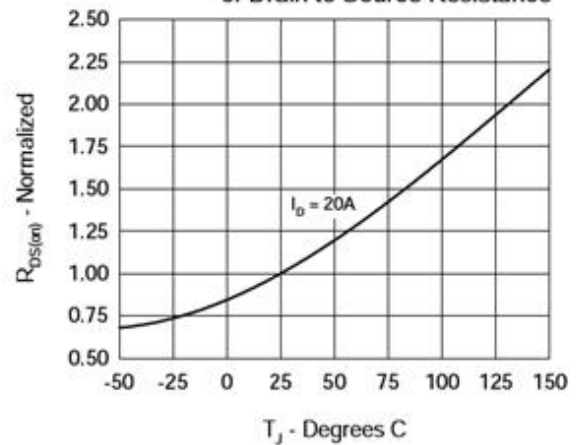


Fig. 5 Drain Current vs. Case Temperature

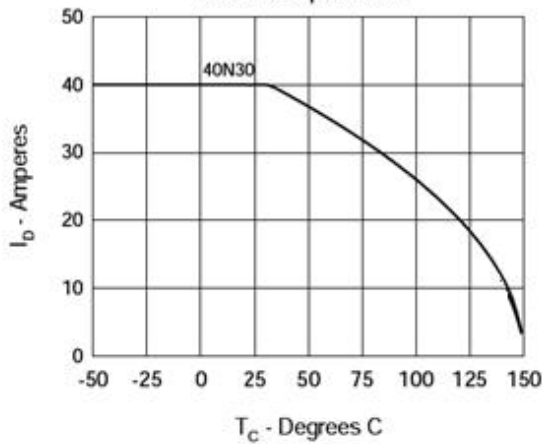
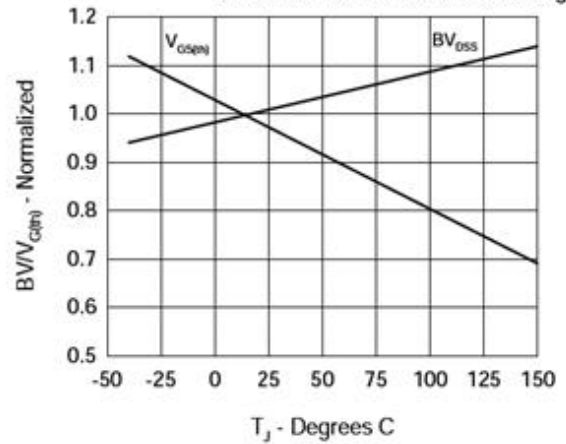


Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage





# GLM40R30A47FD

## Silicon N-Channel Power MOSFET

Fig.7 Gate Charge Characteristic Curve

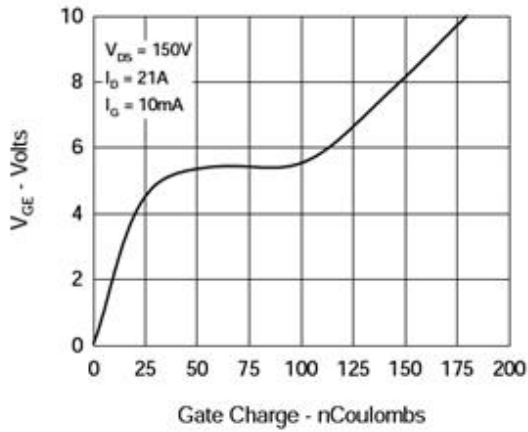


Fig.8 Forward Bias Safe Operating Area

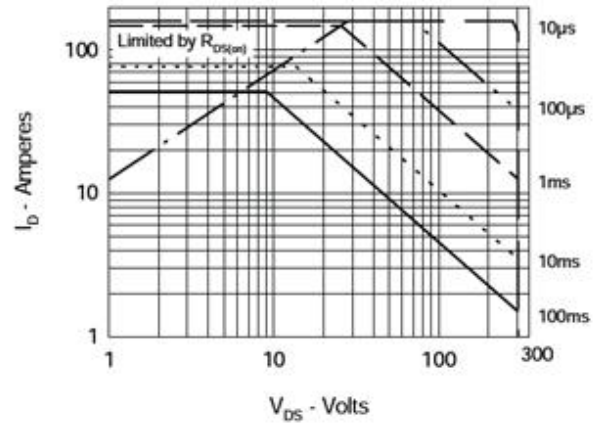


Fig.9 Capacitance Curves

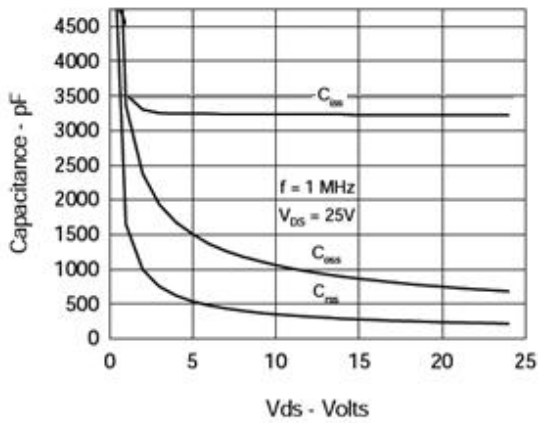


Fig.10 Source Current vs. Source to Drain Voltage

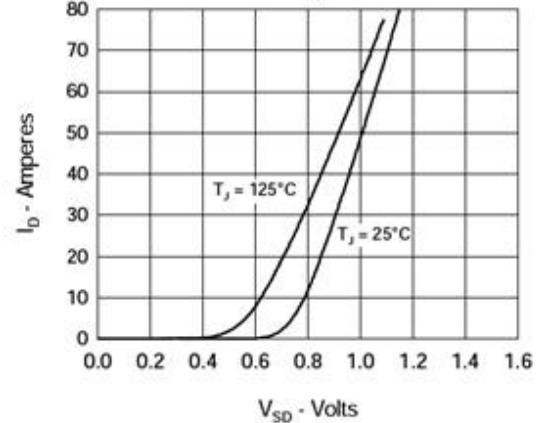


Fig.11 Transient Thermal Impedance

