



GL65P06A4

GL Silicon P-Channel Power MOSFET

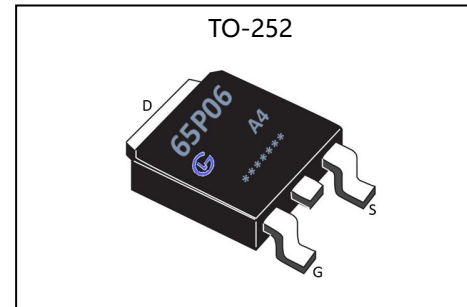
General Description

The GL65P06A4 uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications. The package form is TO-252, which accords with the RoHS standard.

V_{DSS}	-60	V
I_D	-65	A
P_D	130	W
$R_{DS(ON)}$	9	m Ω

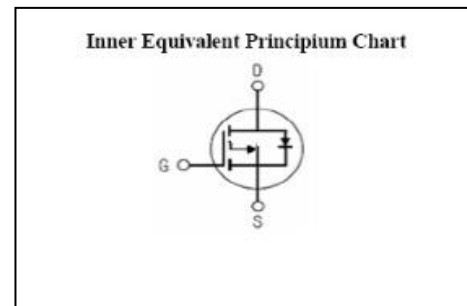
Features

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test



Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply



Absolute (Tc=25°C unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-60	V
I_D	Continuous Drain Current	-65	A
	Continuous Drain Current $T_C=100\text{ }^{\circ}\text{C}$	-45	A
I_{DM}^{a1}	Pulsed Drain Current	-260	A
V_{GS}	Gate-to-Source Voltage	± 20	V
dv/dt^{a3}	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	130	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	175, -55 to 175	$^{\circ}\text{C}$
T_L	Maximum Temperature for Soldering	300	$^{\circ}\text{C}$



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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	$V_{GS}=0V, I_D=-250\mu A$	-60	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	$I_D=-250\mu A$, Reference 25°C	--	0.02	--	V/°C
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=-60V, V_{GS}=0V, T_a=25^\circ C$	--	--	-1	μA
		$V_{DS}=-48V, V_{GS}=0V, T_a=125^\circ C$	--	--	-250	
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+20V$	--	--	1	μA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-20V$	--	--	-1	μA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=-10V, I_D=-20.0A$	--	9	14	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	--	-3.0	V
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	$V_{DS}=-10V, I_D=-20A$	--	25	--	S
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-25V$ $f=1.0MHz$	--	5700	--	pF
C_{oss}	Output Capacitance		--	470	--	
C_{rss}	Reverse Transfer Capacitance		--	220	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$R_L=-1.5\Omega, V_{DD}=-30V$ $V_{GS}=-10V, R_G=3\Omega$	--	20	--	ns
t_r	Rise Time		--	20	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	50	--	
t_f	Fall Time		--	30	--	
Q_g	Total Gate Charge	$I_D=-30.0A, V_{DD}=-20V$ $V_{GS}=-10V$	--	70	--	nC
Q_{gs}	Gate to Source Charge		--	16	--	
Q_{gd}	Gate to Drain ("Miller") Charge		--	17	--	

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	-65	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	-120	A
V_{SD}	Diode Forward Voltage	$I_S = -30A, V_{GS} = 0V$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$I_S = -20A, T_J = 25^\circ C$	--	50	--	ns
Q_{rr}	Reverse Recovery Charge	$dI_F/dt = 100A/\mu s, V_{GS} = 0V$	--	70	--	nC
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

Symbol	Parameter	Typ.	Units
$R_{\theta JA}$	Junction-to-Ambient	0.97	$^\circ C/W$

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

^{a3}: $I_{SD} = -30A, di/dt \leq 100A/\mu s, V_{DD} \leq BV_{DS}$, Start $T_J = 25^\circ C$

Test Circuits

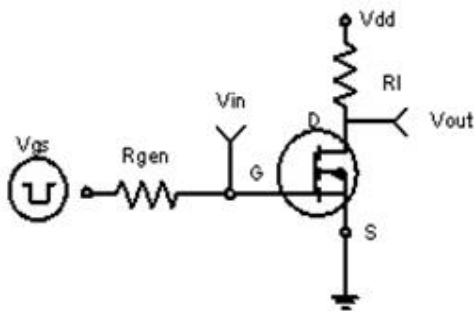


Figure 1: Switching Test Circuit

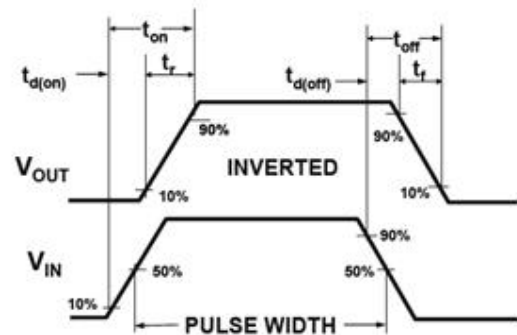


Figure 2: Switching Waveforms

Characteristics Curves

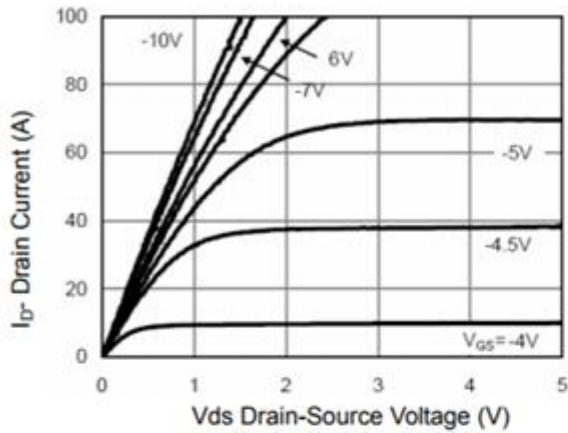


Figure 1 Output Characteristics

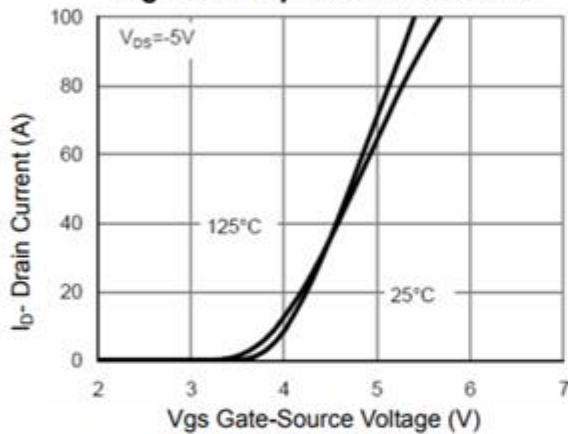


Figure 2 Transfer Characteristics

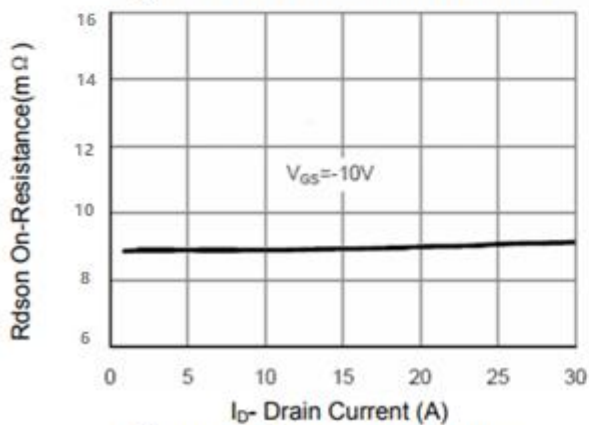


Figure 3 Rdson- Drain Current

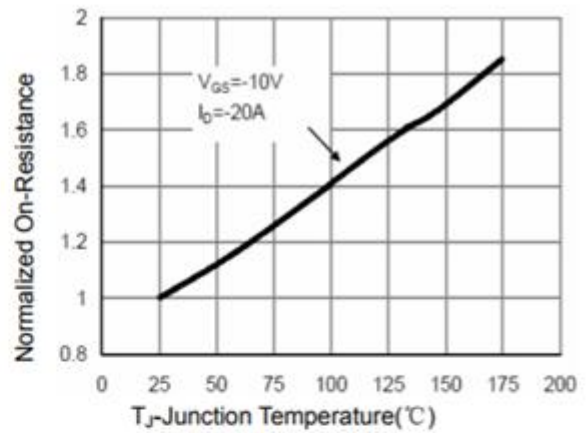


Figure 4 Rdson-Junction Temperature

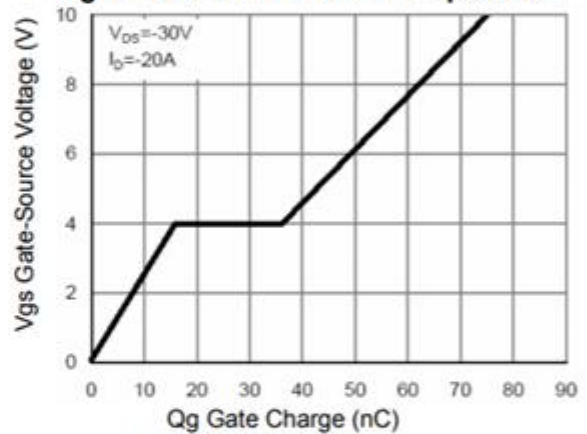


Figure 5 Gate Charge

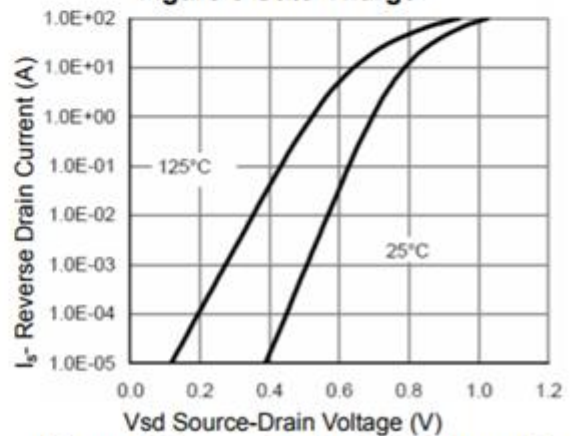


Figure 6 Source- Drain Diode Forward

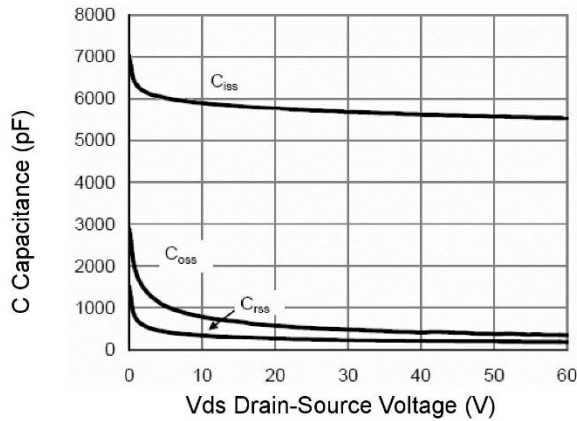


Figure 7 Capacitance vs Vds

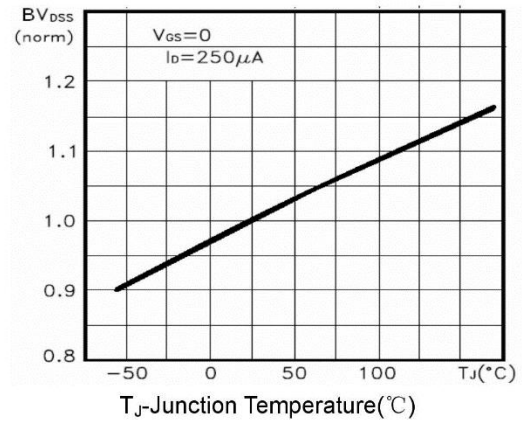


Figure 9 BV_{DSS} vs Junction Temperature

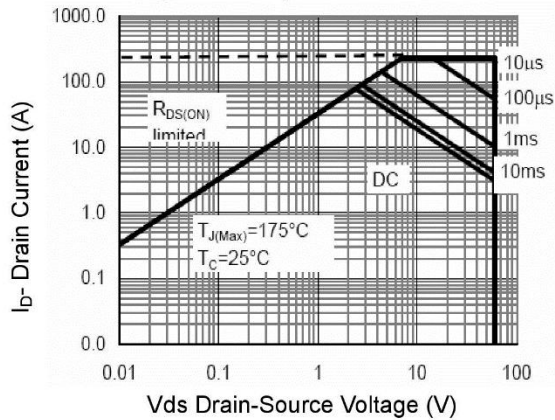


Figure 8 Safe Operation Area

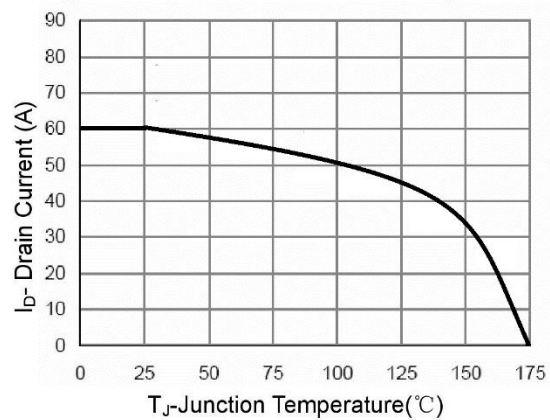


Figure 10 I_D Current Derating vs Junction Temperature

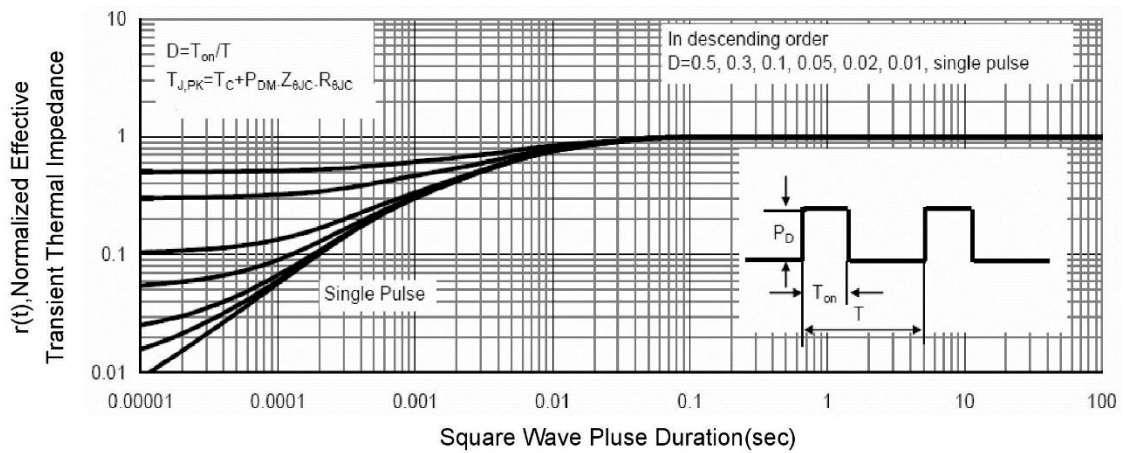


Figure 11 Normalized Maximum Transient Thermal Impedance