



GL540A0

GL Silicon N-Channel Power MOSFET

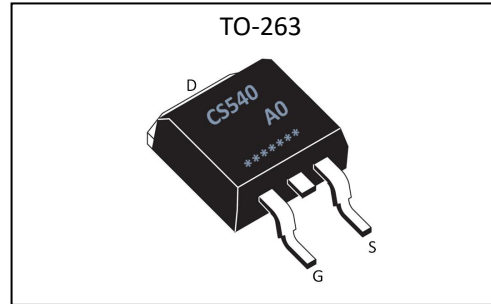
General Description:

The GL540A0 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. The package form is TO-263, which accords with the RoHS standard.

V_{DSS}	100	V
I_D	30	A
P_D	75	W
$R_{DS(ON)type}$	23	$m\Omega$

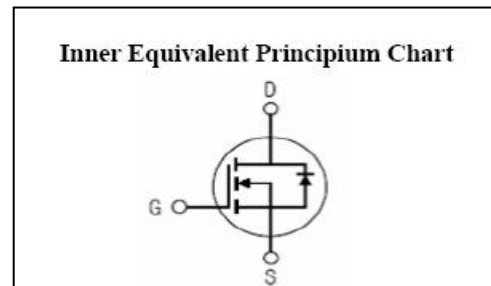
Features:

- $R_{DS(ON)} < 28m\Omega$ @ $V_{GS}=10V$ (Typ:23m Ω)
- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation



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	100	V
I_D	Continuous Drain Current	30	A
I_{DM}	Pulsed Drain Current ^{a1}	70	A
V_{GS}	Gate-to-Source Voltage	± 20	V
P_D	Power Dissipation	75	W
E_{AS}	Single pulse avalanche energy ^{a5}	15	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range	175, -55 to 175	$^{\circ}C$



GL540A0

GL Silicon N-Channel Power MOSFET

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 =250μA	100	--	--	V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =100V, V _{GS} =0V, T _a =25°C	--	--	1.0	μA
I _{GSS(F)}	Gate to Source Forward Leakage	V _{GS} =+20V	--	--	0.1	μA
I _{GSS(R)}	Gate to Source Reverse Leakage	V _{GS} =-20V	--	--	-0.1	μA

ON Characteristics ^{a3}						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
R _{DS(ON)}	Drain-to-Source On-Resistance	V _{GS} =10V, I _D =15A	--	23	28	mΩ
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0	3.0	4.0	V

Pulse width tp ≤ 380μs, δ ≤ 2%

Dynamic Characteristics ^{a4}						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =10A	--	15	--	S
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V f=1.0MHz	--	2000	--	pF
C _{oss}	Output Capacitance		--	300	--	
C _{rss}	Reverse Transfer Capacitance		--	250	--	

Resistive Switching Characteristics ^{a4}						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	R _L =5Ω, V _{DD} =50V V _{GS} =10V, R _G =3.0Ω	--	8	--	ns
t _r	Rise Time		--	4	--	
t _{d(OFF)}	Turn-Off Delay Time		--	20	--	
t _f	Fall Time		--	3	--	
Q _g	Total Gate Charge	I _D =18A, V _{DD} =50V V _{GS} =10V	--	60	--	nC
Q _{gs}	Gate to Source Charge		--	3.6	--	
Q _{gd}	Gate to Drain ("Miller")Charge		--	6.0	--	



GL540A0

GL Silicon N-Channel Power MOSFET

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current ^{a2} (Body Diode)		--	--	30	A
V_{SD}	Diode Forward Voltage ^{a3}	$I_S=30A, V_{GS}=0V$	--	--	1.2	V

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case ^{a2}	2.0	°C/W

^{a1}: Repetitive Rating: Pulse width limited by maximum junction temperature.

^{a2}: Surface Mounted on FR4 Board, $t \leq 10\text{sec}$.

^{a3}: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

^{a4}: Guaranteed by design, not subject to production

^{a5}: EAS condition: $T_j=25^\circ\text{C}, V_{DD}=50\text{V}, V_G=10\text{V}, L=0.5\text{mH}, R_g=25\Omega, I_{AS}=32\text{A}$



GL540A0

GL Silicon N-Channel Power MOSFET

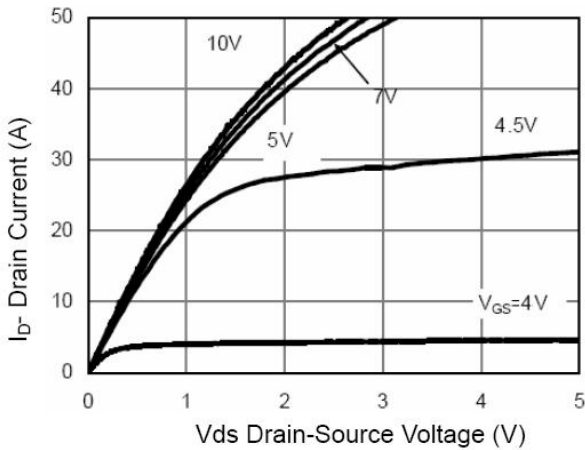


Figure 1 Output Characteristics

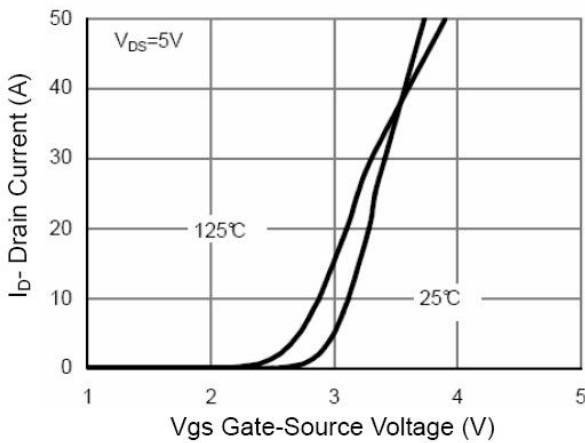


Figure 2 Transfer Characteristics

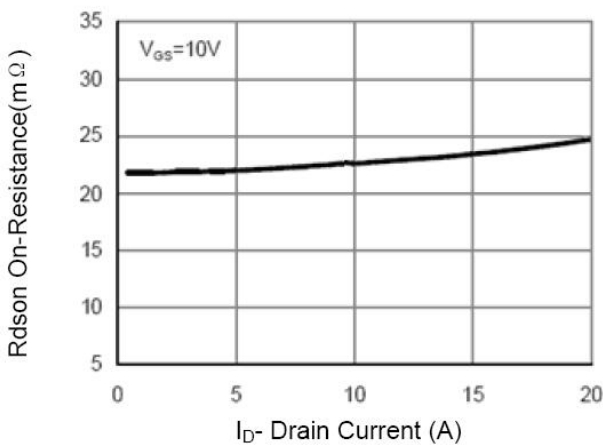


Figure 3 Rdson- Drain Current

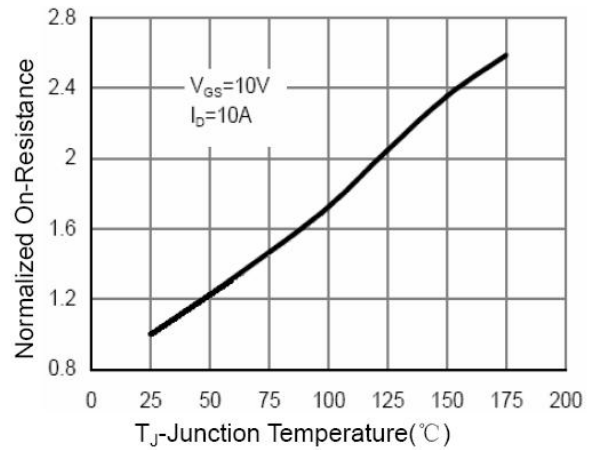


Figure 4 Rdson-Junction Temperature

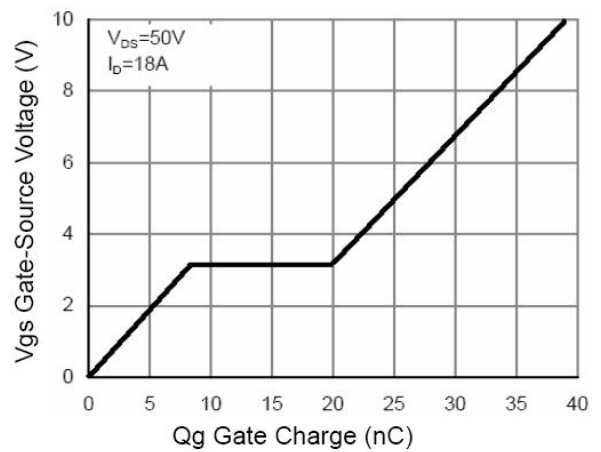


Figure 5 Gate Charge

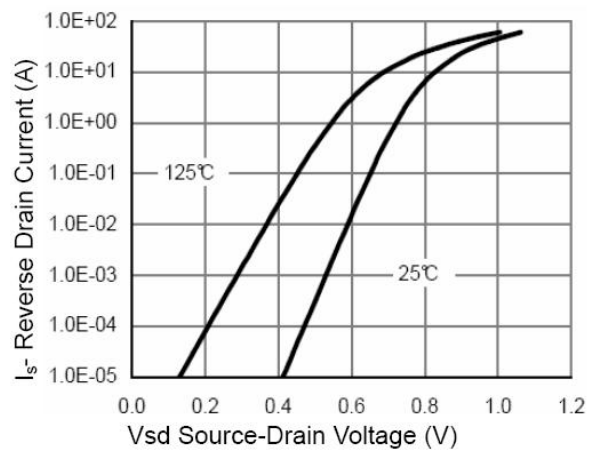


Figure 6 Source- Drain Diode Forward



GL540A0

GL Silicon N-Channel Power MOSFET

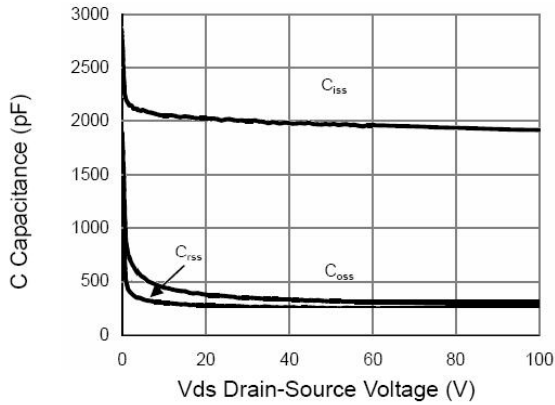


Figure 7 Capacitance vs Vds

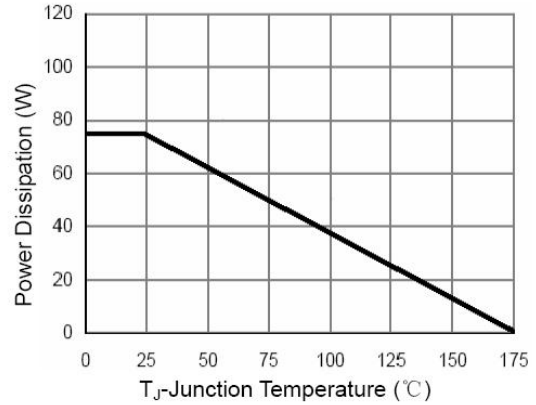


Figure 9 Power De-rating

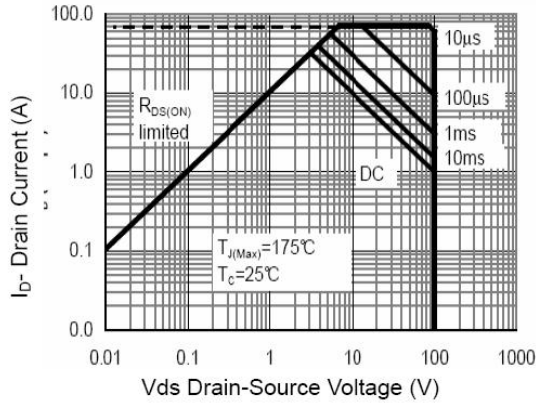


Figure 8 Safe Operation Area

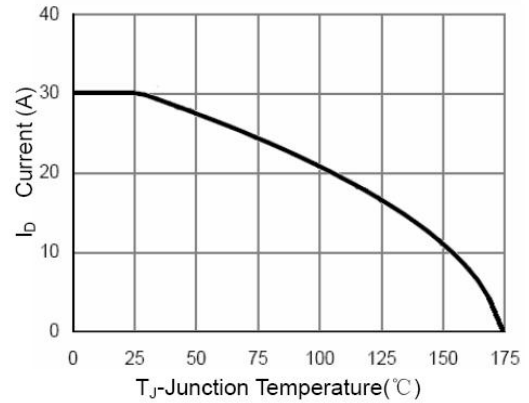


Figure 10 ID Current- Junction Temperature

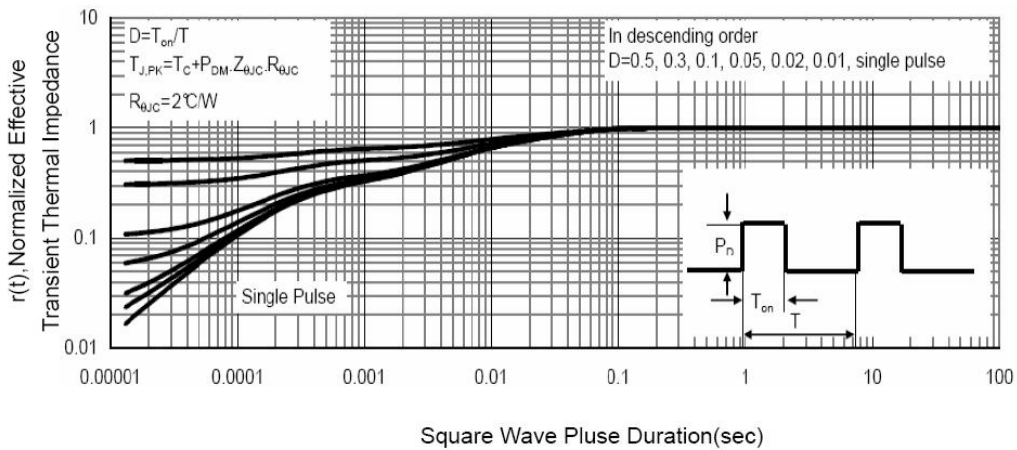


Figure 11 Normalized Maximum Transient Thermal Impedance