

GI80LS02**N-CHANNEL ENHANCEMENT MODE POWER MOSFET**

BV _{DSS}	25V
R _{DS(ON)}	8mΩ
I _D	75A

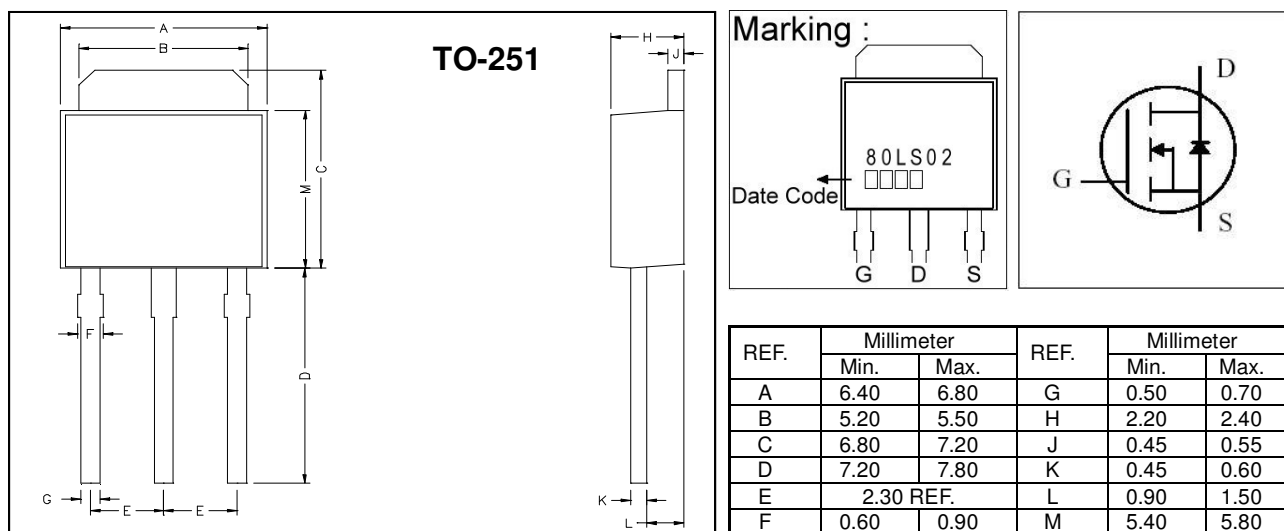
Description

The GI80LS02 used advanced design and process to achieve low gate charge, low on-resistance and fast switching performance.

The through-hole version (TO-251) is available for low-profile applications and suited for low voltage applications such as DC/DC converters.

Features

- *Low On-resistance
- *Simple Drive Requirement
- *Fast Switching Speed

Package Dimensions**Absolute Maximum Ratings**

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	25	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current, V _{GS} @10V	I _D @T _C =25°C	75	A
Continuous Drain Current, V _{GS} @10V	I _D @T _C =100°C	52	A
Pulsed Drain Current ¹	I _{DM}	250	A
Total Power Dissipation	P _D @T _C =25°C	96	W
Linear Derating Factor		0.75	W/°C
Operating Junction and Storage Temperature Range	T _j , T _{stg}	-55 ~ +150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-case Max.	R _{thj-case}	1.4	°C/W
Thermal Resistance Junction-ambient Max.	R _{thj-amb}	110	°C/W

Electrical Characteristics (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	25	-	-	V	V _{GS} =0, I _D =250uA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	0.03	-	V/°C	Reference to 25°C, I _D =1mA
Gate Threshold Voltage	V _{GS(th)}	1.0	-	3.0	V	V _{DS} =V _{GS} , I _D =250uA
Forward Transconductance	g _{fs}	-	20	-	S	V _{DS} =10V, I _D =30A
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V
Drain-Source Leakage Current(T _j =25°C)	I _{DSS}	-	-	1	uA	V _{DS} =25V, V _{GS} =0
Drain-Source Leakage Current(T _j =150°C)		-	-	100	uA	V _{DS} =20V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{DS(ON)}	-	-	8	mΩ	V _{GS} =10V, I _D =40A
		-	-	12		V _{GS} =4.5V, I _D =30A
Total Gate Charge ²	Q _g	-	19	30	nC	I _D =30A V _{DS} =20V V _{GS} =4.5V
Gate-Source Charge	Q _{gs}	-	3	-		
Gate-Drain ("Miller") Charge	Q _{gd}	-	12	-		
Turn-on Delay Time ²	T _{d(on)}	-	9	-	ns	V _{DS} =15V I _D =30A V _{GS} =10V R _G =3.3Ω R _D =0.5Ω
Rise Time	T _r	-	90	-		
Turn-off Delay Time	T _{d(off)}	-	25	-		
Fall Time	T _f	-	97	-		
Input Capacitance	C _{iss}	-	1290	2070	pF	V _{GS} =0V V _{DS} =25V f=1.0MHz
Output Capacitance	C _{oss}	-	630	-		
Reverse Transfer Capacitance	C _{rss}	-	205	-		
Gate Resistance	R _g	-	1.4	-	Ω	f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.3	V	I _S =40A, V _{GS} =0V
Reverse Recovery Time ²	T _{rr}	-	30	-	ns	I _S =30A, V _{GS} =0V
Reverse Recovery Charge	Q _{rr}	-	22	-	nC	dI/dt=100A/μs

Notes: 1. Pulse width limited by safe operating area.

2. Pulse width ≤ 300us, duty cycle ≤ 2%.

Characteristics Curve

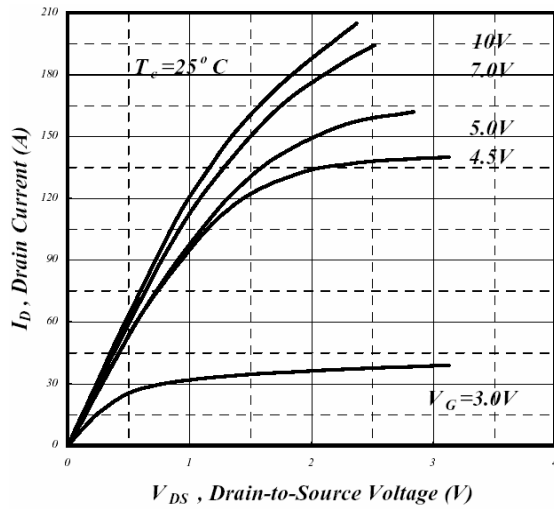


Fig 1. Typical Output Characteristics

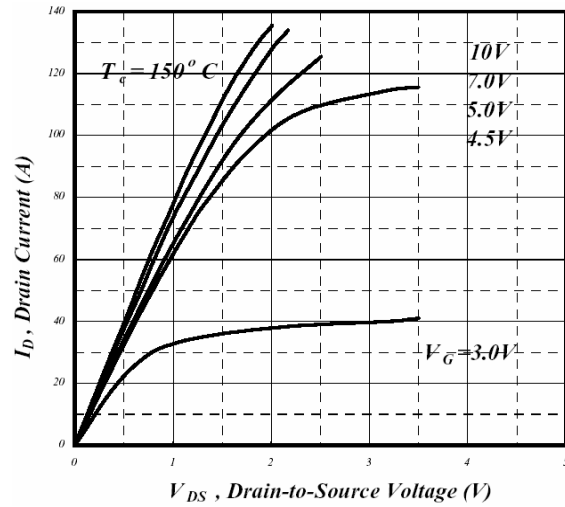


Fig 2. Typical Output Characteristics

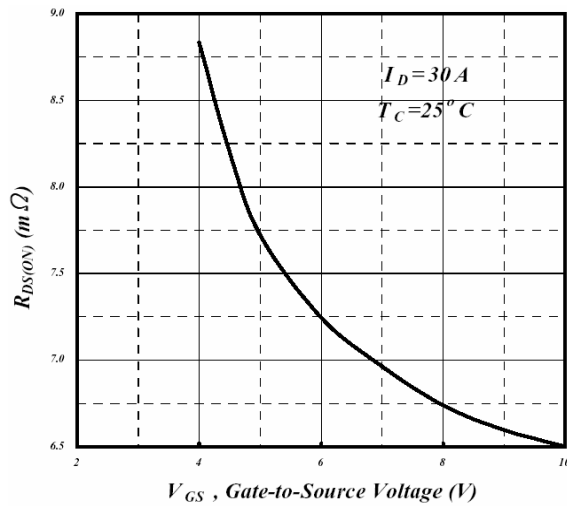


Fig 3. On-Resistance v.s. Gate Voltage

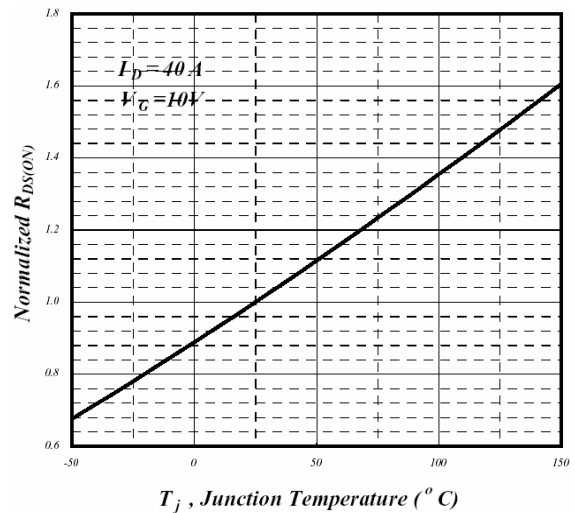


Fig 4. Normalized On-Resistance v.s. Junction Temperature

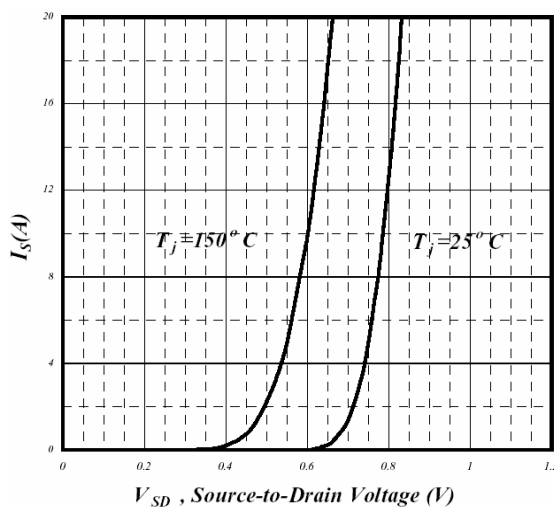


Fig 5. Forward Characteristics of Reverse Diode

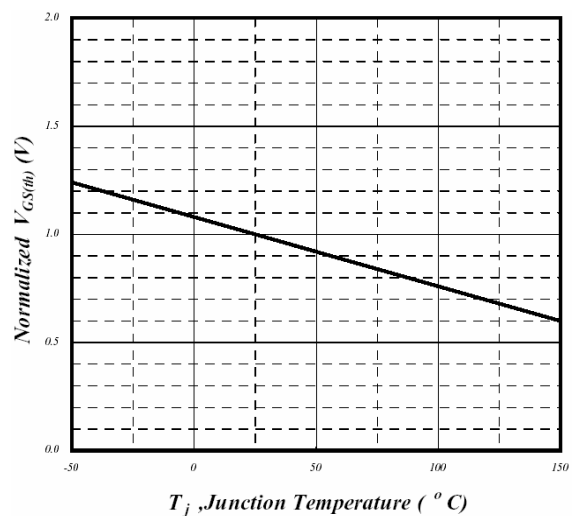


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

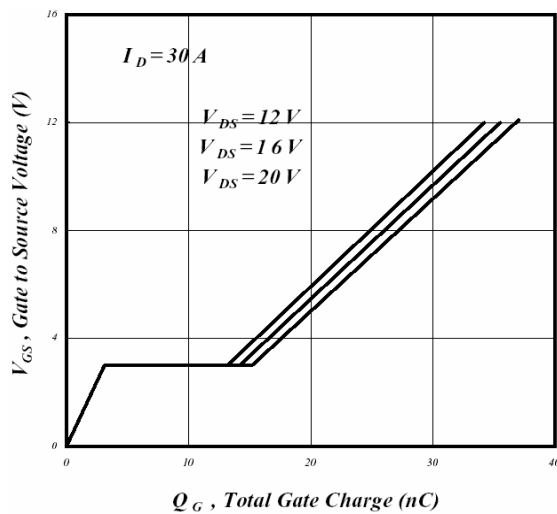


Fig 7. Gate Charge Characteristics

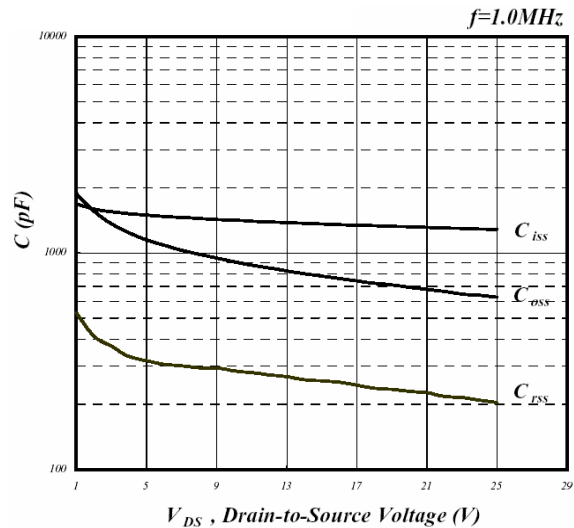


Fig 8. Typical Capacitance Characteristics

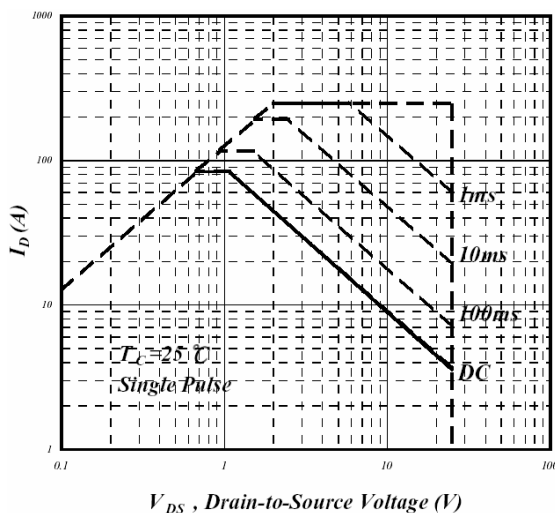


Fig 9. Maximum Safe Operating Area

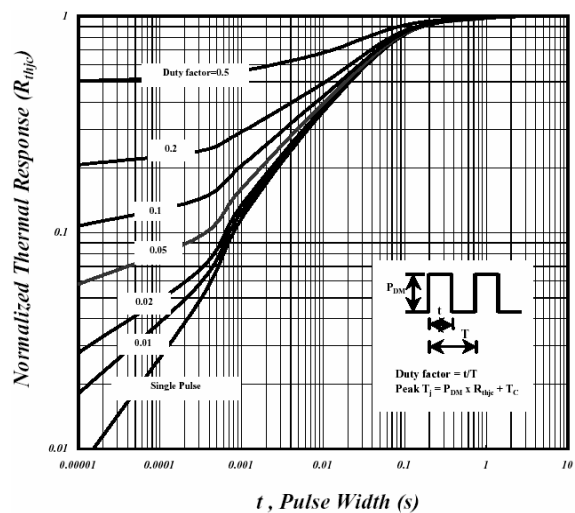


Fig 10. Effective Transient Thermal Impedance

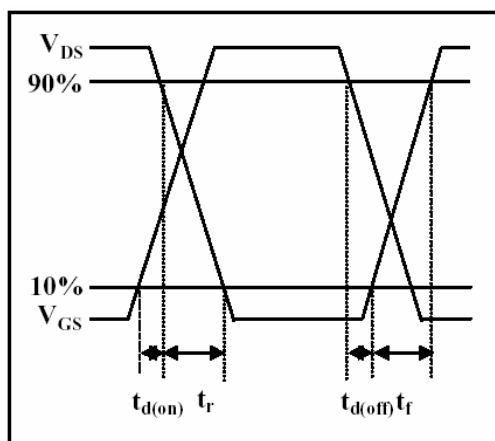


Fig 11. Switching Time Waveform

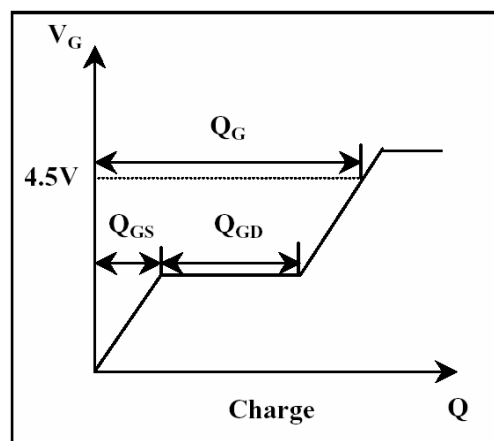


Fig 12. Gate Charge Waveform

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