

GSC4N01

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

BVDSS	20V
RDS(ON)	30mΩ
ID	6A

Description

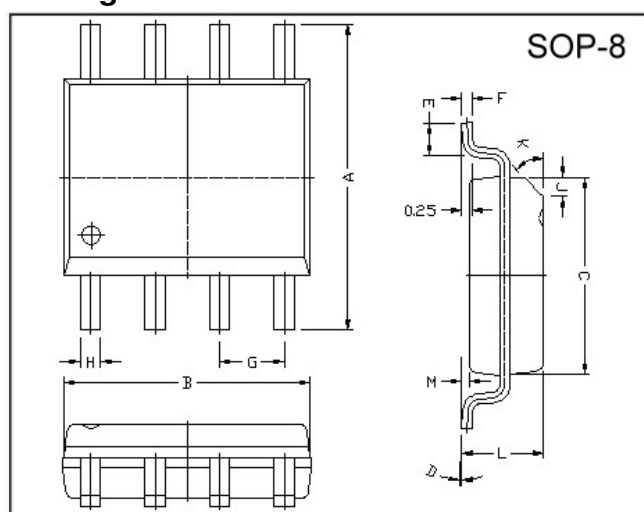
The GSC4N01 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The SOP-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

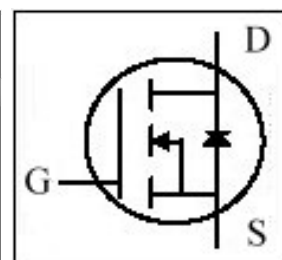
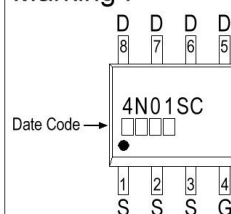
Features

- *Simple Drive Requirement
- *Lower On-resistance
- *Fast Switching Characteristic

Package Dimensions



Marking :



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	M	0.10	0.25
B	4.80	5.00	H	0.35	0.49
C	3.80	4.00	L	1.35	1.75
D	0°	8°	J	0.375 REF.	
E	0.40	0.90	K	45°	
F	0.19	0.25	G	1.27 TYP.	

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current ³ , $V_{GS}@4.5V$	$I_D @T_A=25^\circ C$	6	A
Continuous Drain Current ³ , $V_{GS}@4.5V$	$I_D @T_A=70^\circ C$	4.8	A
Pulsed Drain Current ¹	I_{DM}	20	A
Total Power Dissipation	$P_D @T_A=25^\circ C$	2.5	W
Linear Derating Factor		0.02	W/ $^\circ C$
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ +150	$^\circ C$

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient Max.	$R_{thj-amb}$	50	$^\circ C/W$

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	20	-	-	V	V _{GS} =0, I _D =250uA
Gate Threshold Voltage	V _{GS(th)}	0.6	-	1.2	V	V _{DS} =V _{GS} , I _D =250uA
Forward Transconductance	g _{fs}	-	10	-	S	V _{DS} =2.5V, I _D =2A
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±10V
Drain-Source Leakage Current(T _j =25°C)	I _{DSS}	-	-	1	uA	V _{DS} =20V, V _{GS} =0
Drain-Source Leakage Current(T _j =70°C)		-	-	25	uA	V _{DS} =16V, V _{GS} =0
Static Drain-Source On-Resistance	R _{DS(on)}	-	-	30	mΩ	V _{GS} =4.5V, I _D =4.2A
		-	-	40		V _{GS} =2.5V, I _D =2.0A
Total Gate Charge ²	Q _g	-	11	16	nC	I _D =4.2A V _{DS} =12V V _{GS} =4.5V
Gate-Source Charge	Q _{gs}	-	2.0	-		
Gate-Drain ("Miller") Change	Q _{gd}	-	3.0	-		
Turn-on Delay Time ²	T _{d(on)}	-	13	-	ns	V _{DS} =12V I _D =4.2A V _{GS} =4.5V R _G =2.3Ω
Rise Time	T _r	-	35	-		
Turn-off Delay Time	T _{d(off)}	-	45	-		
Fall Time	T _f	-	50	-		
Input Capacitance	C _{iss}	-	870	1200	pF	V _{GS} =0V V _{DS} =10V f=1.0MHz
Output Capacitance	C _{oss}	-	260	-		
Reverse Transfer Capacitance	C _{rss}	-	60	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.2	V	I _S =1.7A, V _{GS} =0V

Notes: 1. Pulse width limited by Max. junction temperature.

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

3. Surface mounted on 1 in² copper pad of FR4 board; 125°C/W when mounted on Min. copper pad.

Characteristics Curve

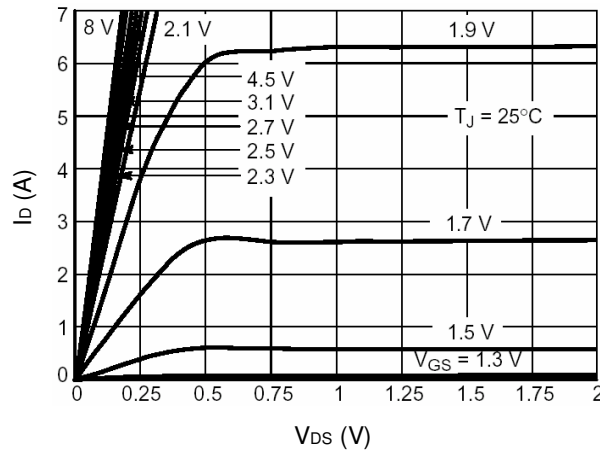


Fig 1. Typical Output Characteristics

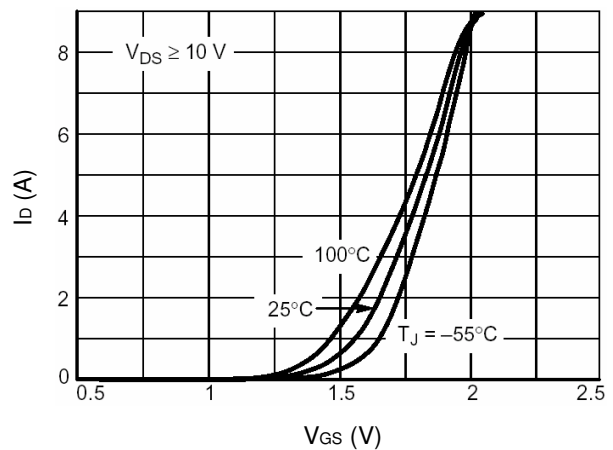


Fig 2. Transfer Characteristics

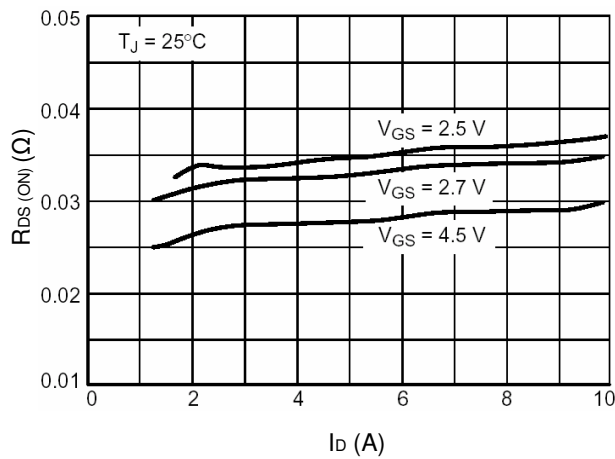


Fig 3. On-Resistance v.s. Drain Current and Gate Voltage

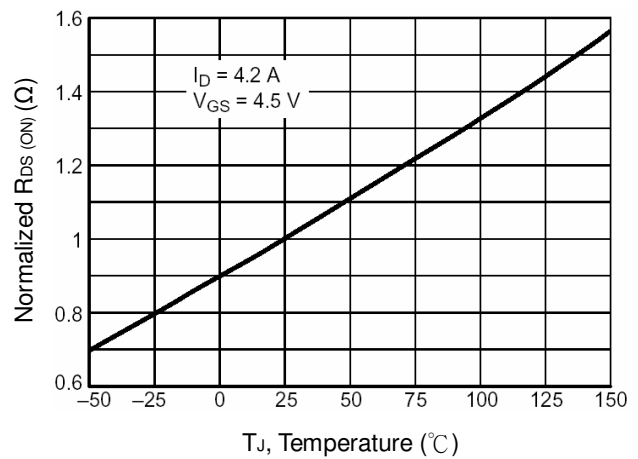


Fig 4. On-Resistance v.s. Junction Temperature

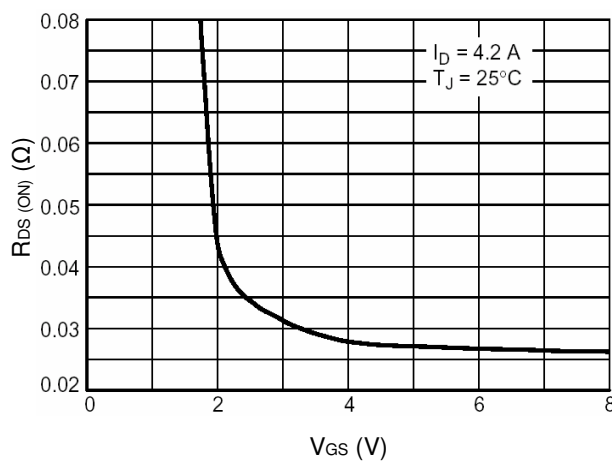


Fig 5. On-Resistance v.s. Gate-Source Voltage

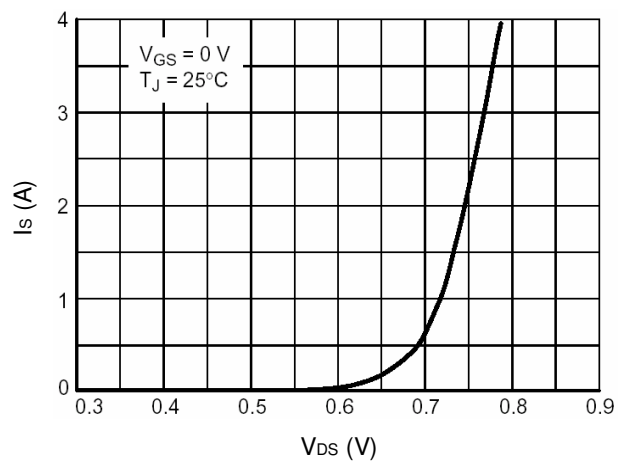


Fig 6. Body Diode Characteristics

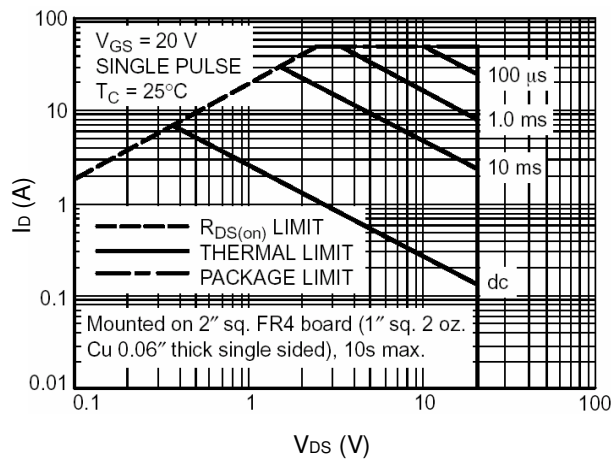


Fig 7. Maximum Safe Operating Area

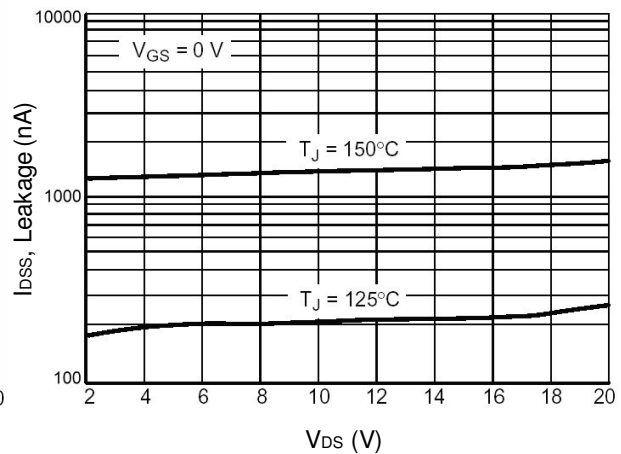


Fig 8. Drain-Source Leakage Current v.s. Voltage

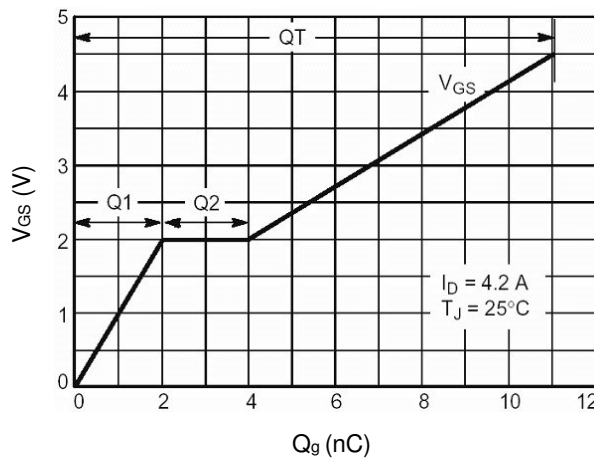


Fig 9. Gate Charge Characteristics

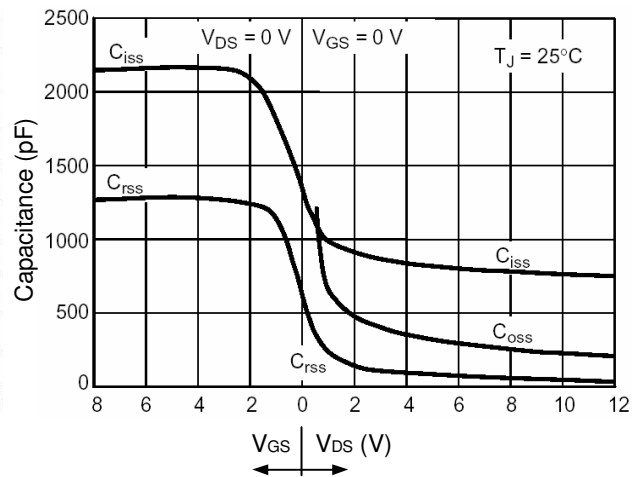


Fig 10. Typical Capacitance Characteristics

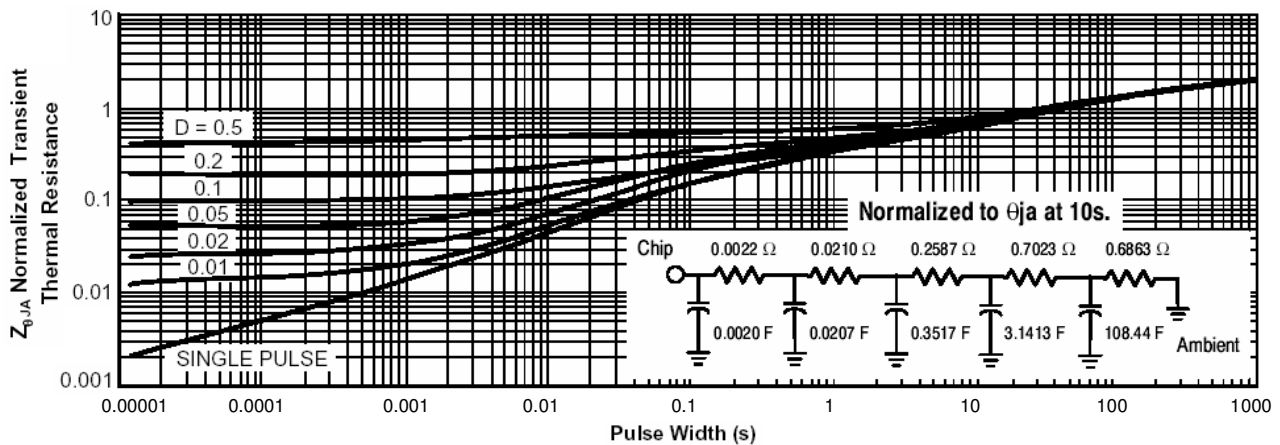


Fig 11. Normalized Maximum Transient Thermal Impedance

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