

GI3055S

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV _{DSS}	20V
R _{DS(ON)}	25mΩ
I _D	18A

Description

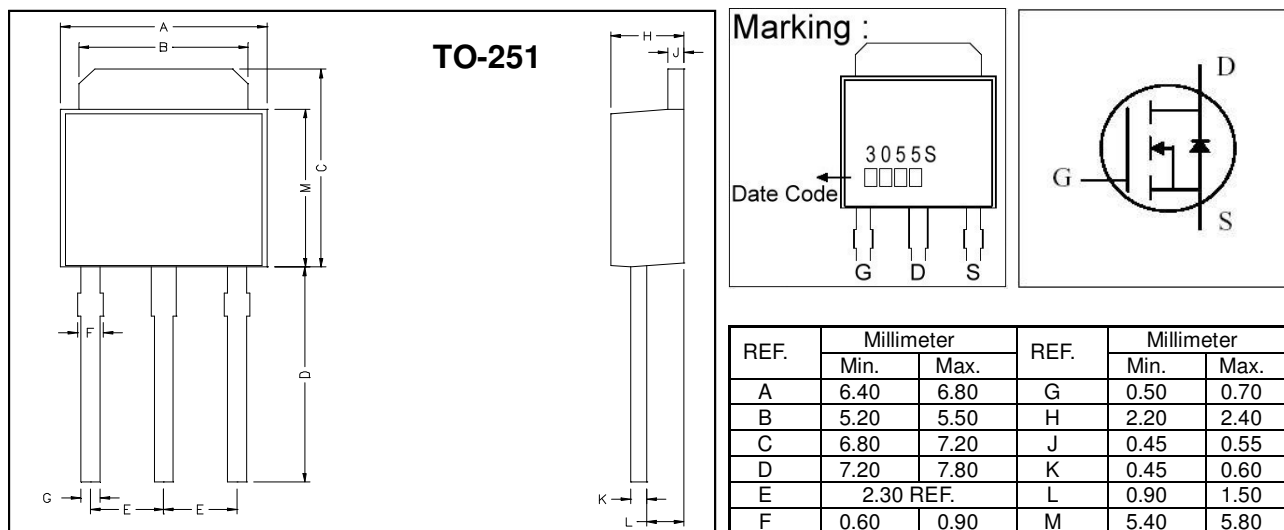
The GI3055S provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

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 Gate Charge
- *Simple Drive Requirement
- *Fast Switching

Package Dimensions



Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{GS}	20	V
Gate-Source Voltage	V _{GS}	±8	V
Continuous Drain Current, V _{GS} @10V	I _D @T _C =25°C	18	A
Continuous Drain Current, V _{GS} @10V	I _D @T _C =100°C	10	A
Pulsed Drain Current ¹	I _{DM}	30	A
Total Power Dissipation	P _D @T _C =25°C	28	W
Linear Derating Factor		0.22	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-c}	4.5	°C/W
Thermal Resistance Junction-ambient Max.	R _{thj-a}	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}	20	-	-	V	V _{GS} =0, I _D =250uA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	0.037	-	V/°C	Reference to 25°C, I _D =1mA
Gate Threshold Voltage	V _{GS(th)}	0.5	-	1.2	V	V _{DS} =V _{GS} , I _D =250uA
Forward Transconductance	g _{fs}	-	7	-	S	V _{DS} =10V, I _D =6A
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±8V
Drain-Source Leakage Current(T _j =25°C)	I _{DSS}	-	-	1	uA	V _{DS} =20V, V _{GS} =0
Drain-Source Leakage Current(T _j =150°C)		-	-	25	uA	V _{DS} =16V, V _{GS} =0
Static Drain-Source On-Resistance	R _{DS(ON)}	-	-	25	mΩ	V _{GS} =10V, I _D =8A
		-	-	30		V _{GS} =4.5V, I _D =6A
		-	-	40		V _{GS} =2.5V, I _D =5.2A
Total Gate Charge ²	Q _g	-	18.9	-	nC	I _D =6A V _{DS} =10V V _{GS} =10V
Gate-Source Charge	Q _{gs}	-	2.1	-		
Gate-Drain ("Miller") Change	Q _{gd}	-	2.4	-		
Turn-on Delay Time ²	T _{d(on)}	-	14.3	-	ns	V _{DS} =10V I _D =1A V _{GS} =4.5V R _G =6Ω R _L =10Ω
Rise Time	T _r	-	11.9	-		
Turn-off Delay Time	T _{d(off)}	-	22.1	-		
Fall Time	T _f	-	16.7	-		
Input Capacitance	C _{iss}	-	614	-	pF	V _{GS} =0V V _{DS} =8V f=1.0MHz
Output Capacitance	C _{oss}	-	151	-		
Reverse Transfer Capacitance	C _{rss}	-	116	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.3	V	I _S =18A, V _{GS} =0V, T _j =25°C
Continuous Source Current(Body Diode)	I _S	-	-	18	A	V _D = V _G =0V, V _S =1.3V
Pulsed Source Current(Body Diode) ¹	I _{SM}	-	-	30	A	

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

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

Characteristics Curve

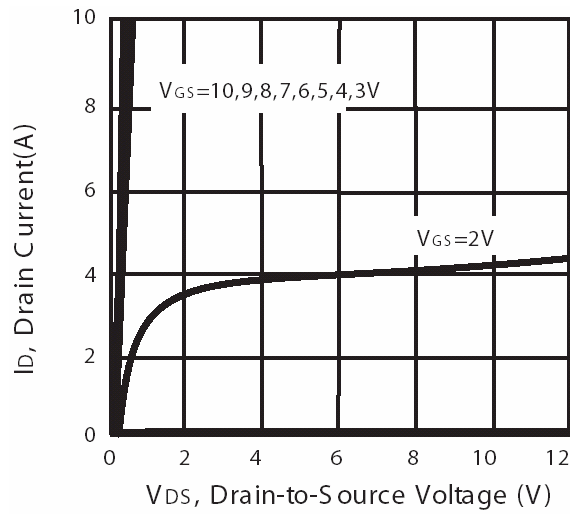


Fig 1. Typical Output Characteristics

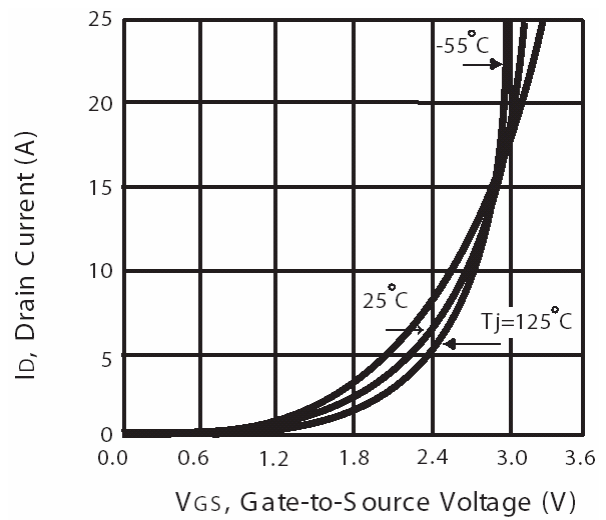


Fig 2. Transfer Characteristics

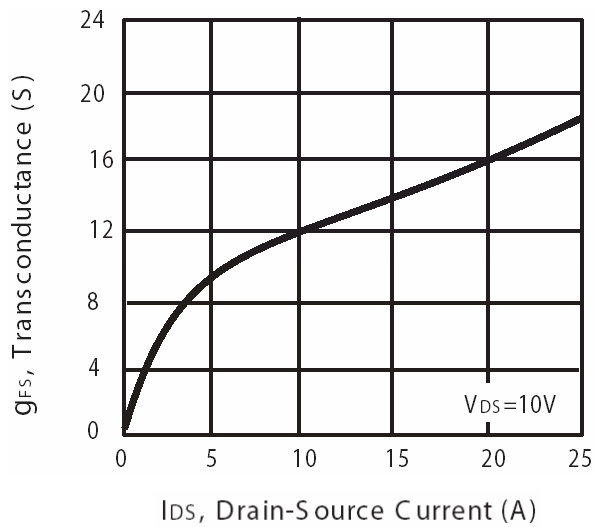


Fig 3. Transconductance v.s. Drain Current

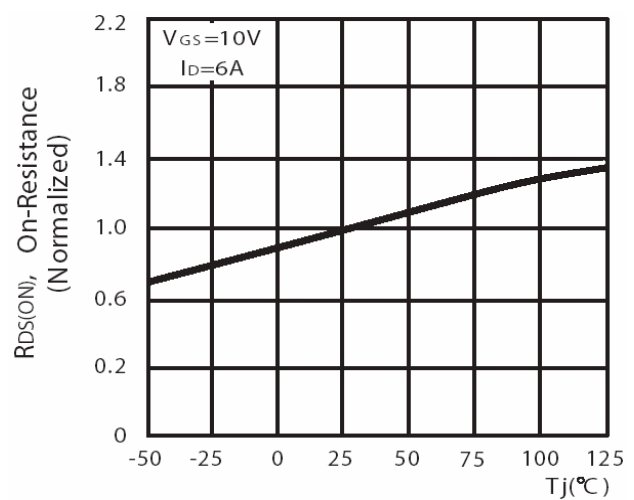


Fig 4. On-Resistance v.s. Junction Temperature

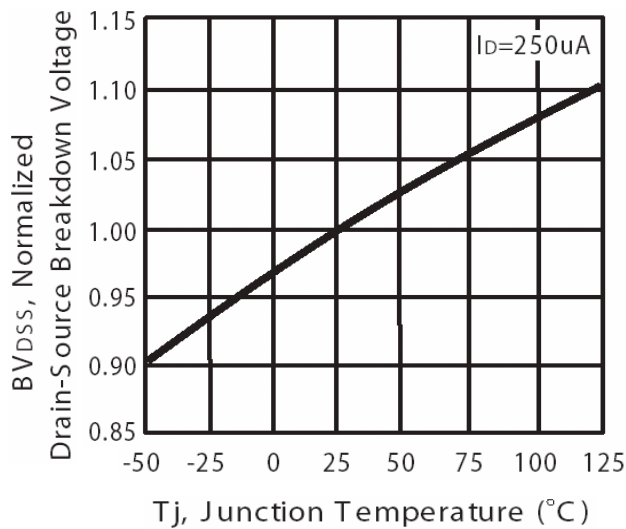


Fig 5. Breakdown Voltage v.s. Junction Temperature

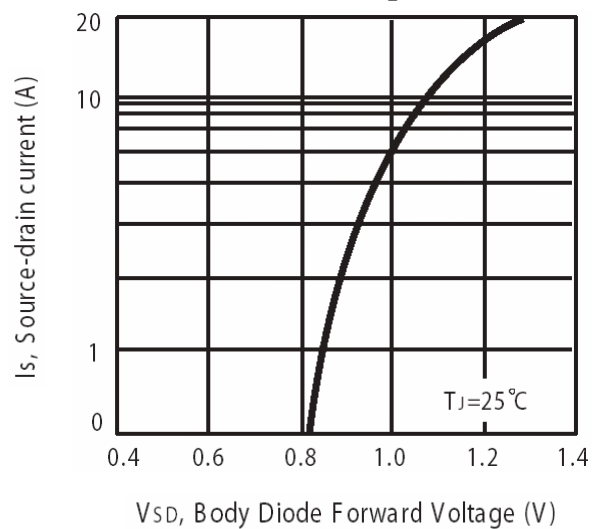


Fig 6. Body Diode Forward Voltage v.s. Source Current

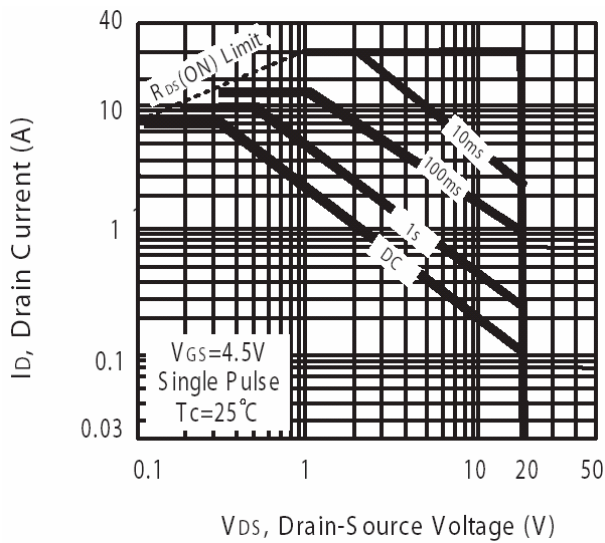


Fig 7. Maximum Safe Operating Area

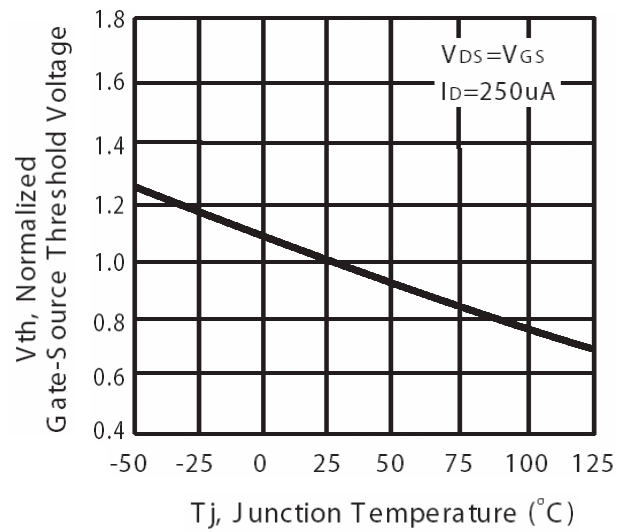


Fig 8. Gate Threshold Voltage v.s. Junction Temperature

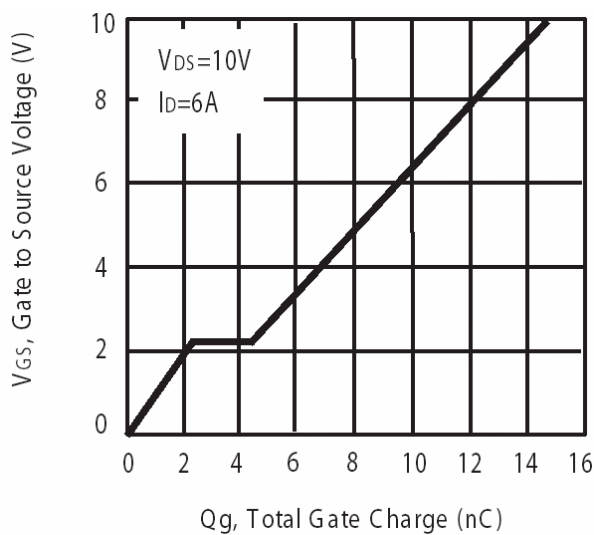


Fig 9. Gate Charge Characteristics

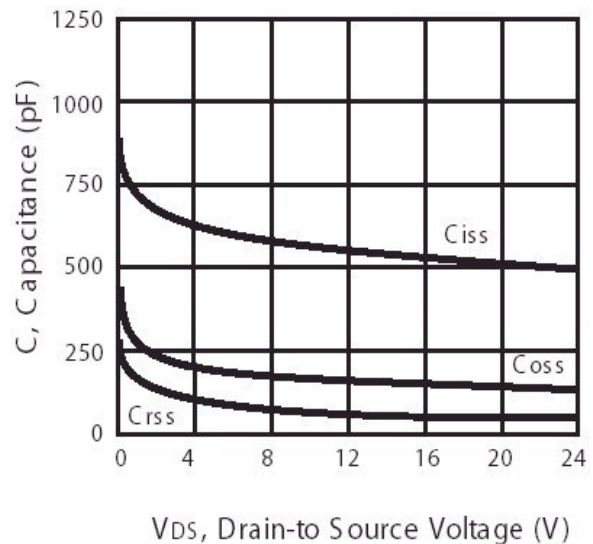


Fig 10. Typical Capacitance Characteristics

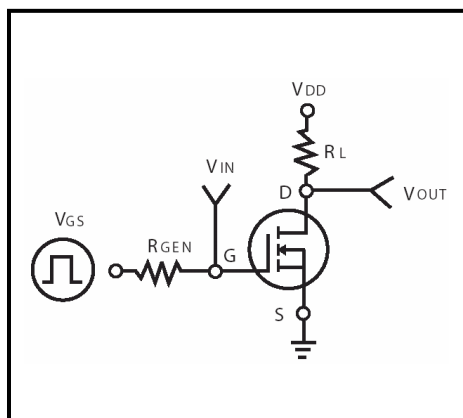


Fig 11. Switching Time Circuit

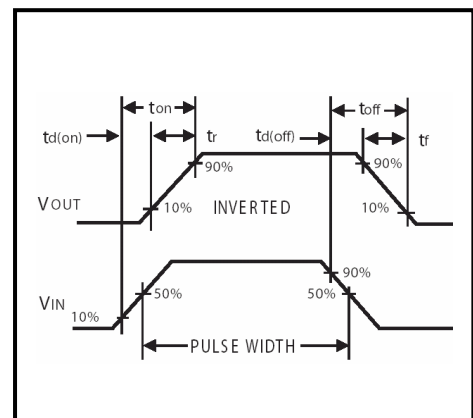


Fig 12. Switching Time Waveform

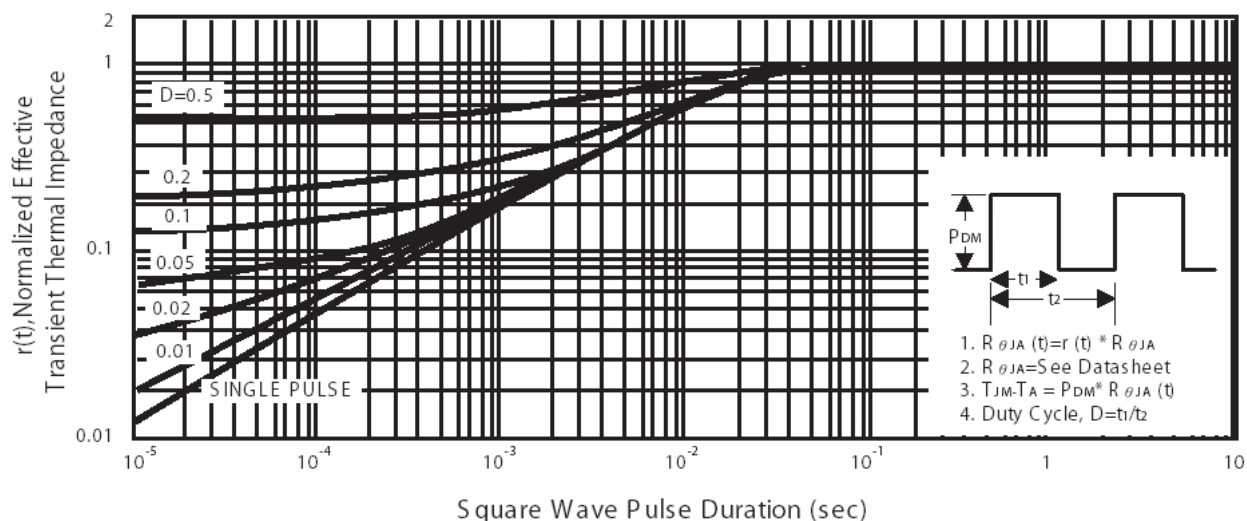


Fig 13. Normalized Thermal Transient Impedance Curve

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