

## GS152B

### P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BVDSS	-20V
RDS(ON)	300mΩ
ID	-0.7A

### Description

The GS152B provides the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.

The GS152B is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

### Features

\*Low On-State Resistance:0.3Ω (max)

\*Ultra High Speed Switching

### Applications

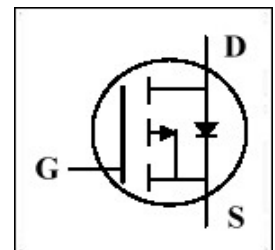
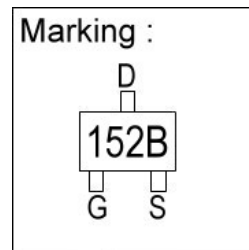
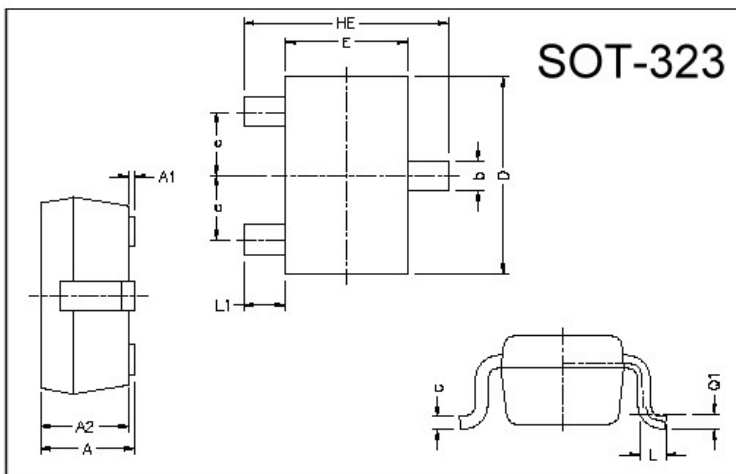
\*Notebook PCs

\*Cellular and portable phones

\*On-board power supplies

\*Li-ion battery System

### Package Dimensions



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	0.80	1.10	L1	0.42 REF.	
A1	0	0.10	L	0.15	0.35
A2	0.80	1.00	b	0.25	0.40
D	1.80	2.20	c	0.10	0.25
E	1.15	1.35	e	0.65 REF.	
HE	1.80	2.40	Q1	0.15 BSC.	

### Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V <sub>DS</sub>	-20	V
Gate-Source Voltage	V <sub>GS</sub>	±12	V
Continuous Drain Current <sup>3</sup>	I <sub>D</sub> @TA=25°C	-0.7	A
Pulsed Drain Current <sup>1,2</sup>	I <sub>DM</sub>	-2.8	A
Power Dissipation	P <sub>D</sub> @TA=25°C	0.35	W
Linear Derating Factor		0.0028	W/°C
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 ~ +150	°C

### Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient <sup>3</sup> Max.	R <sub>thj-a</sub>	360	°C/W

**Electrical Characteristics (T<sub>j</sub> = 25°C unless otherwise specified)**

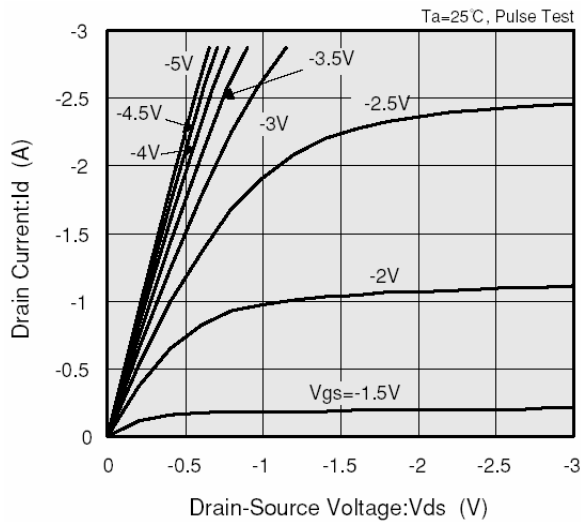
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-20	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =-250uA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	-0.1	-	V/°C	Reference to 25°C, I <sub>D</sub> =-1mA
Gate Threshold Voltage	V <sub>GS(th)</sub>	-0.5	-	-1.2	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-1mA
Forward Transconductance	g <sub>fs</sub>	-	1.5	-	S	V <sub>DS</sub> =-10V, I <sub>D</sub> =-0.4A
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±12V
Drain-Source Leakage Current(T <sub>j</sub> =25°C)	I <sub>DSS</sub>	-	-	-10	uA	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	-	-	300	mΩ	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.4A
		-	-	500		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-0.4A
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	-	3.2	-	nC	I <sub>D</sub> =-0.7A V <sub>DS</sub> =-10V V <sub>GS</sub> =-4.5V
Gate-Source Charge	Q <sub>gs</sub>	-	0.7	-		
Gate-Drain ("Miller") Change	Q <sub>gd</sub>	-	0.8	-		
Turn-on Delay Time <sup>2</sup>	T <sub>d(on)</sub>	-	9.8	-	ns	V <sub>DS</sub> =-10V I <sub>D</sub> =-0.4A V <sub>GS</sub> =-4.5V R <sub>G</sub> =6Ω
Rise Time	T <sub>r</sub>	-	10.8	-		
Turn-off Delay Time	T <sub>d(off)</sub>	-	79.1	-		
Fall Time	T <sub>f</sub>	-	41.3	-		
Input Capacitance	C <sub>iss</sub>	-	290	-	Pf	V <sub>GS</sub> =0V V <sub>DS</sub> =-20V f=1.0MHz
Output Capacitance	C <sub>oss</sub>	-	60	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	45	-		

**Source-Drain Diode**

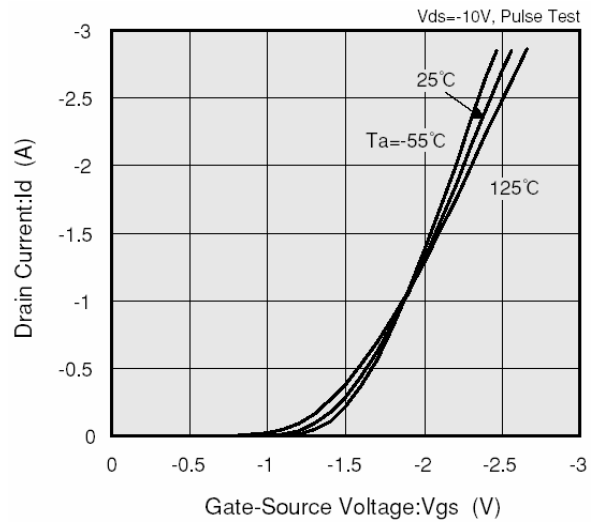
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage <sup>2</sup>	V <sub>SD</sub>	-	-	-1.1	V	I <sub>S</sub> =-0.7A, V <sub>GS</sub> =0V

- Notes: 1. Pulse width limited by Max. junction temperature.  
2. Pulse width ≤ 300us, duty cycle ≤ 2%.  
3. Surface mounted on FR4 board, t ≤ 10sec.

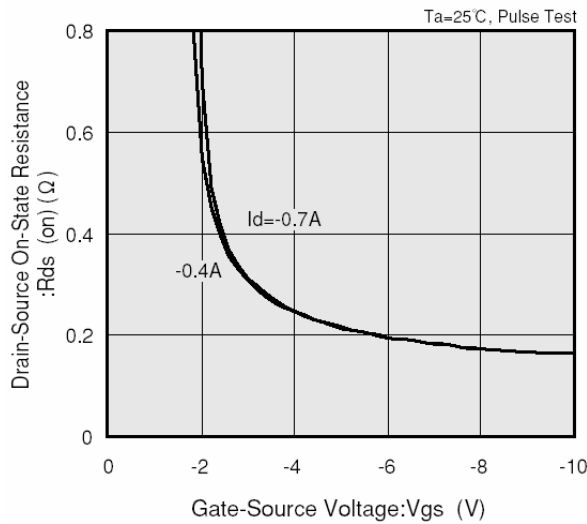
## Characteristics Curve



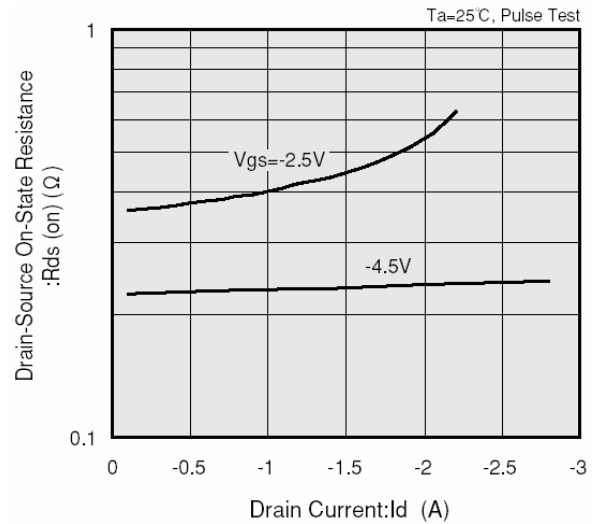
**Fig 1. Drain Current vs. Drain-Source Voltage**



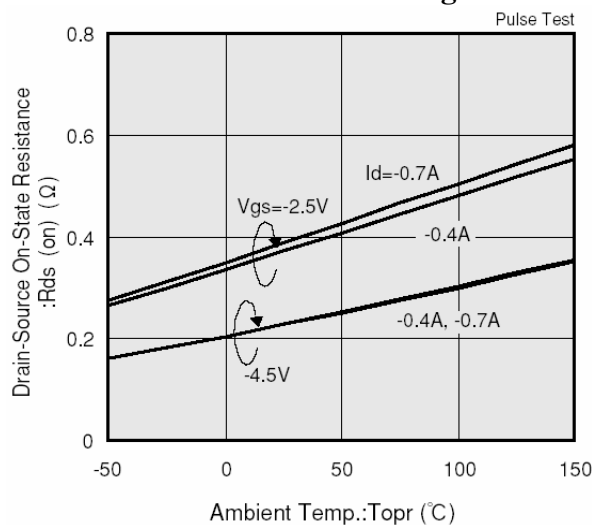
**Fig 2. Drain Current vs. Gate-Source Voltage**



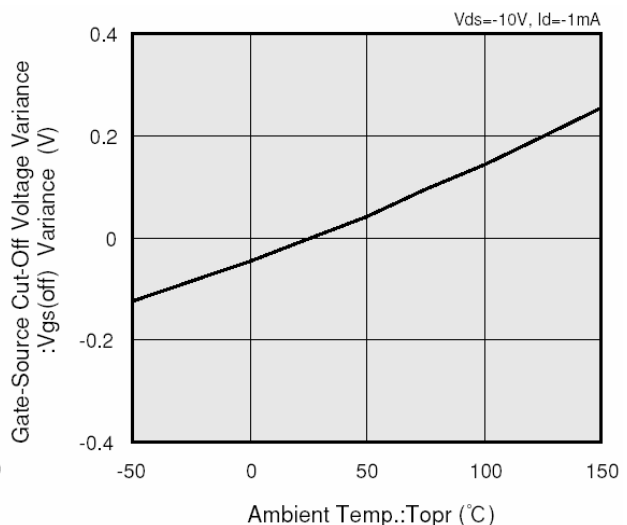
**Fig 3. Drain-Source On-State Resistance vs. Gate-Source Voltage**



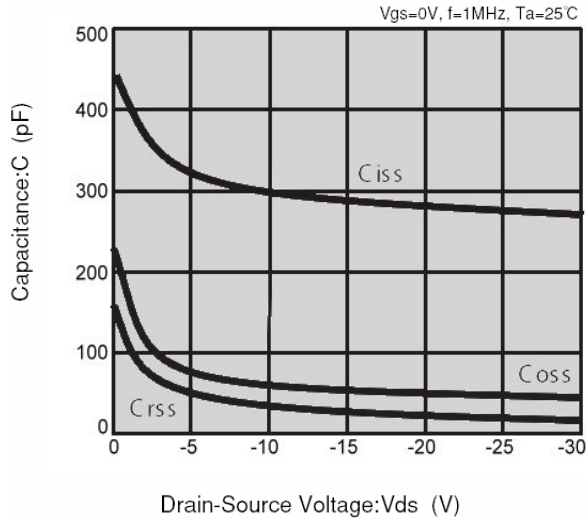
**Fig 4. Drain-Source On-State Resistance vs. Drain Current**



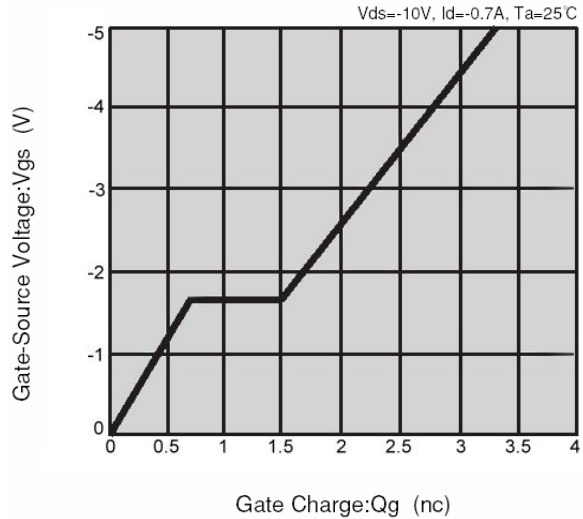
**Fig 5. Drain-Source On-State Resistance vs. Ambient Temperature**



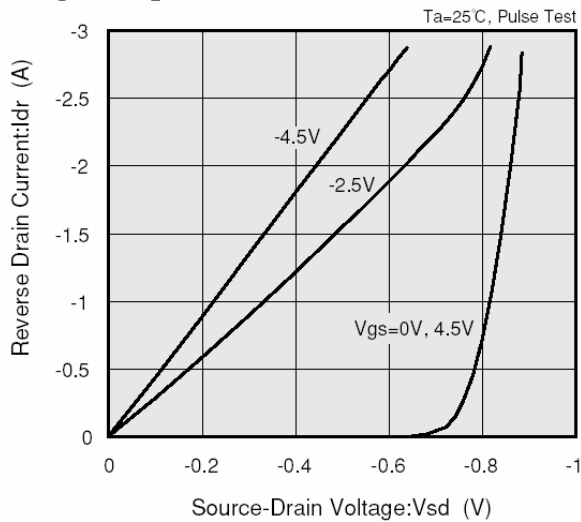
**Fig 6. Gate-Source Cut-off Voltage Variance vs. Ambient Temperature**



**Fig 7. Capacitance v.s. Drain-Source Voltage**



**Fig 8. Gate-Source Voltage v.s. Gate Charge**



**Fig 9. Reverse Drain-Current v.s. Source-Drain Voltage**

**Important Notice:**

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of GTM.
- GTM reserves the right to make changes to its products without notice.
- GTM semiconductor products are not warranted to be suitable for use in life-support Applications, or systems.
- GTM assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.

**Head Office And Factory:**

- **Taiwan:** No. 17-1 Tatung Rd. Fu Kou Hsin-Chu Industrial Park, Hsin-Chu, Taiwan, R. O. C.  
 TEL : 886-3-597-7061 FAX : 886-3-597-9220, 597-0785
- **China:** (201203) No.255, Jang-Jiang Tsai-Lueng RD. , Pu-Dung-Hsin District, Shang-Hai City, China  
 TEL : 86-21-5895-7671 ~ 4 FAX : 86-21-38950165