GP4953

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV_{DSS}	-30V
$R_{DS(ON)}$	53mΩ
I_D	-5A

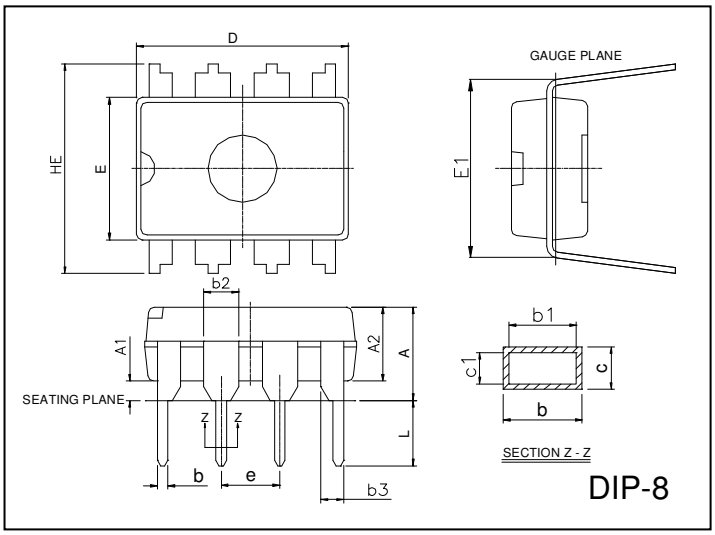
Description

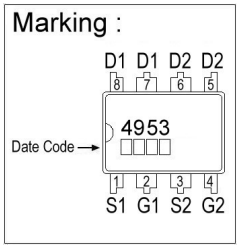
The GP4953 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

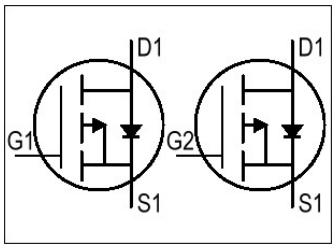
Features

*Low On-Resistance
*Simple Drive Requirement
*Fast Switching

Package Dimensions







REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	-	0.5334	c1	0.203	0.279
A1	0.381	-	D	9.017	10.16
A2	2.921	4.953	E	6.096	7.112
b	0.356	0.559	E1	7.620	8.255
b1	0.356	0.508	e	2.540 BSC	
b2	1.143	1.778	HE	-	10.92
b3	0.762	1.143	L	2.921	3.810
c	0.203	0.356			

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[3]	I_D @T_A=25℃	-5	A
Continuous Drain Current[3]	I_D @T_A=70℃	-4	A
Pulsed Drain Current[1]	I_{DM}	-20	A
Total Power Dissipation	P_D @T_A=25℃	2	W
Linear Derating Factor		0.016	W/℃
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +150	℃

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient[3] Max.	Rthj-amb	62.5	℃/W

Electrical Characteristics(Tj = 25℃ Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	V_{GS}=0, I_D=-250uA
Breakdown Voltage Temperature Coefficient	$\triangle BV_{DSS}/\triangle Tj$	-	-0.1	-	V/℃	Reference to 25℃, 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}	-	6	-	S	V_{DS}=-10V, I_D=-5A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	-1	uA	V_{DS}=-30V, V_{GS}=0
Drain-Source Leakage Current(Tj=70℃)		-	-	-25	uA	V_{DS}=-24V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	-	53	mΩ	V_{GS}=-10V, I_D=-5A
		-	-	90		V_{GS}=-4.5V, I_D=-4A
Total Gate Charge[2]	Q_g	-	9	15	nC	I_D=-5A V_{DS}=-15V V_{GS}=-4.5V
Gate-Source Charge	Q_{gs}	-	2	-		
Gate-Drain ("Miller") Change	Q_{gd}	-	5	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	10	-	ns	V_{DS}=-15V I_D=-1A V_{GS}=-10V R_G=6Ω R_D=15Ω
Rise Time	T_r	-	9	-		
Turn-off Delay Time	$T_{d(off)}$	-	20	-		
Fall Time	T_f	-	25	-		
Input Capacitance	C_{iss}	-	500	800	pF	V_{GS}=0V V_{DS}=-15V f=1.0MHz
Output Capacitance	C_{oss}	-	217	-		
Reverse Transfer Capacitance	C_{rss}	-	153	-		

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
Reverse Recovery Time[2]	T_{rr}	-	21.5	-	ns	I_S=-5A, V_{GS}=0V dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	18	-	nC	

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

2. Pulse width≦300us, duty cycle≦2%.

3. Mounted on 1 in^2 copper pad of FR4 board; 90℃/W when mounted on Min. copper pad.

Characteristics Curve

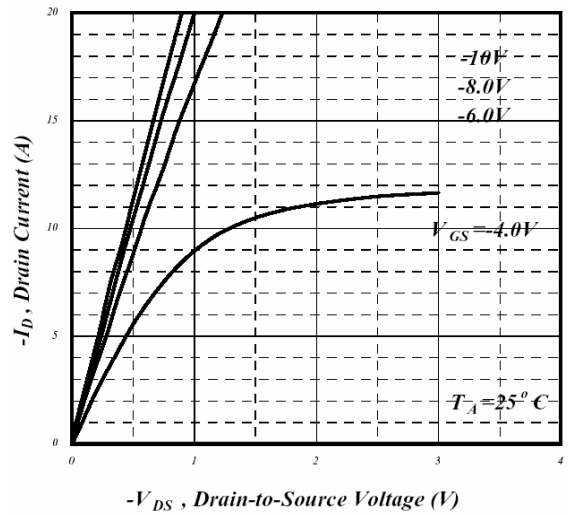


Fig 1. Typical Output Characteristics

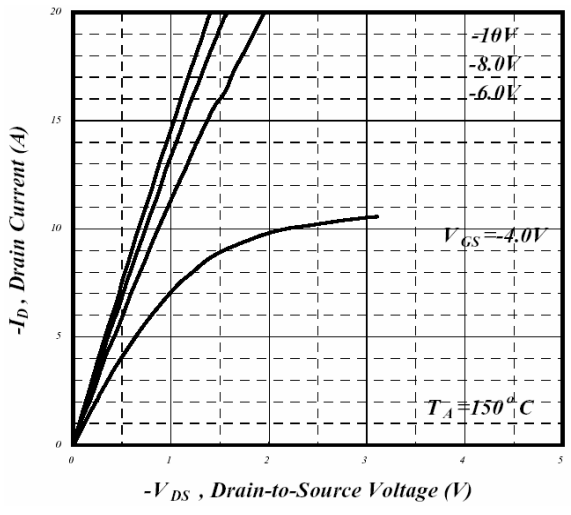


Fig 2. Typical Output Characteristics

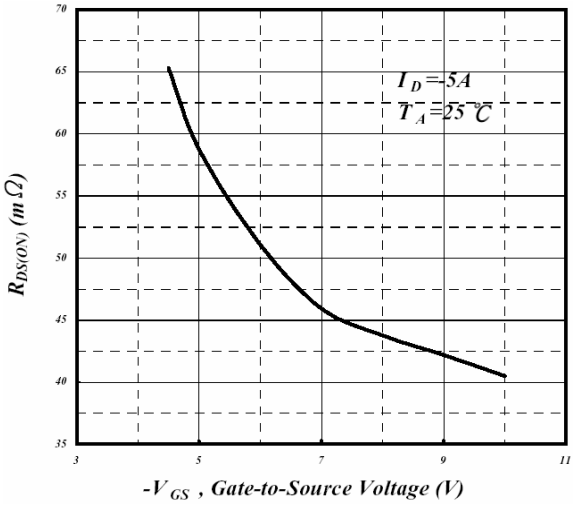


Fig 3. On-Resistance v.s. Gate Voltage

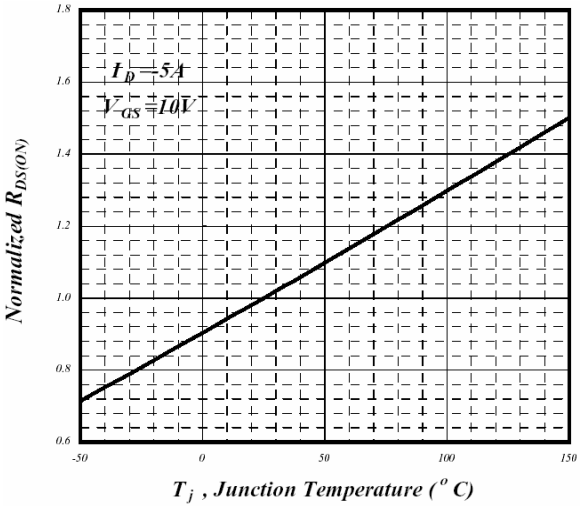


Fig 4. Normalized On-Resistance v.s. Junction Temperature

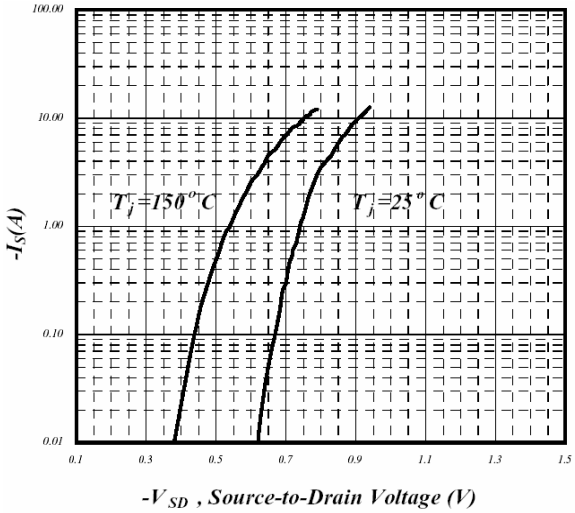


Fig 5. Forward Characteristics of Reverse Diode

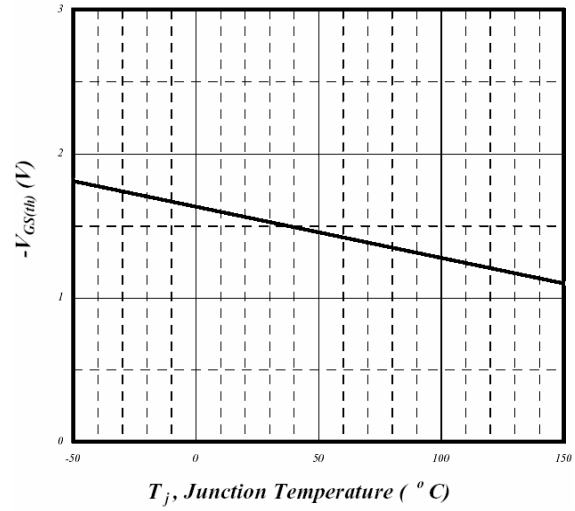


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

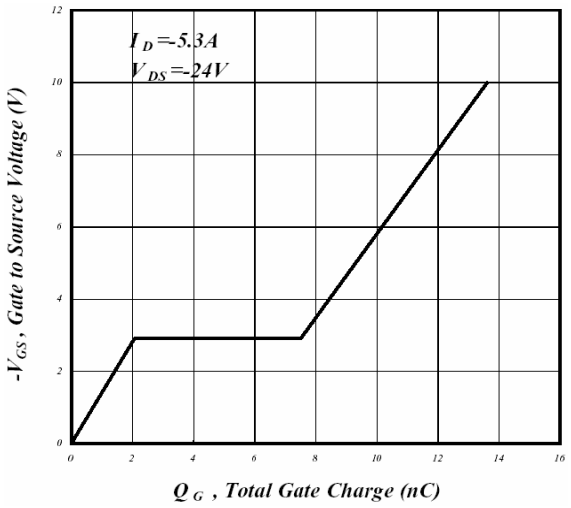


Fig 7. Gate Charge Characteristics

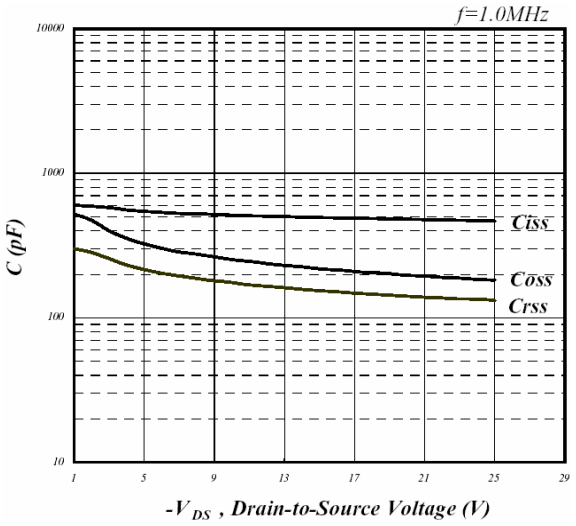


Fig 8. Typical Capacitance Characteristics

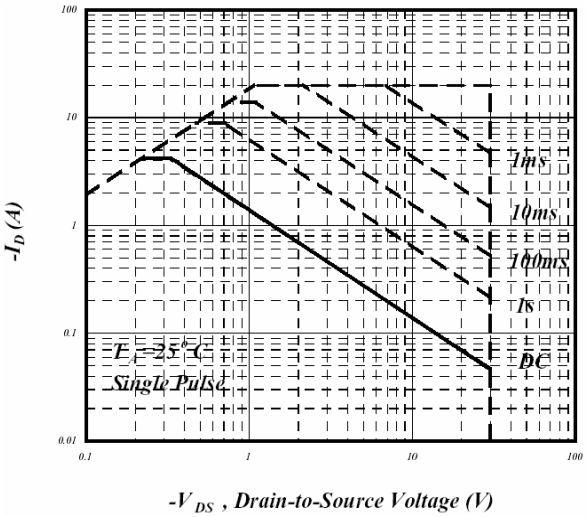


Fig 9. Maximum Safe Operating Area

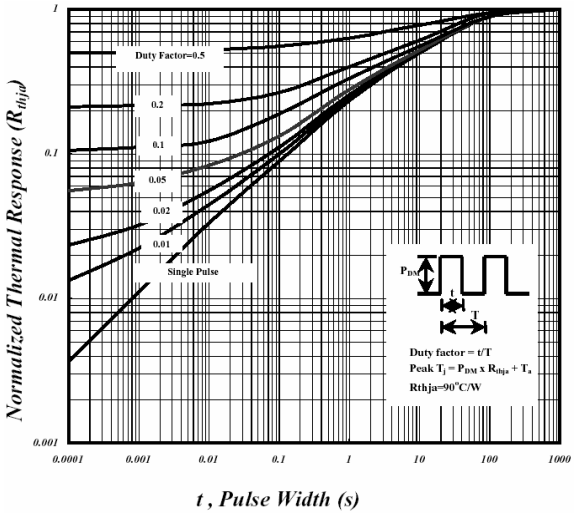


Fig 10. Effective Transient Thermal Impedance

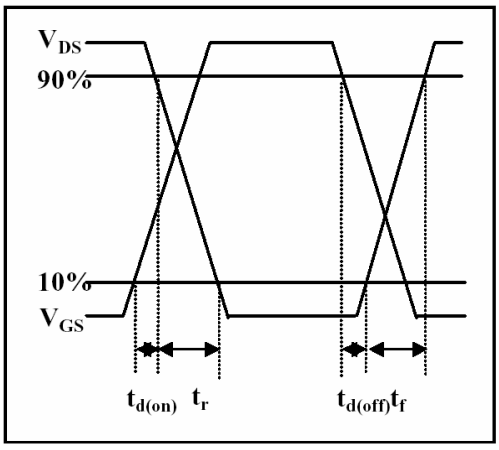


Fig 11. Switching Time Waveform

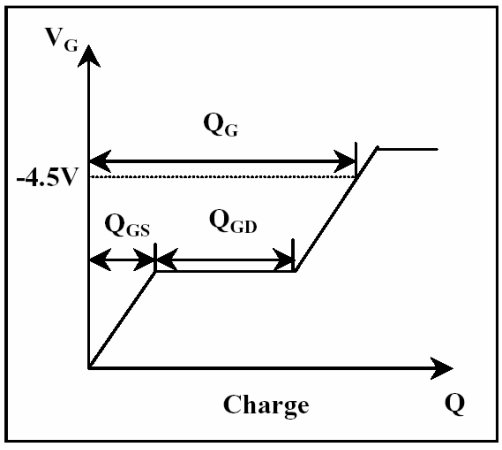


Fig 12. Gate Charge Waveform

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