G1333

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV_{DSS}	-20V
$R_{DS(ON)}$	800mΩ
I_D	-550mA

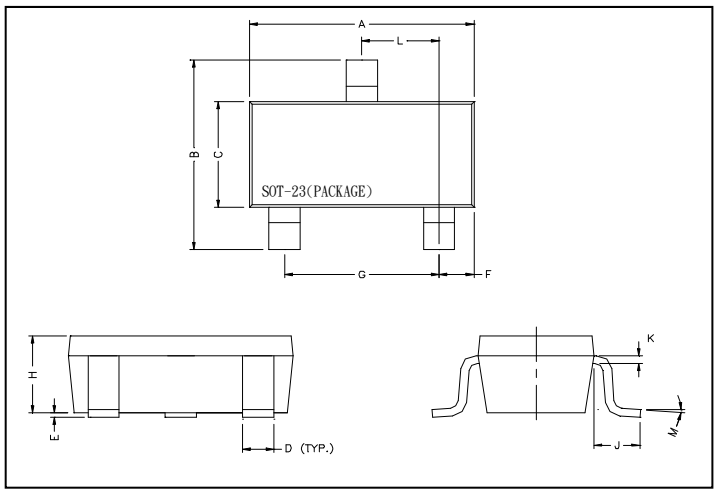
Description

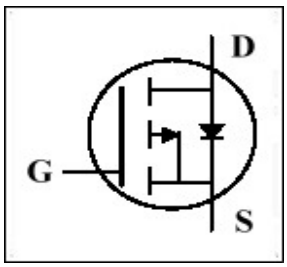
The G1333 provide the designer with best combination of fast switching, low on-resistance and cost-effectiveness.

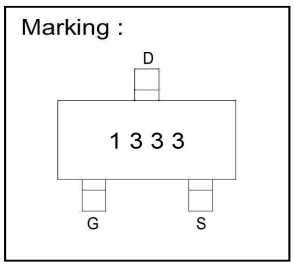
Features

*Simple Gate Drive
*Small Package Outline
*Fast Switching Speed

Package Dimensions







REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	1.90 REF.	
B	2.40	2.80	H	1.00	1.30
C	1.40	1.60	K	0.10	0.20
D	0.35	0.50	J	0.40	-
E	0	0.10	L	0.85	1.15
F	0.45	0.55	M	0°	10°

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[3]	I_D @T_A=25℃	-550	mA
Continuous Drain Current[3]	I_D @T_A=70℃	-440	mA
Pulsed Drain Current[1,2]	I_{DM}	2.5	A
Total Power Dissipation	P_D @T_A=25℃	1.0	W
Linear Derating Factor		0.008	W/℃
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +150	℃

Thermal Data

Parameter	Symbol	Ratings	Unit
Thermal Resistance Junction-ambient[3] Max.	Rthj-a	125	℃/W

Electrical Characteristics(Tj = 25℃ 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	$\triangle BV_{DSS}/\triangle Tj$	-	0.01	-	V/℃	Reference to 25℃, 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}	-	1	-	S	V_{DS}=-5V, I_D=-550mA
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±12V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	-1	uA	V_{DS}=-20V, V_{GS}=0
Drain-Source Leakage Current(Tj=70℃)		-	-	-10	uA	V_{DS}=-16V, V_{GS}=0
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	600	mΩ	V_{GS}=-10V, I_D=-550mA
		-	-	800		V_{GS}=-4.5V, I_D=-500mA
		-	-	1000		V_{GS}=-2.5V, I_D=-300mA
Total Gate Charge[2]	Q_g	-	1.7	2.7	nC	I_D=-500mA V_{DS}=-16V V_{GS}=-4.5V
Gate-Source Charge	Q_{gs}	-	0.3	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	0.4	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	5	-	ns	V_{DS}=-10V I_D=-500mA V_{GS}=-5V R_G=3.3Ω R_D=20Ω
Rise Time	T_r	-	8	-		
Turn-off Delay Time	$T_{d(off)}$	-	10	-		
Fall Time	T_f	-	2	-		
Input Capacitance	C_{iss}	-	66	105.6	pF	V_{GS}=0V V_{DS}=-10V f=1.0MHz
Output Capacitance	C_{oss}	-	25	-		
Reverse Transfer Capacitance	C_{rss}	-	20	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-	-1.2	V	I_S=-300mA, V_{GS}=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

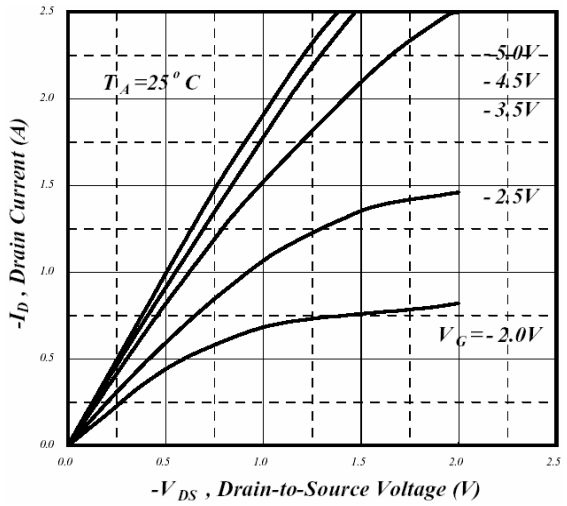


Fig 1. Typical Output Characteristics

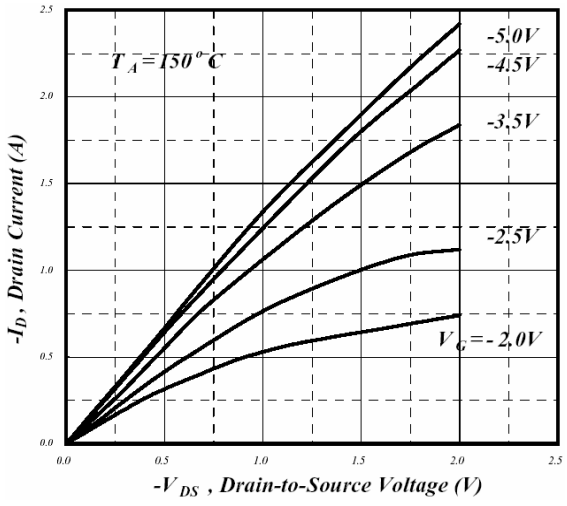


Fig 2. Typical Output Characteristics

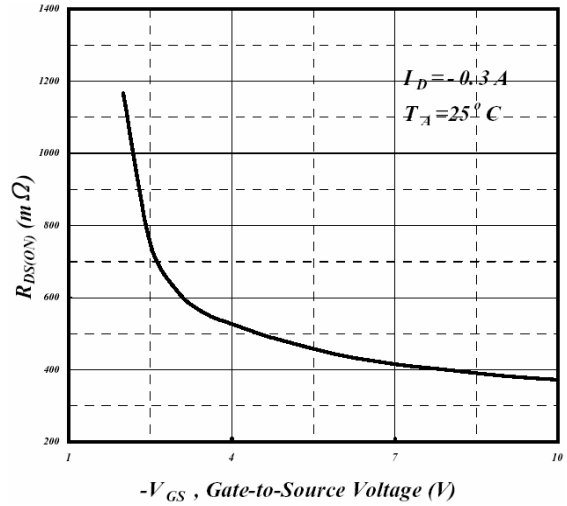


Fig 3. On-Resistance v.s. Gate Voltage

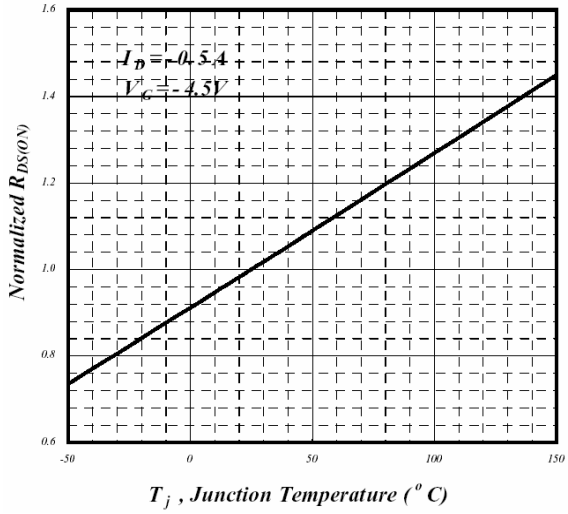


Fig 4. Normalized On-Resistance v.s. Junction Temperature

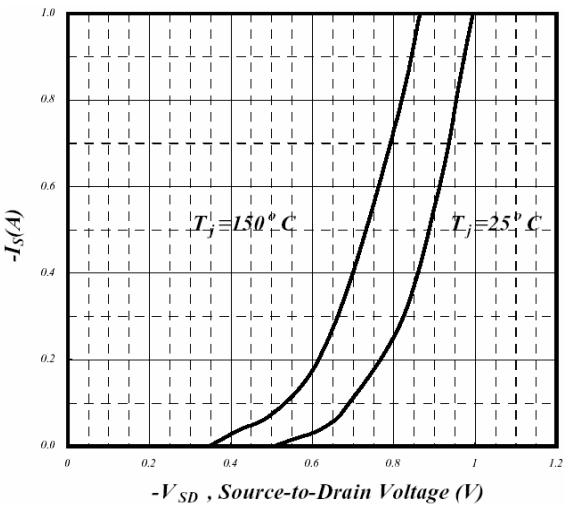


Fig 5. Forward Characteristics of Reverse Diode

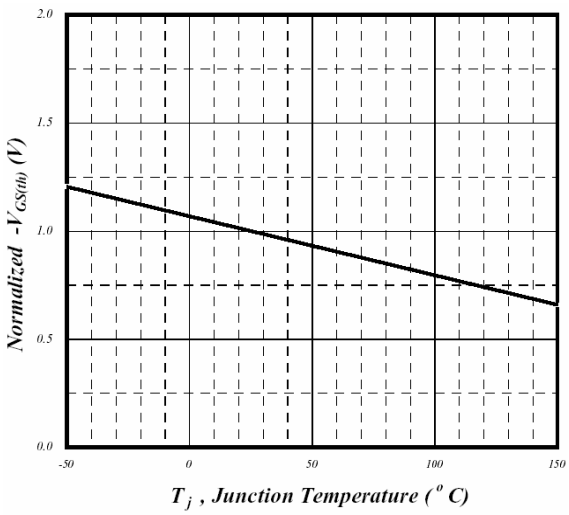


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

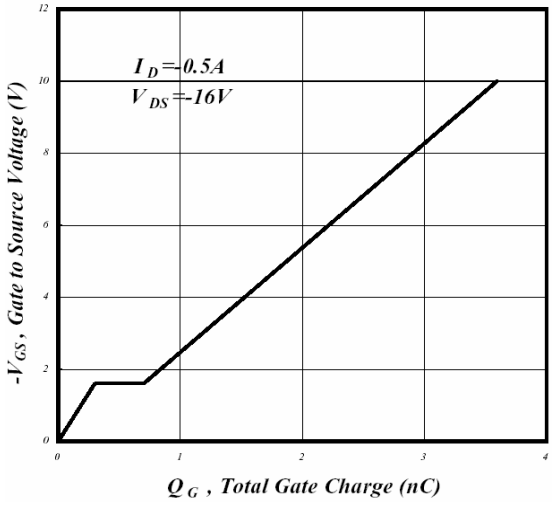


Fig 7. Gate Charge Characteristics

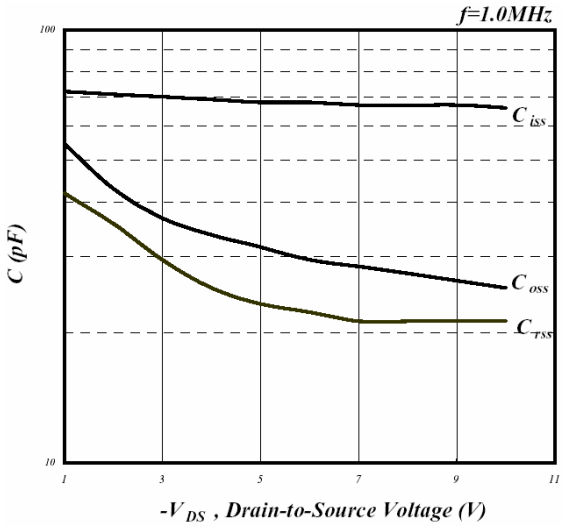


Fig 8. Typical Capacitance Characteristics

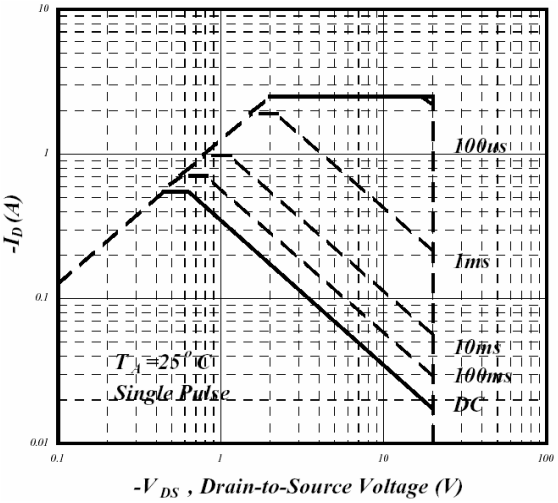


Fig 9. Maximum Safe Operating Area

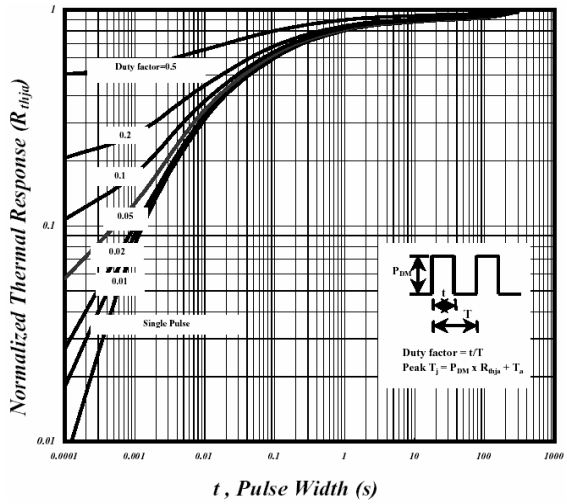


Fig 10. Effective Transient Thermal Impedance

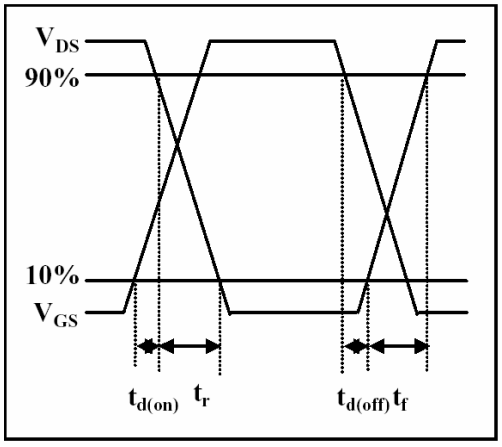


Fig 11. Switching Time Waveform

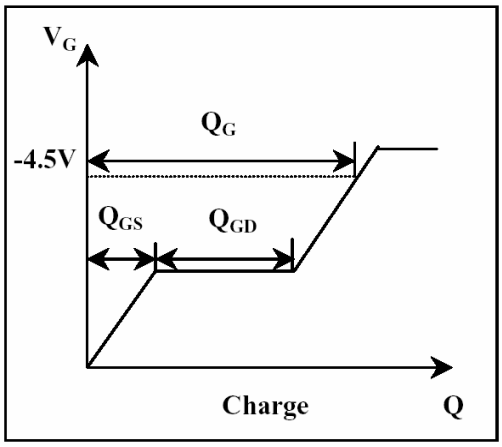


Fig 12. Gate Charge Waveform

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