

GTM CORPORATION

ISSUED DATE :2005/03/10
REVISED DATE :

GS1333

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BVDSS	-20V
RDS(ON)	800mΩ
ID	-550mA

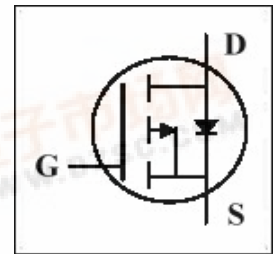
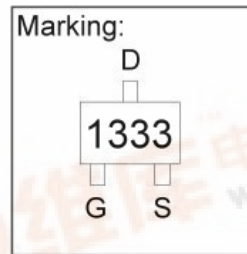
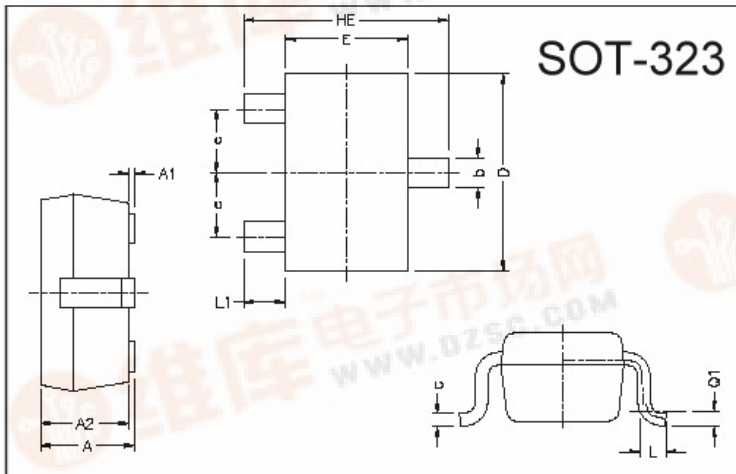
Description

The GS1333 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	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_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ³	$I_D @TA=25^\circ C$	-550	mA
Continuous Drain Current ³	$I_D @TA=70^\circ C$	-440	mA
Pulsed Drain Current ^{1,2}	I_{DM}	2.5	A
Total Power Dissipation	$P_D @TA=25^\circ C$	0.35	W
Linear Derating Factor		0.003	W/°C
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ +150	°C

Thermal Data

Parameter	Symbol	Ratings	Unit
Thermal Resistance Junction-ambient ³ Max.	R_{thj-a}	360	°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	$\Delta BV_{DSS} / \Delta T_j$	-	0.01	-	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}	-	1	-	S	V _{DS} =-5V, I _D =-550mA
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±12V
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)		-	-	-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") Charge	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

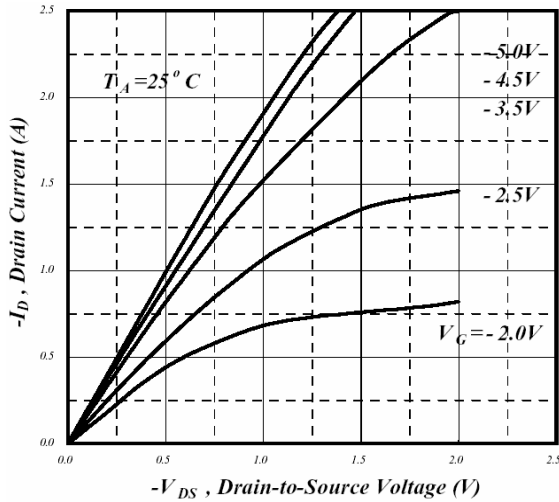


Fig 1. Typical Output Characteristics

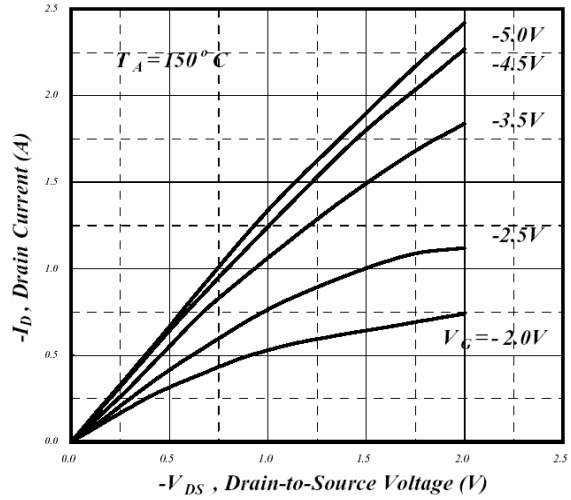


Fig 2. Typical Output Characteristics

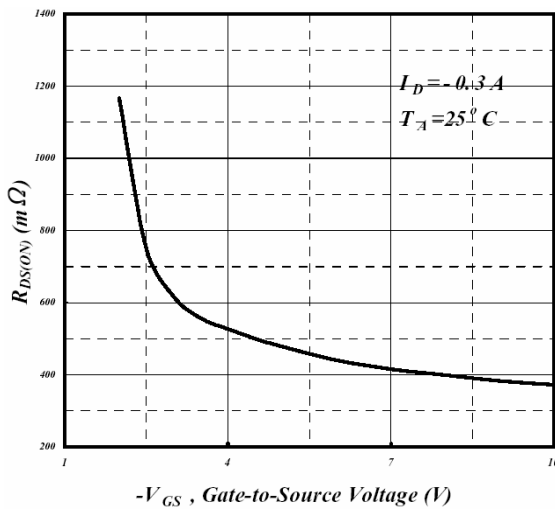


Fig 3. On-Resistance v.s. Gate Voltage

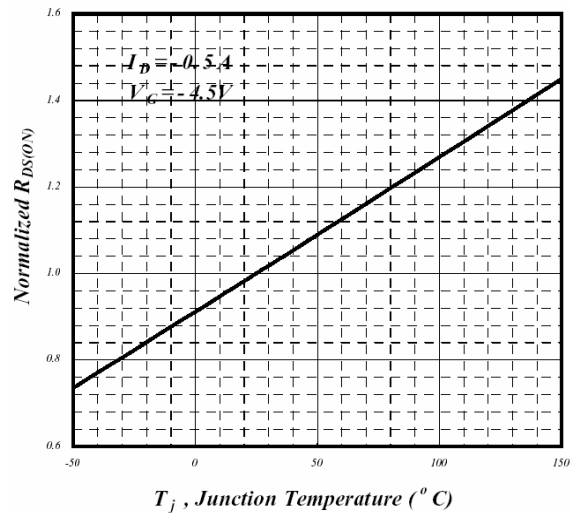


Fig 4. Normalized On-Resistance v.s. Junction Temperature

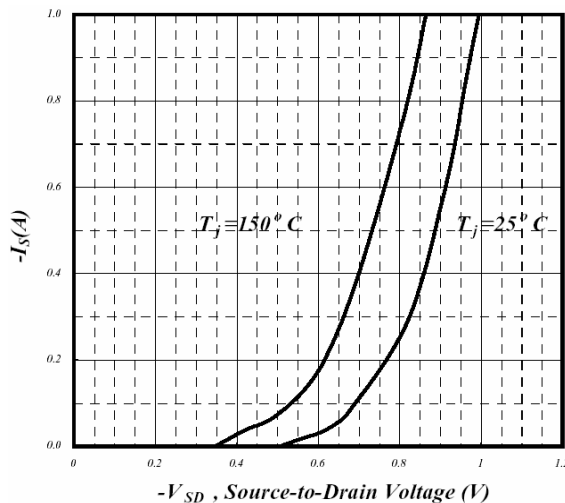


Fig 5. Forward Characteristics of Reverse Diode

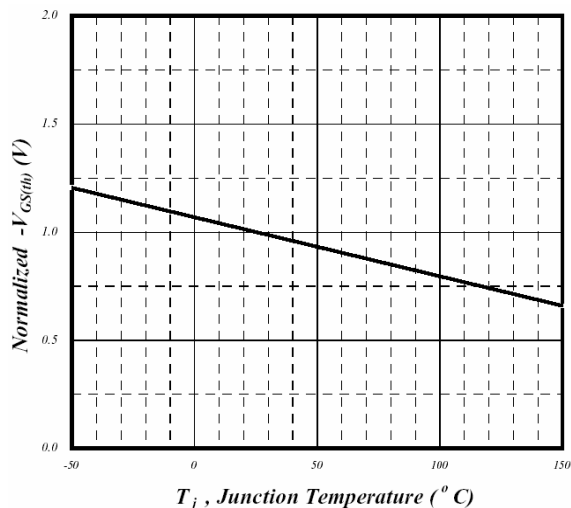


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

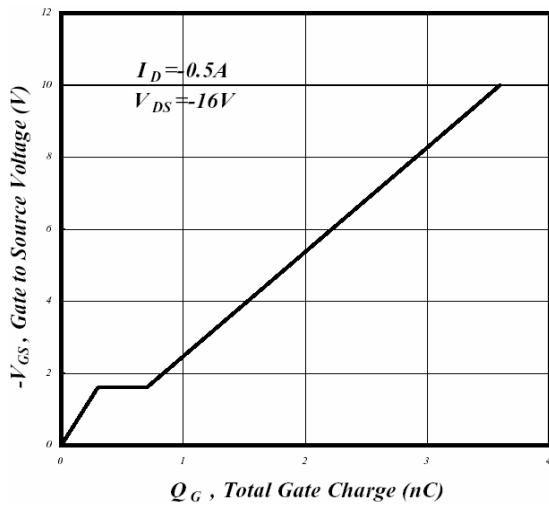


Fig 7. Gate Charge Characteristics

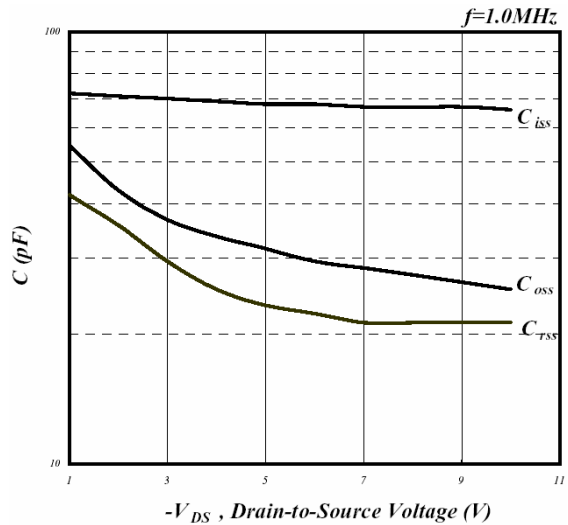


Fig 8. Typical Capacitance Characteristics

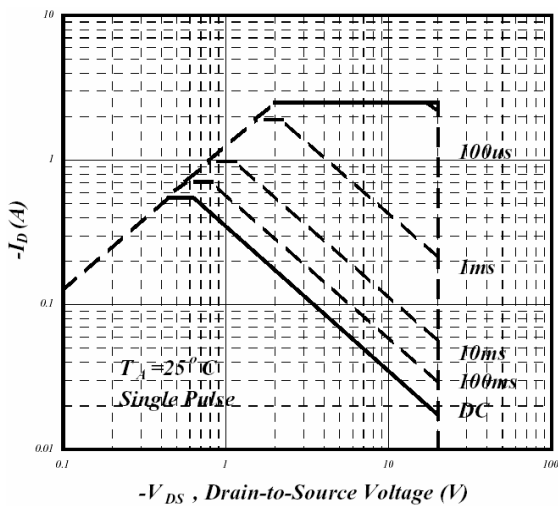


Fig 9. Maximum Safe Operating Area

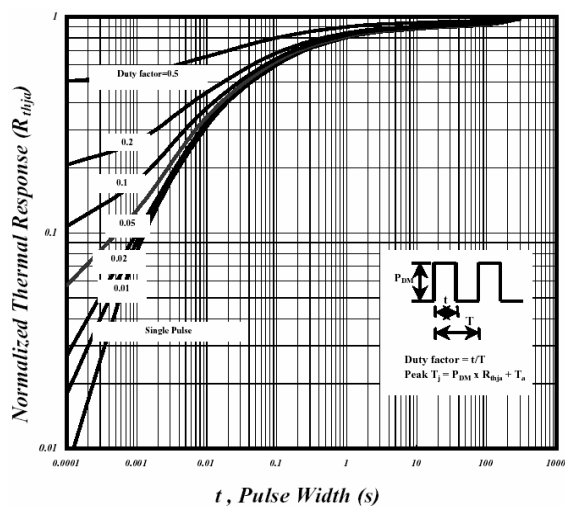


Fig 10. Effective Transient Thermal Impedance

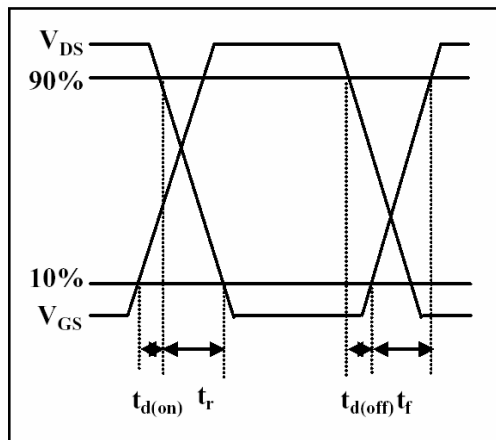


Fig 11. Switching Time Waveform

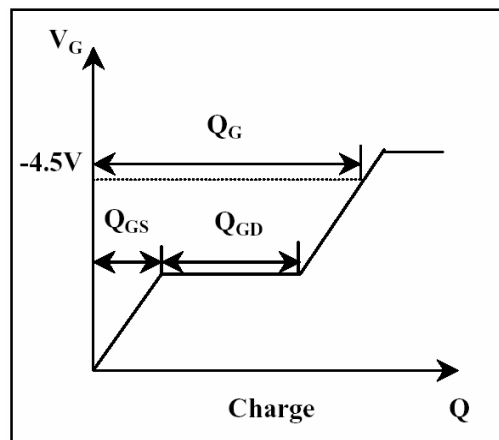


Fig 12. Gate Charge Waveform

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