

GM2306**N-CHANNEL ENHANCEMENT MODE POWER MOSFET**

BVD _{SS}	20V
R _{DS(ON)}	32mΩ
I _D	5.3A

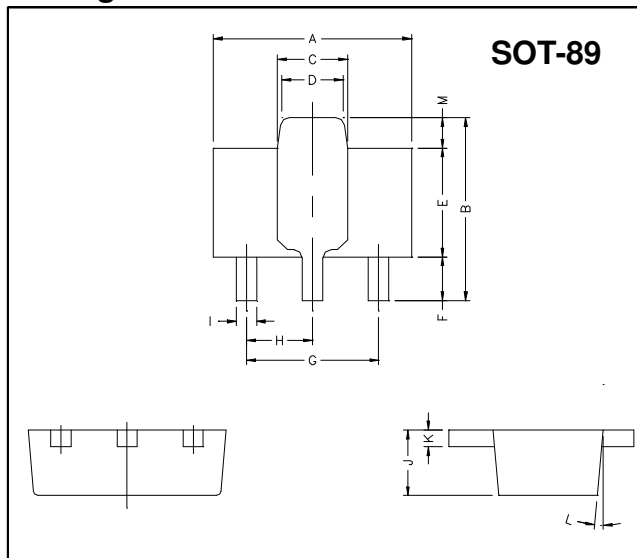
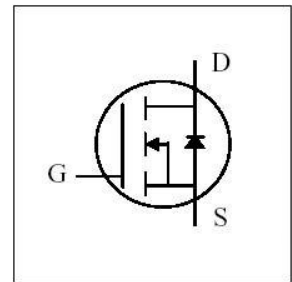
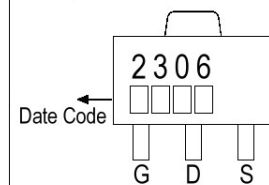
Description

The GM2306 utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device.

The GM2306 is universally used for all commercial-industrial surface mount applications.

Features

- *Capable of 2.5V gate drive
- *Lower on-resistance

Package Dimensions**Marking :**

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.4	4.6	G	3.00	REF.
B	4.05	4.25	H	1.50	REF.
C	1.50	1.70	I	0.40	0.52
D	1.30	1.50	J	1.40	1.60
E	2.40	2.60	K	0.35	0.41
F	0.89	1.20	L	5° TYP.	
			M	0.70 REF.	

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 , V _{GS} @4.5V	I _D @TA=25°C	5.3	A
Continuous Drain Current ³ , V _{GS} @4.5V	I _D @TA=70°C	4.3	A
Pulsed Drain Current ^{1,2}	I _{DM}	10	A
Power Dissipation	P _D @TA=25°C	1.5	W
Linear Derating Factor		0.012	W/°C
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 ~ +150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient ³ Max.	R _{thj-a}	83.3	°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	$\Delta BV_{DSS} / \Delta T_j$	-	0.1	-	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}	-	13	-	S	V _{DS} =5V, I _D =5.3A
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 =55°C)		-	-	10	uA	V _{DS} =16V, V _{GS} =0
Static Drain-Source On-Resistance	R _{DS(ON)}	-	-	30	mΩ	V _{GS} =10V, I _D =5.5A
		-	-	35		V _{GS} =4.5V, I _D =5.3A
		-	-	50		V _{GS} =2.5V, I _D =2.6A
		-	-	90		V _{GS} =1.8V, I _D =1.0A
Total Gate Charge ²	Q _g	-	8.7	-	nC	I _D =5.3A
Gate-Source Charge	Q _{gs}	-	1.5	-		V _{DS} =10V
Gate-Drain ("Miller") Change	Q _{gd}	-	3.6	-		V _{GS} =4.5V
Turn-on Delay Time ²	T _{d(on)}	-	6	-	ns	V _{DS} =15V
Rise Time	T _r	-	14	-		I _D =1A
Turn-off Delay Time	T _{d(off)}	-	18.4	-		V _{GS} =10V
Fall Time	T _f	-	2.8	-		R _G =2Ω R _D =15Ω
Input Capacitance	C _{iss}	-	603	-	pF	V _{GS} =0V
Output Capacitance	C _{oss}	-	144	-		V _{DS} =15V
Reverse Transfer Capacitance	C _{rss}	-	111	-		f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.2	V	I _S =1.2A, V _{GS} =0V
Reverse Recovery Time ²	T _{rr}	-	16.8	-	ns	I _S =5A, V _{GS} =0V dI/dt=100A/μs
Reverse Recovery Charge	Q _{rr}	-	11	-	nC	

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

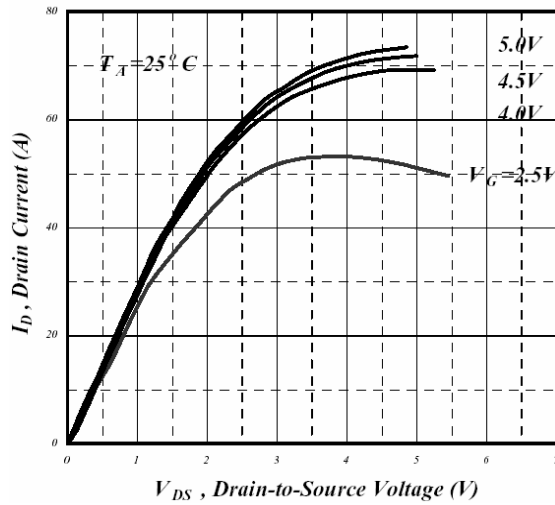


Fig 1. Typical Output Characteristics

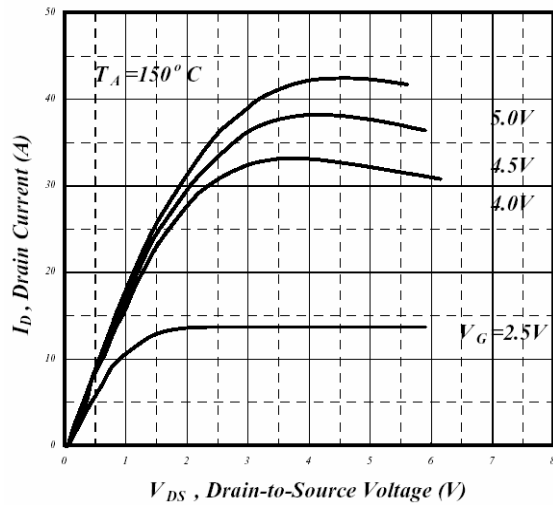


Fig 2. Typical Output Characteristics

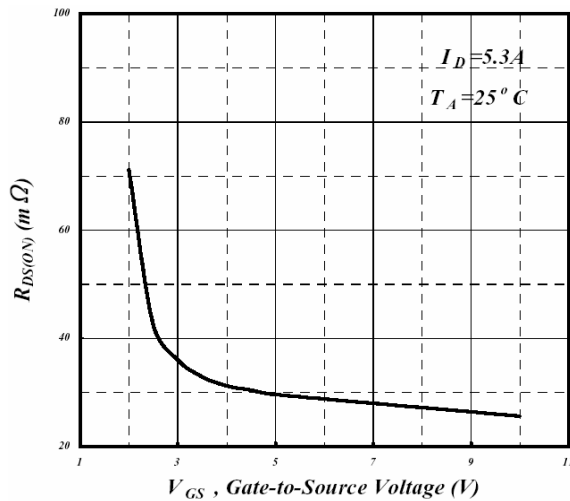


Fig 3. On-Resistance v.s. Gate Voltage

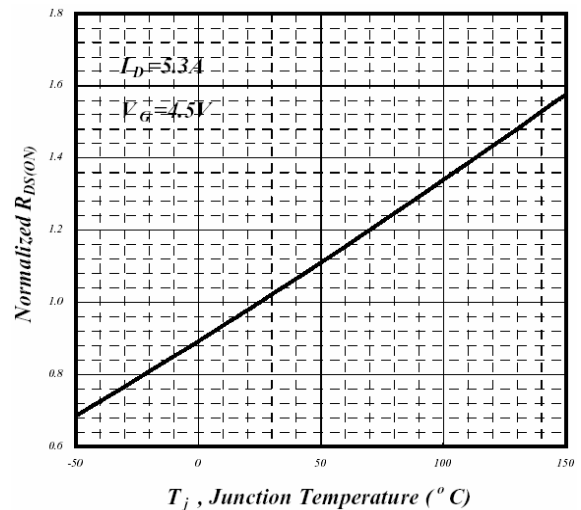


Fig 4. Normalized On-Resistance v.s. Junction Temperature

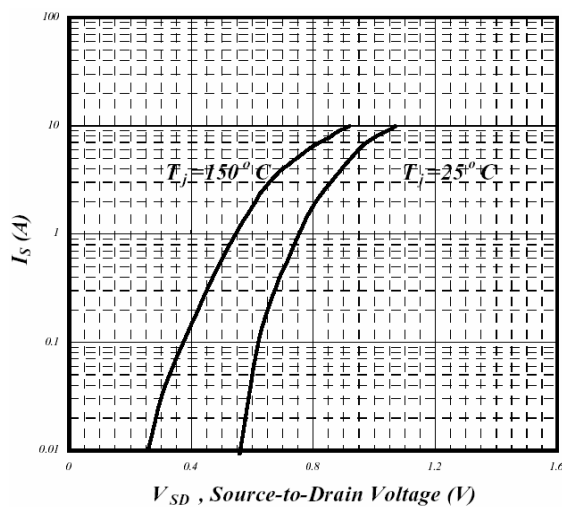


Fig 5. Forward Characteristics of Reverse Diode

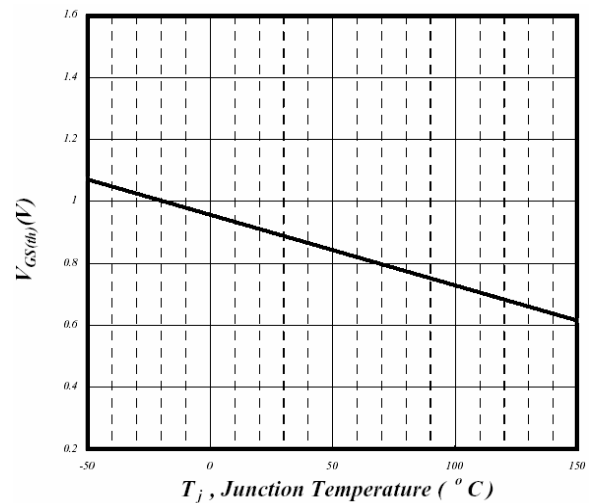


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

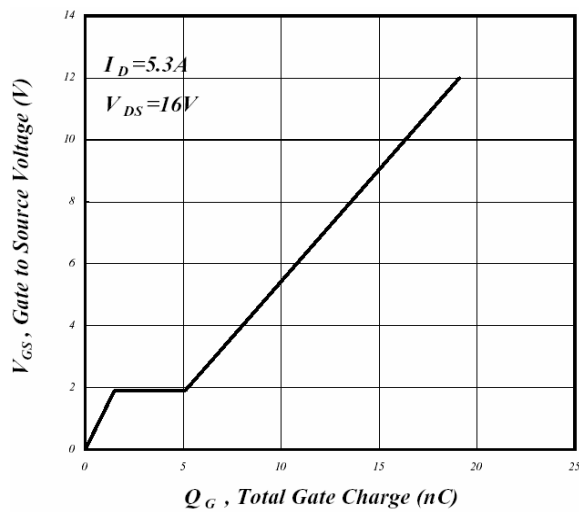


Fig 7. Gate Charge Characteristics

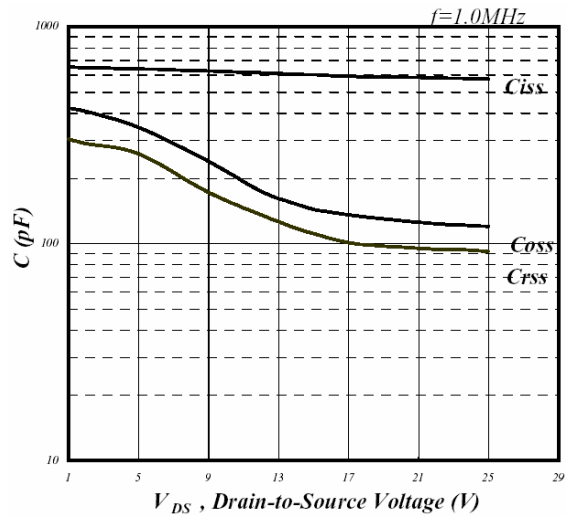


Fig 8. Typical Capacitance Characteristics

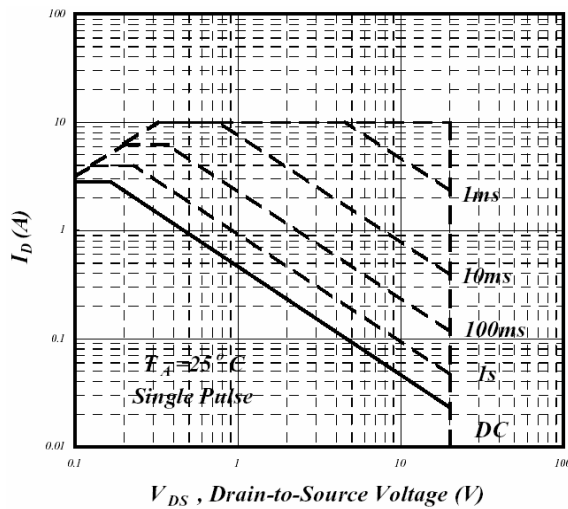


Fig 9. Maximum Safe Operating Area

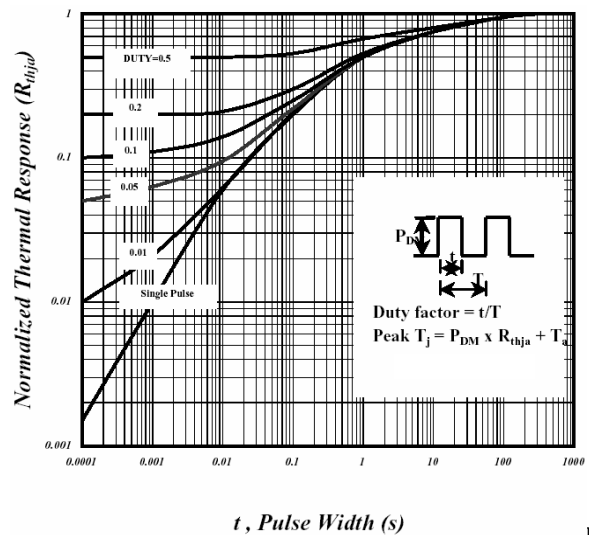


Fig 10. Effective Transient Thermal Impedance

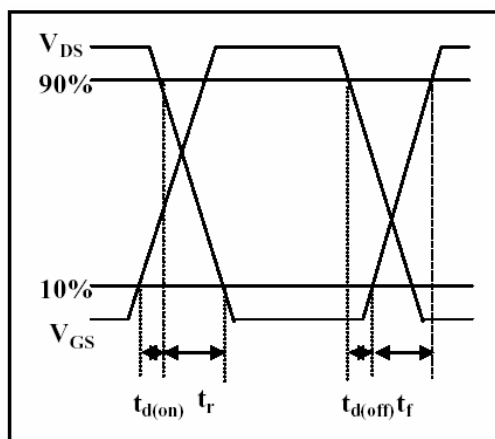


Fig 11. Switching Time Waveform

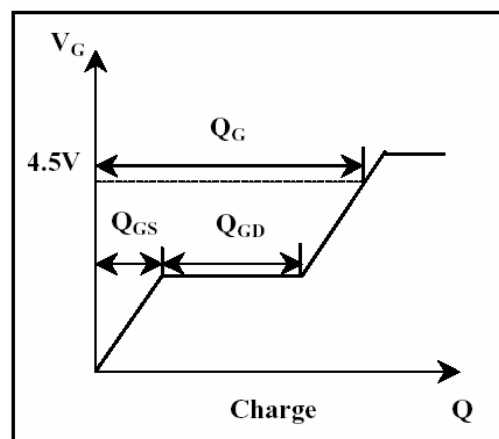


Fig 12. Gate Charge Waveform

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