



FMT2301S 2.6Amps 20 Voltage P - Channel POWER MOSFET

BV _{DSS}	-20V
R _{DS(ON)}	130mΩ
I _D	-2.6A

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

Description

The FMT2301S provides the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.

The FMT2301S is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

Features

- Super High Dense Cell Design for Extremely Low R_{DS(ON)}
- Reliable and Rugged

Applications

- Power Management in Notebook Computer
- Portable Equipment
- Battery Powered System.

Package Dimensions

P-Channel

Marking :

REF.	Min.	Max.	REF.	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 @TA=25°C	-2.6	A
Continuous Drain Current ³	I _D @TA=70°C	-2.1	A
Pulsed Drain Current	I _{DM}	-10	A
Power Dissipation	P _D @TA=25°C	1.38	W
Linear Derating Factor		0.01	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}	90	°C/W



FMT2301S 2.6Amps 20 Voltage P - Channel POWER MOSFET

ELECTRICAL CHARACTERISTICS (T_j=25°C UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	MIN.	TYPE	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	-	-	V	V _{DS} =V _{GS} , I _D =-250uA
Forward Transconductance	g _{fs}	-	4.4	-	S	V _{DS} =-5.0V, I _D =-2.8A
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 ²	R _{DS(ON)}	-	-	130	mΩ	I _D =-2.8A, V _{GS} =-5.0V
		-	-	190		I _D =-2.0A, V _{GS} =-2.8V
Total Gate Charge ²	Q _g	-	5.2	10	nC	I _D =-2.8A
Gate-Source Charge	Q _{gs}	-	1.36	-		V _{DS} =-6.0V
Gate-Drain ("Miller") Charge	Q _{gd}	-	0.6	-		V _{GS} =-5.0V
Turn-on Delay Time ²	T _{d(on)}	-	5.2	-	ns	V _{DS} =-15V I _D =-1A V _{GS} =-10V R _G =6Ω R _D =15Ω
Rise Time	T _r	-	9.7	-		
Turn-off Delay Time	T _{d(off)}	-	19	-		
Fall Time	T _f	-	29	-		
Input Capacitance	C _{iss}	-	295	-	pF	V _{GS} =0V V _{DS} =-6V f=1.0MHz
Output Capacitance	C _{oss}	-	170	-		
Reverse Transfer Capacitance	C _{rss}	-	65	-		

Source-Drain Diode

Forward On Voltage ²	V _{SD}	-	-	-1.2	V	I _S =-1.6A, V _{GS} =0 T _j =25°C
Continuous Source Current (Body Diode)	I _S	-	-	-1	A	V _D =V _G =0V, V _S =-1.2V
Pulsed Source Current (Body Diode) ¹	I _{SM}	-	-	-10	A	

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

2. Pulse width ≤ 300us, duty cycle ≤ 2%.

3. Surface mounted on 1 in² copper pad of FR4 board; 270°C/w when mounted on min. copper pad.

Characteristics Curve

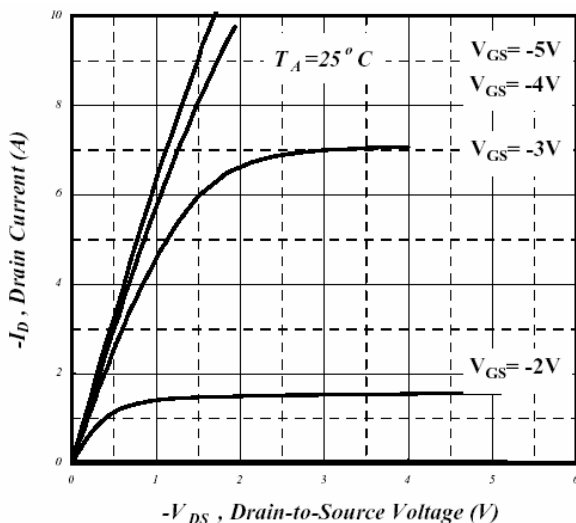


Fig 1. Typical Output Characteristics

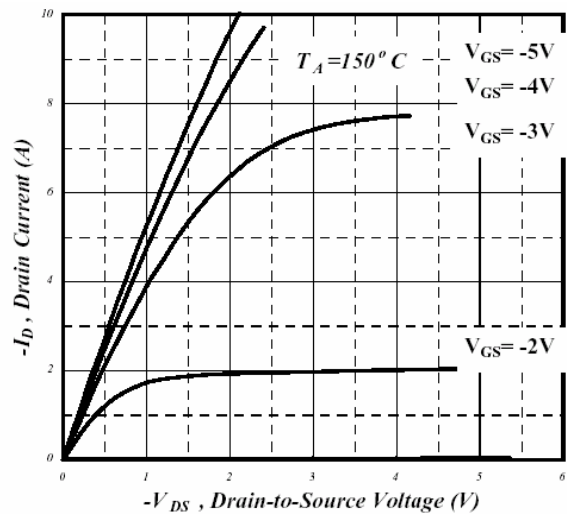


Fig 2. Typical Output Characteristics



FMT2301S 2.6Amps 20 Voltage P - Channel POWER MOSFET

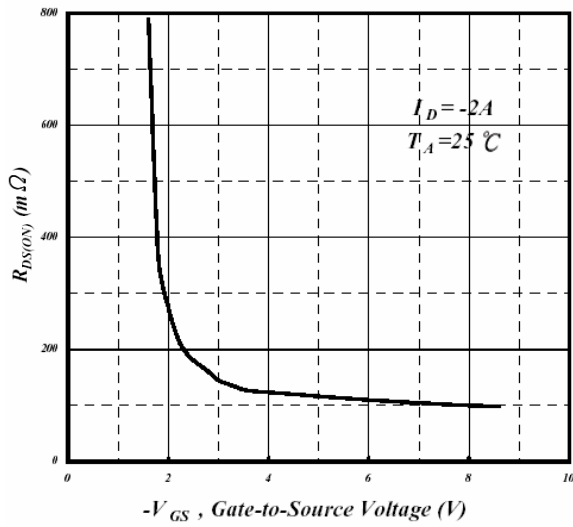


Fig 3. On-Resistance v.s. Gate Voltage

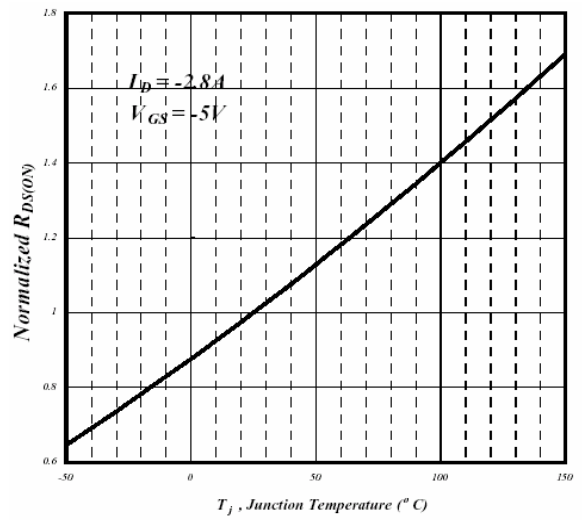


Fig 4. Normalized On-Resistance

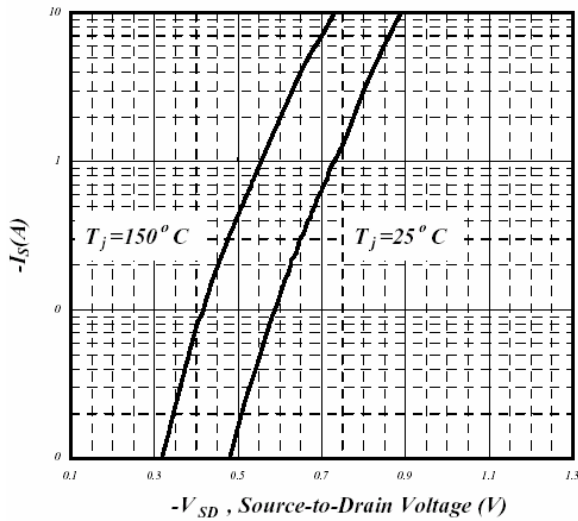


Fig 5. Forward Characteristic of Reverse Diode

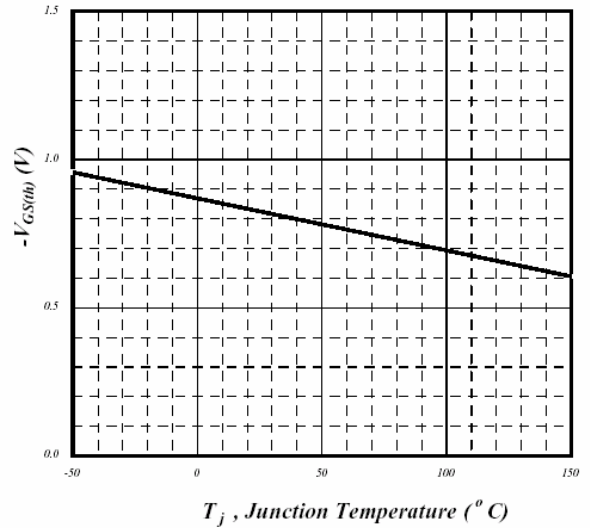


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

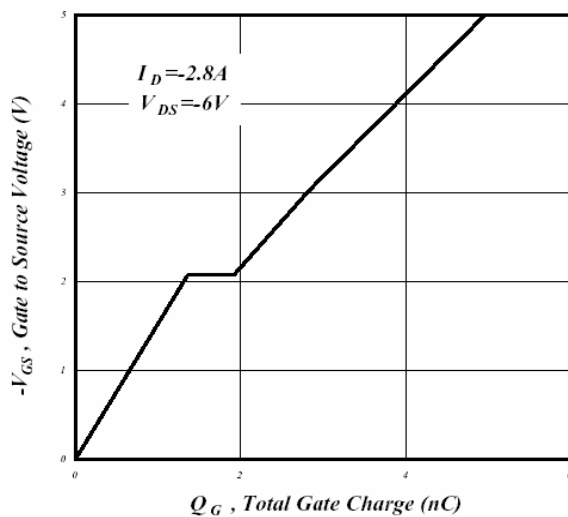


Fig 7. Gate Charge Characteristics

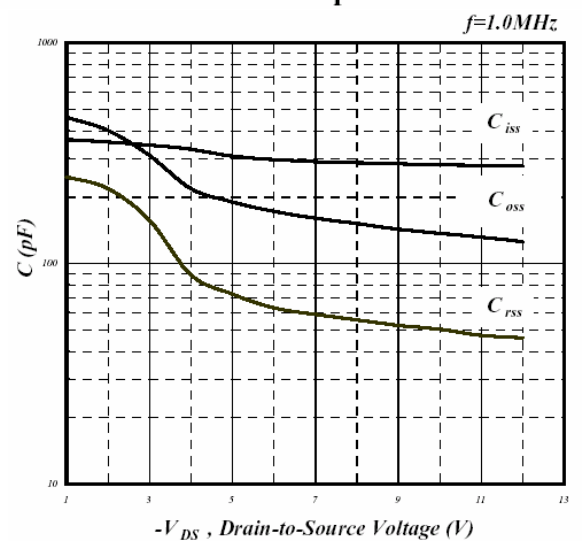


Fig 8. Typical Capacitance Characteristics



FMT2301S 2.6Amps 20 Voltage P - Channel POWER MOSFET

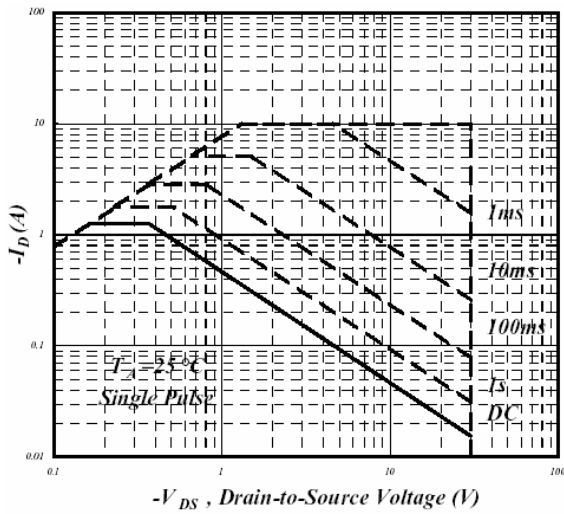


Fig 9. Maximum Safe Operating Area

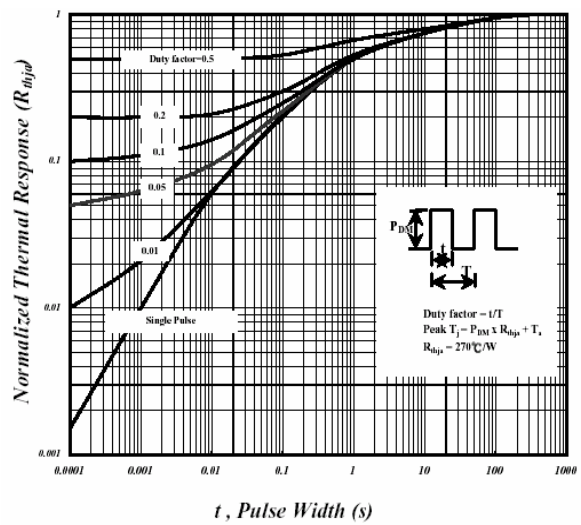


Fig 10. Effective Transient Thermal Impedance

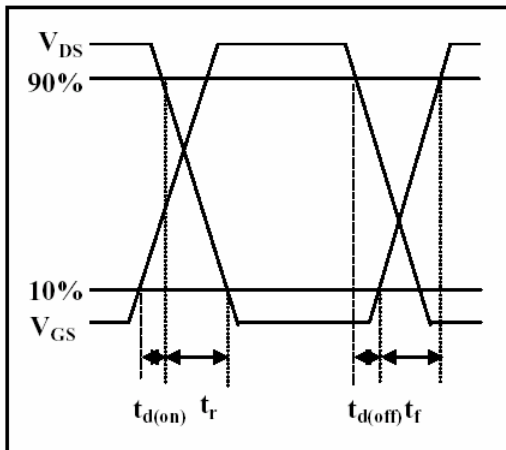


Fig 11. Switching Time Waveform

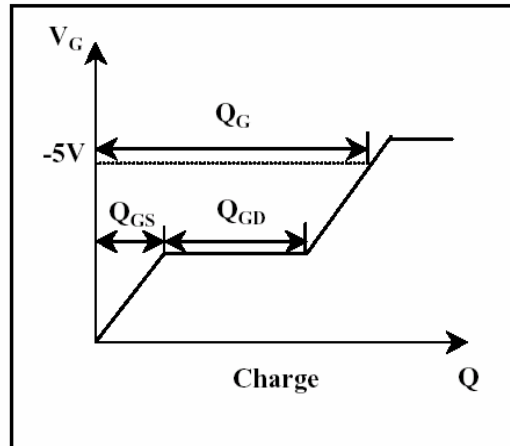


Fig 12. Gate Charge Waveform