

P CHANNEL ENCHANCEMENT MODE POWER MOSFET

Description:

THE FMT6401 provides the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.

The FMT6401 is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters

Features:

- Ultra low Rdson
- Fast Switching
- 1.8V Gate Rated

Applications:

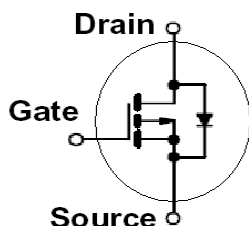
- Power Management in Notebook Computer
- Portable Equipment
- Battery Powered System.

FMT6401

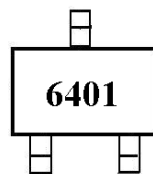
BV_{dss} = -12V

I_d = -4.3A

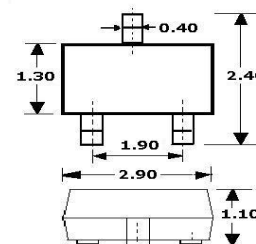
R_{dson} = 50mΩ



SOT-23



Marking



Dimensions in mm

Absolute Maximum Rating						
Parameter	Symbol	Rating			Unit	Remark
Drain- Source Voltage	V _{ds}	-12			V	
Gate-Source Voltage	V _{gs}	± 8			V	
Continuous Drain Current @ Ta=25C	I _d	-4.3			A	
Continuous Drain Current @ Ta=70C	I _d	-3.4			A	
Pulse Drain Current	I _{dm}	-12			A	
Power Dissipation @25C	P _d	1.38			W	
Linear Derating Factor		0.01			W/°C	
Operating Junction & Storage Temp. Range	T _j & T _{stg}	-55to +150			°C	
Thermal resistance Junction-Ambient	R _{thj-a}	90			W/°C	
		MIN	TYP.	MAX	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{dss}	-12			V	V _{gs} =0, I _d = -250uA
Breakdown Voltage Temp. Coefficient	ΔBV _{dss} /ΔT _j		-0.01		V/°C	I _d =1mA @25C
Gate threshold Voltage	V _{gs(th)}			-1.0	V	V _{ds} =V _{gs} , I _d =-250uA
Forward Transconductance	G _{fs}		12		S	V _{ds} =-5.0V, I _d =-4.0A
Gate-Source Leakage Current	I _{gss}			± 100	nA	V _{gs} =± 8
Drain-Source Leakage Current @T _j =25C	I _{dss}			-1	uA	V _{ds} =-16V, V _{gs} =0
Drain-Source Leakage Current @T _j =70C	I _{dss}			-25	uA	V _{ds} =-12V, V _{gs} =0
Absolute Maximum Rating						
Parameter	Symbol	Rating			Unit	test conditions
Static Drain-Source On-Resistance	R _{dson}			50	mΩ	V _{gs} =-4.5V, I _d =4.3A
				85		V _{gs} =-2.5V, I _d =2.5A
				125		V _{gs} =-1.8V, I _d =2.0A
Total Gate Charge	Q _g	15	24	nC	I _d =-4.0A	
Gate-Source Charge	Q _{gs}	1.3			V _{ds} =-12V	
Gate-Drain Charge	Q _{gd}	4			V _{gs} =-4.5V	
Turn-on Delay Time	T _{d(on)}	8		ns	V _{ds} =-10V	
Rise Time	T _r	11			I _d =1A	
Turn-off Delay Time	T _{d(off)}	54			V _{gs} =-10V	
Fall Time	T _f	36			R _g =3.3Ω, R _d =10Ω	
Input Capacitance	C _{iss}	985		pF	V _{gs} =0V	
Output Capacitance	C _{oss}	180			V _{ds} =-15V	
Reverse Transfer Capacitance	C _{rss}	160			f=1.0MHZ	
Forward On-Voltage	V _{sd}			V	I _s =-1.2A, V _{gs} =0V	
Reverse Recovery time	T _{rr}	39		nS	I _s =-4.0A, V _{gs} =0	
Reverse Recovery Charge	Q _{rr}	26		nC	dI/dt=100A/us	

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

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

Notes:3. Surface mounted on 1 in² copper pad of FR4 board; 270C/W when mounted on min. copper pad

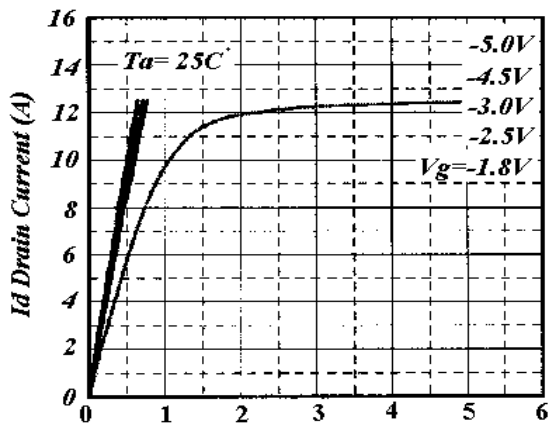


Fig.1 Typical Output Characteristics
-Vds, Drain-to-Source Voltage(V)

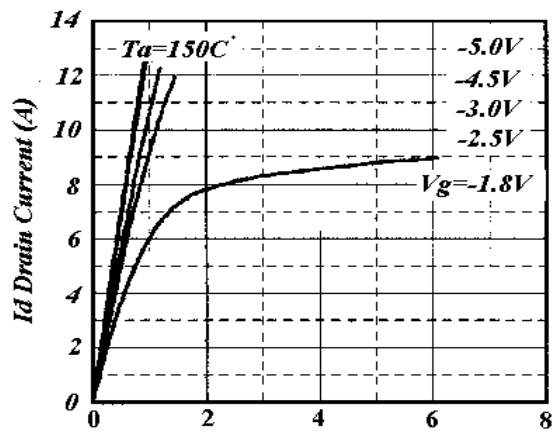


Fig 2. Typical Output Characteristics
Vds, Drain-to-Source Voltage(V)

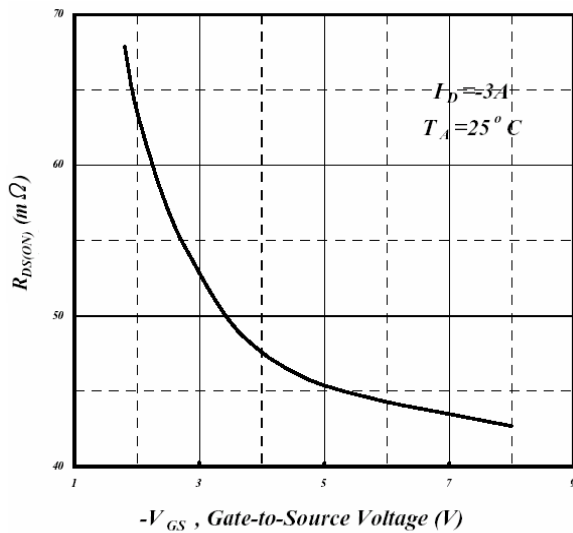


Fig 3. On-Resistance v.s. Gate Voltage

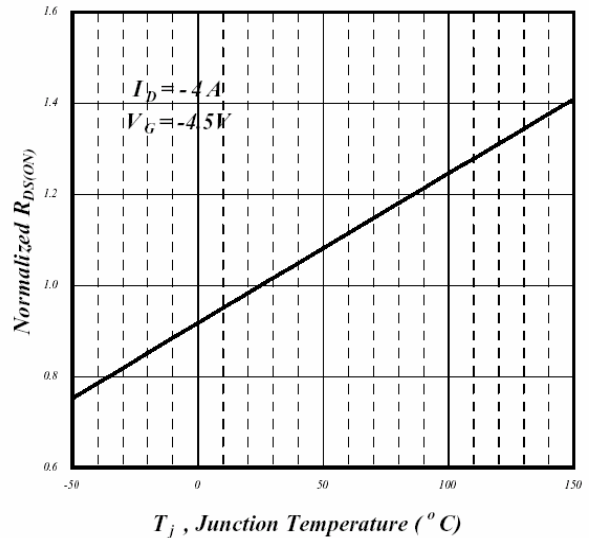


Fig 4. Normalized On-Resistance
v.s. Junction Temperature

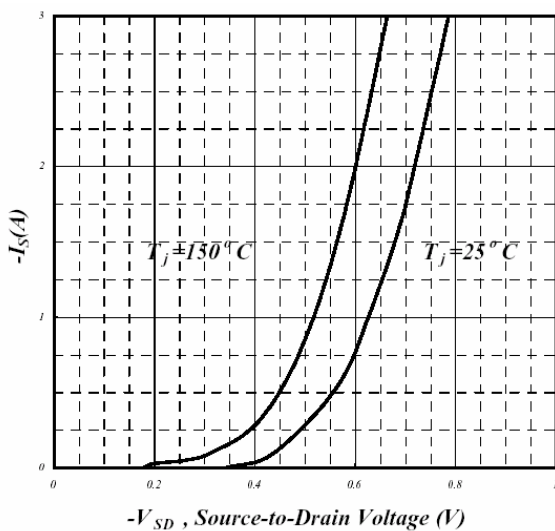


Fig 5. Forward Characteristic of
Reverse Diode

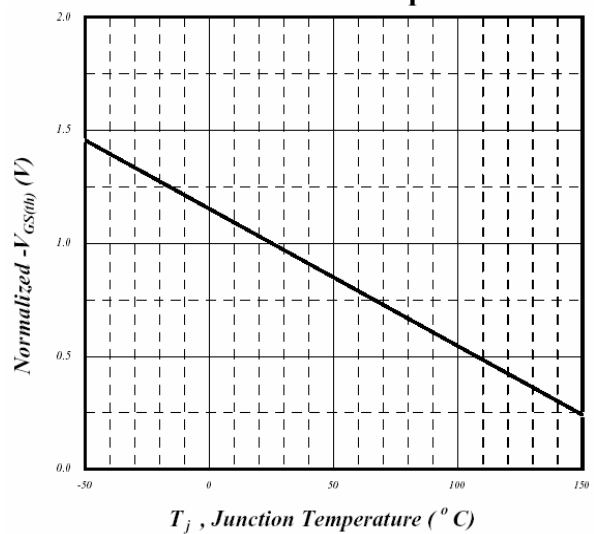


Fig 6. Gate Threshold Voltage v.s.
Junction Temperature

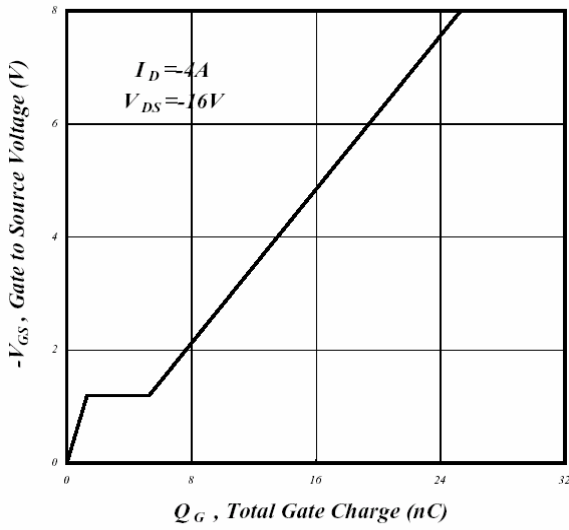


Fig 7. Gate Charge Characteristics

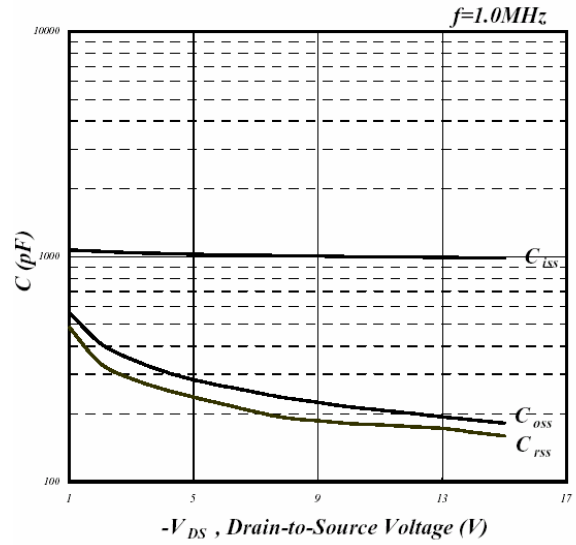


Fig 8. Typical Capacitance Characteristics

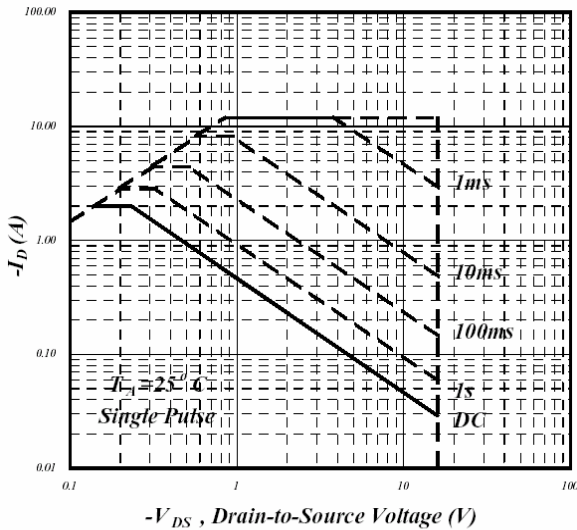


Fig 9. Maximum Safe Operating Area

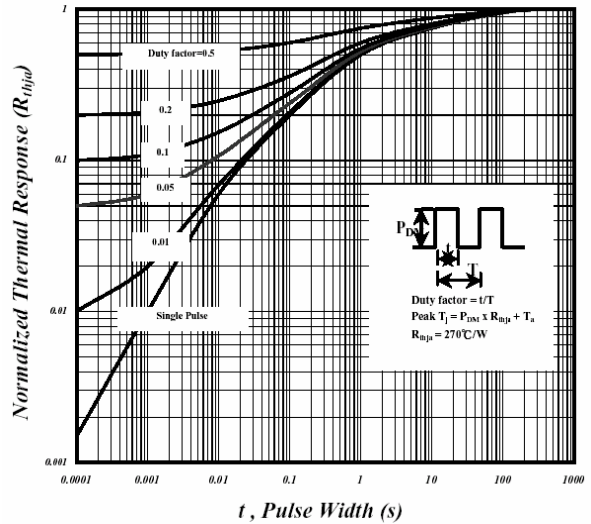


Fig 10. Effective Transient Thermal Impedance

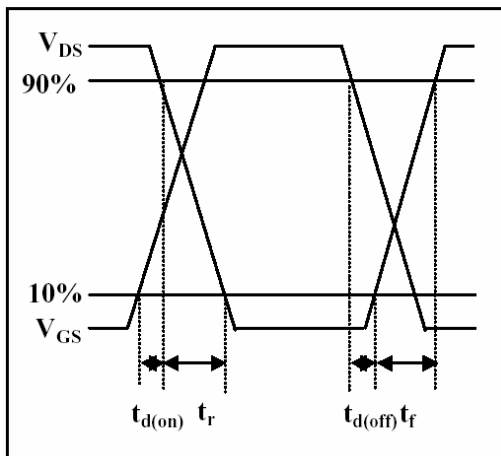


Fig 11. Switching Time Waveform

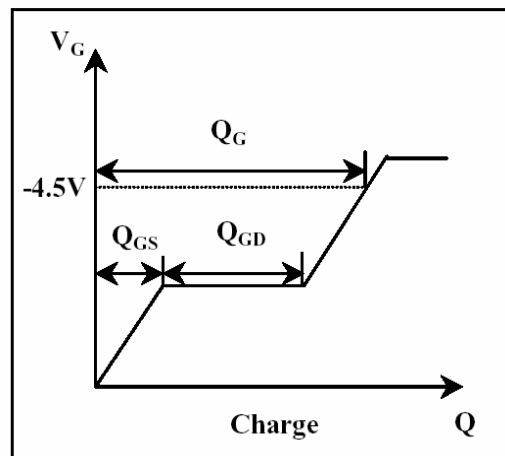


Fig 12. Gate Charge Waveform