

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:

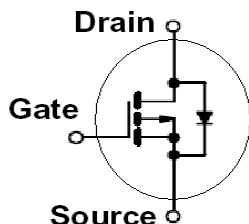
- Power Management in Notebook Computer
- Portable Equipment
- Battery Powered System.

FMT6401

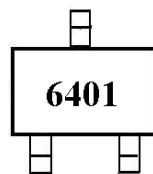
BVdss= -12V

Id= -4.3A

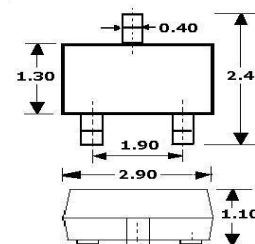
Rdson=50mΩ



SOT-23



Marking



Dimensions in mm

Absolute Maximum Rating						
Parameter	Symbol	Rating			Unit	Remark
Drain- Source Voltage	Vds	-12			V	
Gate-Source Voltage	Vgs	± 8			V	
Continuous Drain Current @ Ta=25C	Id	-4.3			A	
Continuous Drain Current @ Ta=70C	Id	-3.4			A	
Pulse Drain Current	Idm	-12			A	
Power Dissipation @25C	Pd	1.38			W	
Linear Derating Factor		0.01			W/°C	
Operating Junction & Storage Temp. Range	Tj & Tstg	-55to +150			°C	
Thermal resistance Junction-Ambient	Rthj-a	90			W/°C	
		MIN	TYP.	MAX	Unit	Test Conditions
Drain-Source Breakdown Voltage	BVdss	-12			V	Vgs=0, Id= -250uA
Breakdown Voltage Temp. Coefficient	ΔBVdss/ΔTj		-0.01		V/°C	Id=1mA @25C
Gate threshold Voltage	Vgs(th)			-1.0	V	Vds=Vgs, Id=-250uA
Forward Transconductance	Gfs		12		S	Vds=-5.0V, Id=-4.0A
Gate-Source Leakage Current	Igss			± 100	nA	Vgs=± 8
Drain-Source Leakage Current @Tj=25C	Idss			-1	uA	Vds=-16V, Vgs=0
Drain-Source Leakage Current @Tj=70C	Idss			-25	uA	Vds=-12V, Vgs=0
Absolute Maximum Rating						
Parameter	Symbol	Rating			Unit	test conditions
Static Drain-Source On-Resistance	Rdson			50	mΩ	Vgs=-4.5V, Id=4.3A
				85		Vgs=-2.5V, Id=2.5A
				125		Vgs=-1.8V, Id=2.0A
Total Gate Charge	Qg	15	24	nC	Id=-4.0A	
Gate-Source Charge	Qgs	1.3			Vds=-12V	
Gate-Drain Charge	Qgd	4			Vgs=-4.5V	
Turn-on Delay Time	Td(on)	8		ns	Vds=-10V	
Rise Time	Tr	11			Id=1A	
Turn-off Delay Time	Td(off)	54			Vgs=-10V	
Fall Time	Tf	36			Rg=3.3Ω, Rd=10Ω	
Input Capacitance	Ciss	985		pF	Vgs=0V	
Output Capacitance	Coss	180			Vds=-15V	
Reverse Transfer Capacitance	Crss	160			f=1.0MHZ	
Forward On-Voltage	Vsd			-1.2	V	Is=-1.2A, Vgs=0V
Reverse Recovery time	Trr	39			nS	Is=-4.0A, Vgs=0
Reverse Recovery Charge	Qrr	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

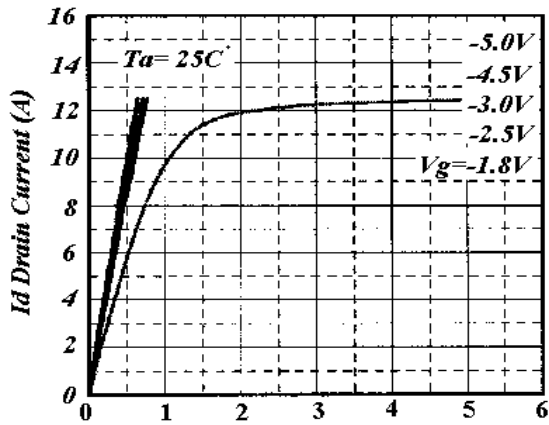


Fig.1 Typical Output Characteristics
-Vds, Drain-to-Source Voltage(V)

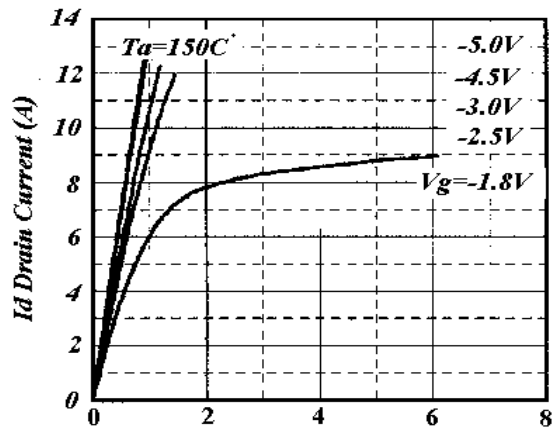


Fig 2. Typical Output Characteristics
Vds, Drain-to-Source Voltage(V)

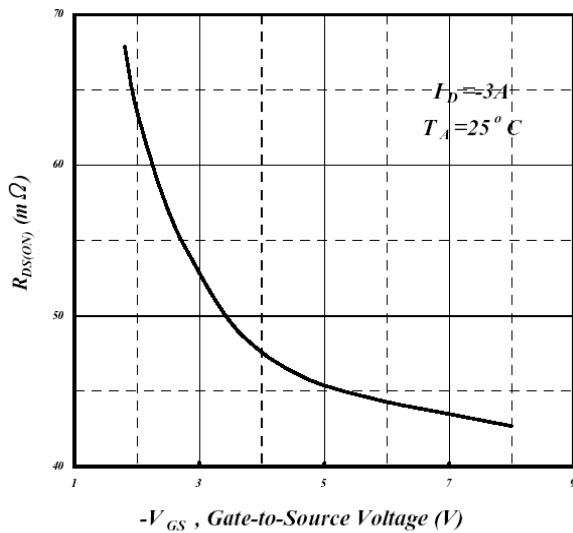


Fig 3. On-Resistance v.s. Gate Voltage

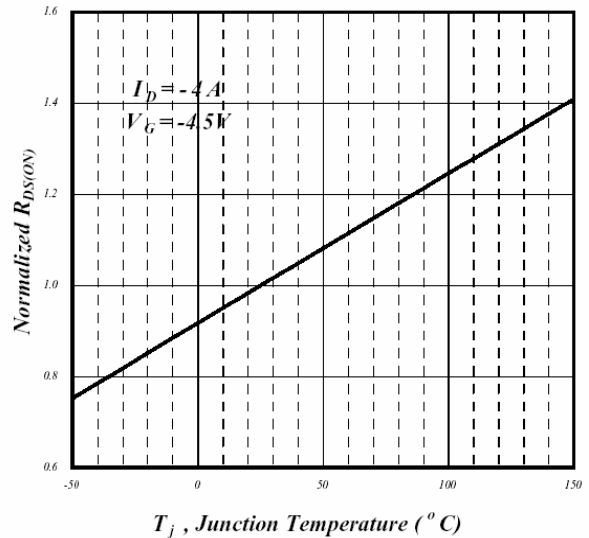


Fig 4. Normalized On-Resistance
v.s. Junction Temperature

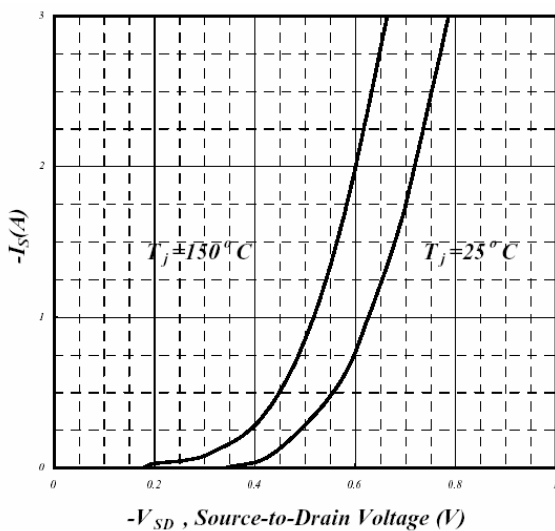


Fig 5. Forward Characteristic of
Reverse Diode

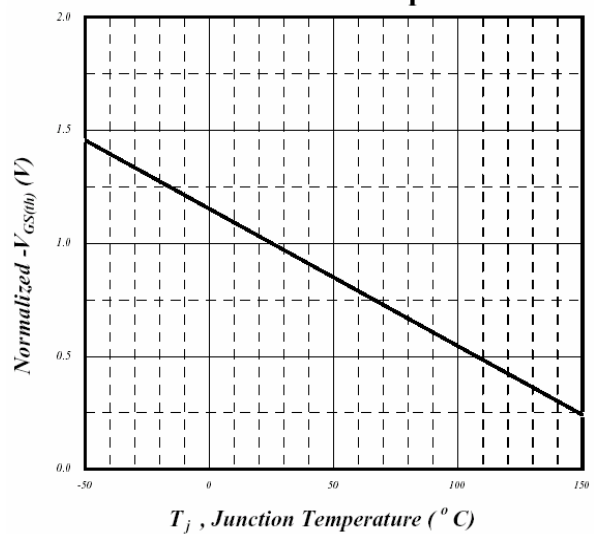


Fig 6. Gate Threshold Voltage v.s.
Junction Temperature

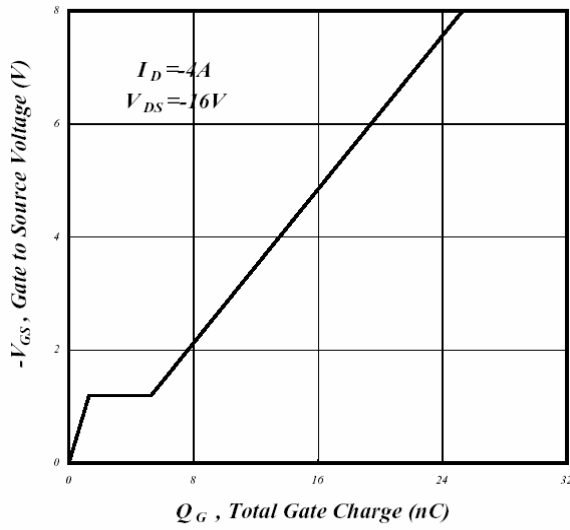


Fig 7. Gate Charge Characteristics

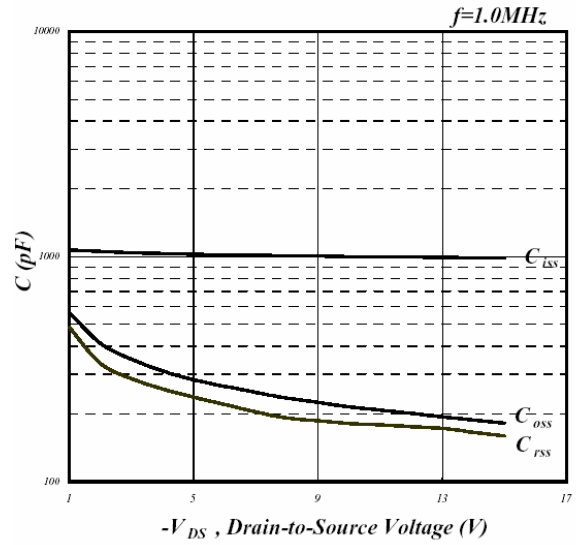


Fig 8. Typical Capacitance Characteristics

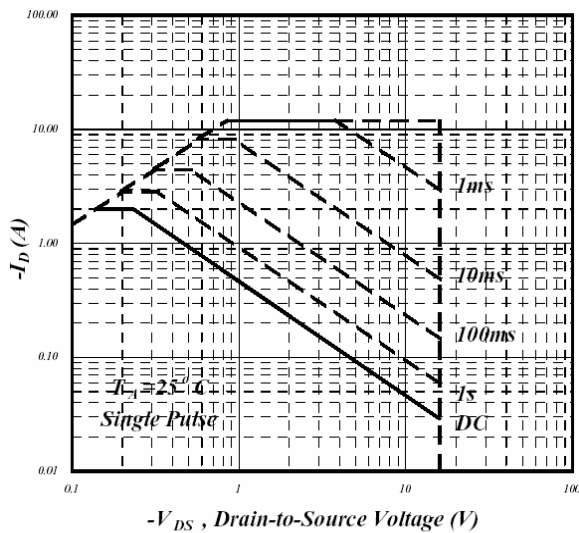


Fig 9. Maximum Safe Operating Area

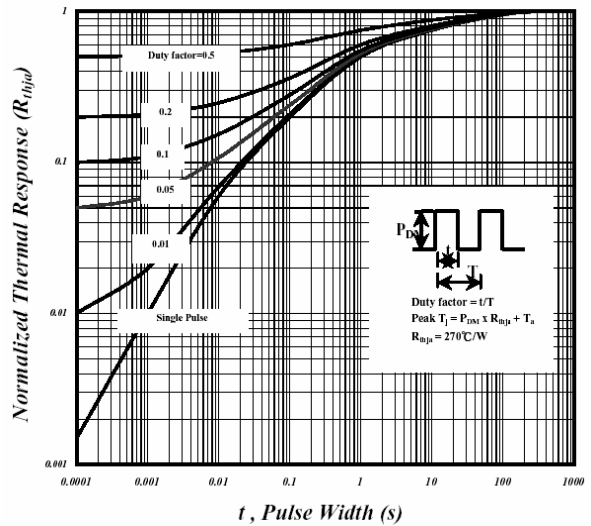


Fig 10. Effective Transient Thermal Impedance

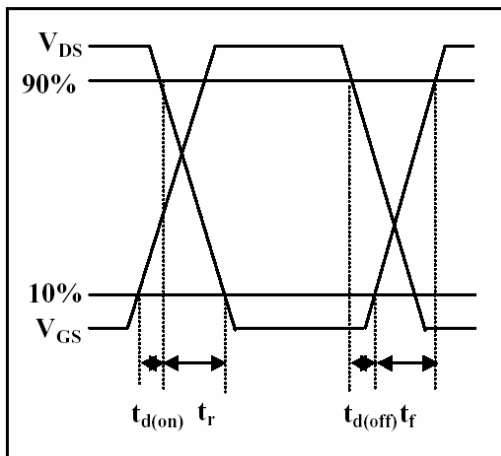


Fig 11. Switching Time Waveform

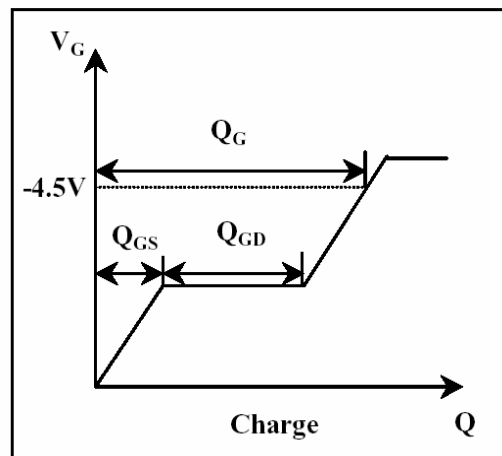


Fig 12. Gate Charge Waveform