G6402

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV_{DSS}	-20V
$R_{DS(ON)}$	65mΩ
I_D	-4.2A

Description

The G6402 provides the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.
The G6402 is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

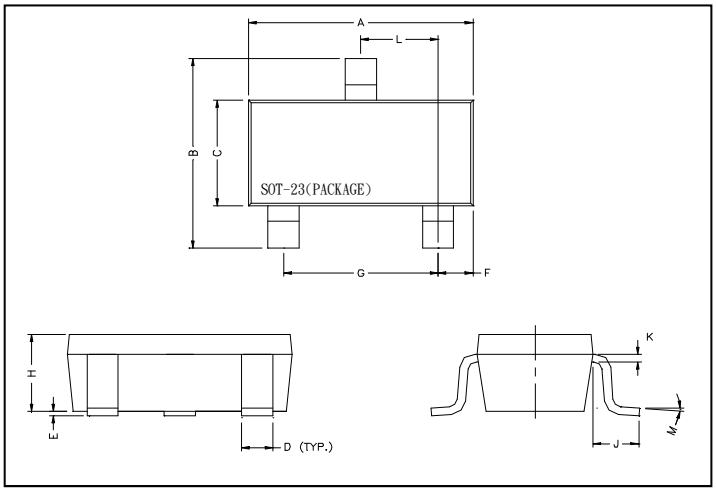
Features

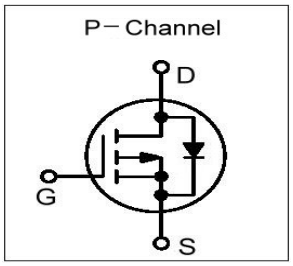
- Ultra Low $R_{DS(ON)}$
- Fast Switching

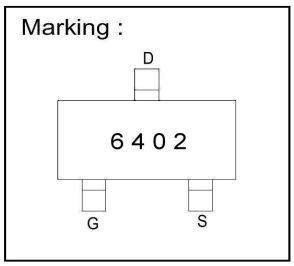
Applications

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

Package Dimensions







REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		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 @T_A=25℃	-4.2	A
Continuous Drain Current[3]	I_D @T_A=70℃	-3.4	A
Pulsed Drain Current[1,2]	I_{DM}	-10	A
Power Dissipation	P_D @T_A=25℃	1.38	W
Linear Derating Factor		0.01	W/℃
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +150	℃

Thermal Data

Parameter	Symbol	Ratings	Unit
Thermal Resistance Junction-ambient[3] Max.	Rthj-a	90	℃/W

Electrical Characteristics(Tj = 25℃ 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	$\triangle BV_{DSS}/\triangle Tj$	-	-0.1	-	V/℃	Reference to 25℃, I_D=-1mA
Gate Threshold Voltage	$V_{GS(th)}$	-0.5	-	-	V	V_{DS}= V_{GS}, I_D=-250uA
Forward Transconductance	gfs	-	9	-	S	V_{DS}=-5.0V, I_D=-2.8A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±12V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	-1	uA	V_{DS}=-20V, V_{GS}=0
Drain-Source Leakage Current(Tj=70℃)		-	-	-10	uA	V_{DS}=-16V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	-	65	mΩ	V_{GS}=-4.5V, I_D=-3.7A
		-	-	135		V_{GS}=-2.5V, I_D=-3.1A
Total Gate Charge[2]	Q_g	-	10.6	-	nC	I_D=-4.2A
Gate-Source Charge	Q_{gs}	-	2.32	-		V_{DS}=-16V
Gate-Drain ("Miller") Change	Q_{gd}	-	3.68	-		V_{GS}=-4.5V
Turn-on Delay Time[2]	$T_{d(on)}$	-	5.9	-	ns	V_{DS}=-15V I_D=-4.2A, V_{GS}=-10V R_G=6Ω R_D=3.6Ω
Rise Time	T_r	-	3.6	-		
Turn-off Delay Time	$T_{d(off)}$	-	32.4	-		
Fall Time	T_f	-	2.6	-		
Input Capacitance	C_{iss}	-	740	-	pF	V_{GS}=0V V_{DS}=-15V f=1.0MHz
Output Capacitance	C_{oss}	-	167	-		
Reverse Transfer Capacitance	C_{rss}	-	126	-		

Source-Drain Diode

Forward On Voltage[2]	V_{SD}	-	-	-1.2	V	I_S=-1.2A, V_{GS}=0 Tj=25℃
Reverse Recovery Time	T_{rr}	-	27.7	-	ns	I_S=-4.2A,V_{GS}=0 dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	22	-	nC	

Notes: 1. Pulse width limited by Max. junction temperature.
2. Pulse width≦300us, duty cycle≦2%.
3. Surface mounted on 1 in^2 copper pad of FR4 board;270℃/w when mounted on min. copper pad.

Characteristics Curve

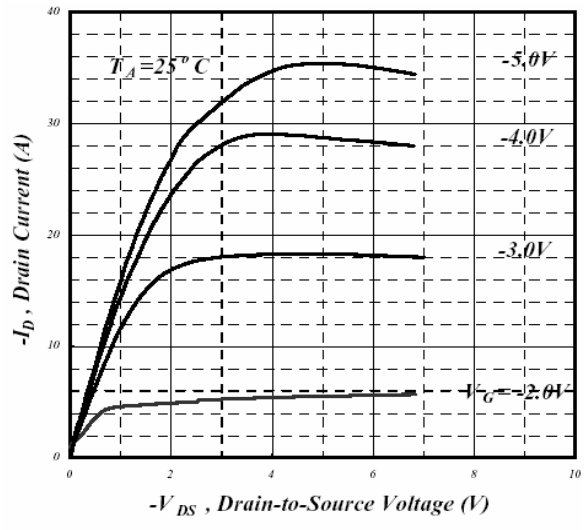


Fig 1. Typical Output Characteristics

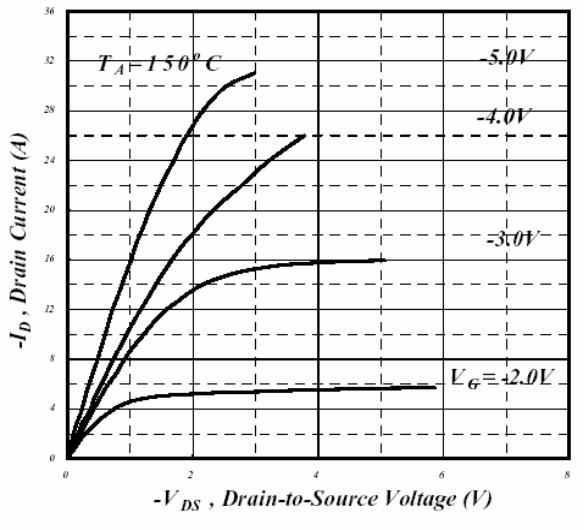


Fig 2. Typical Output Characteristics

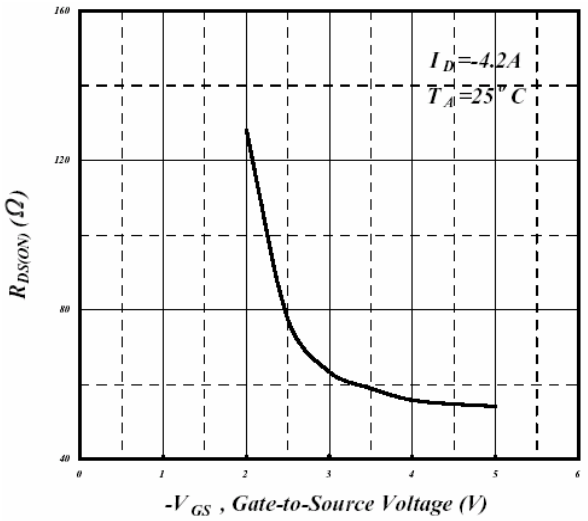


Fig 3. On-Resistance v.s. Gate Voltage

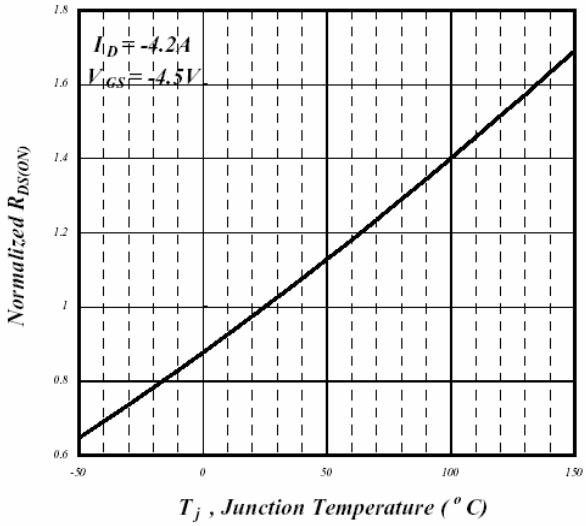


Fig 4. Normalized On-Resistance v.s. Junction Temperature

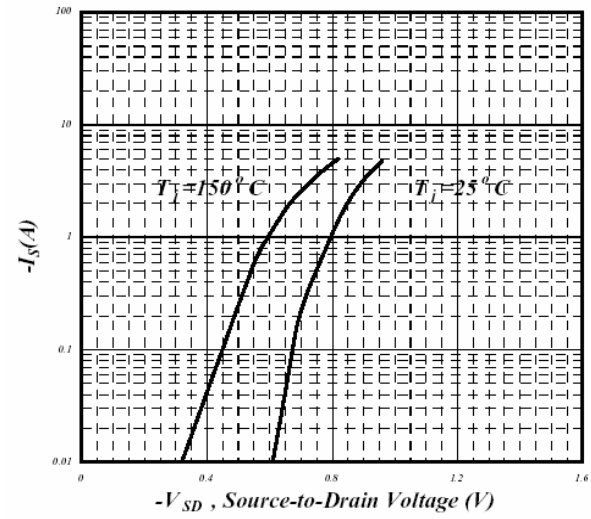


Fig 5. Forward Characteristic of Reverse Diode

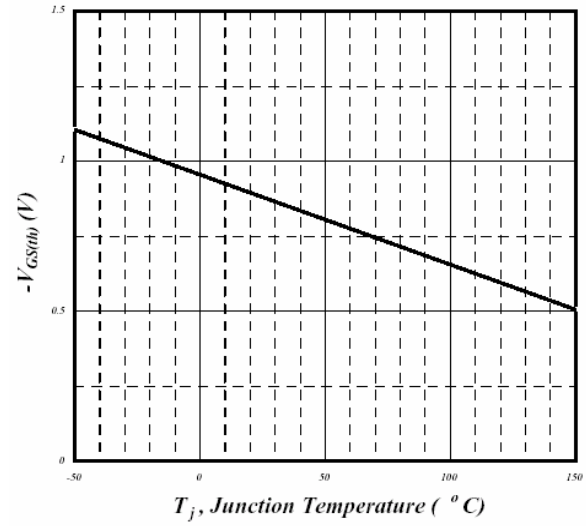


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

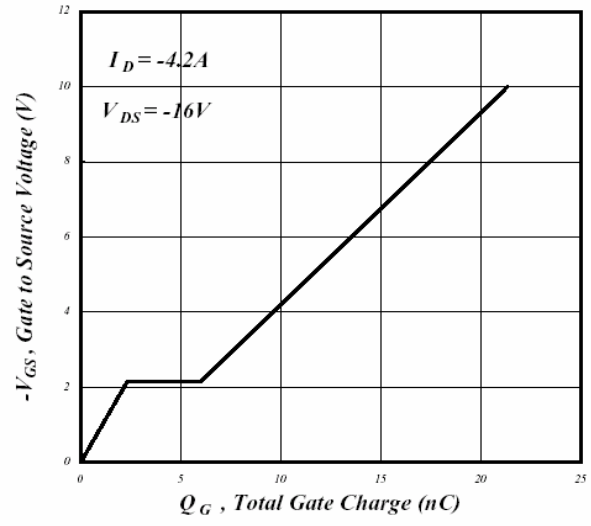


Fig 7. Gate Charge Characteristics

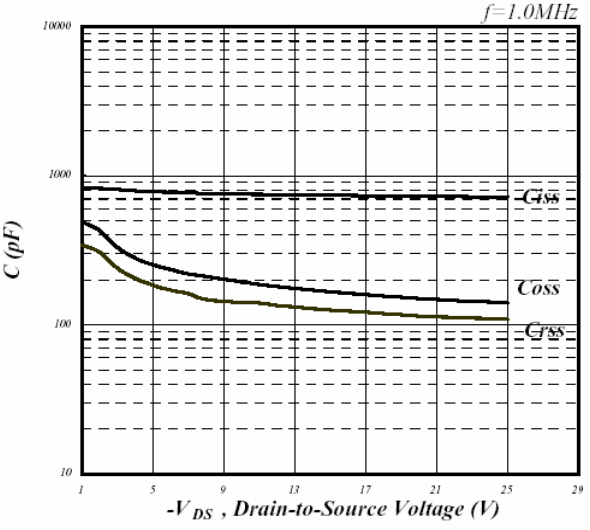


Fig 8. Typical Capacitance Characteristics

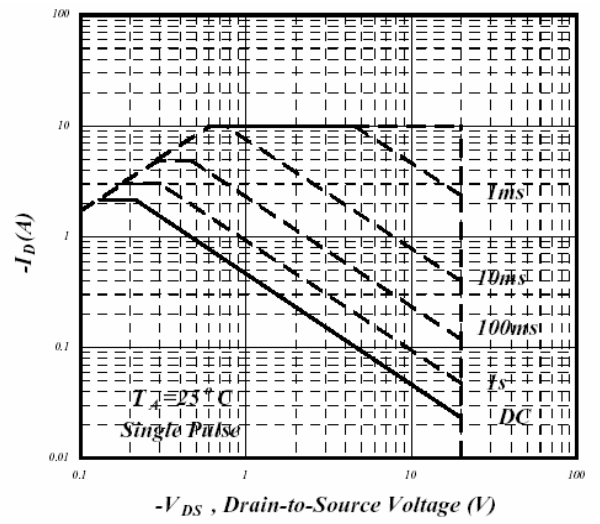


Fig 9. Maximum Safe Operating Area

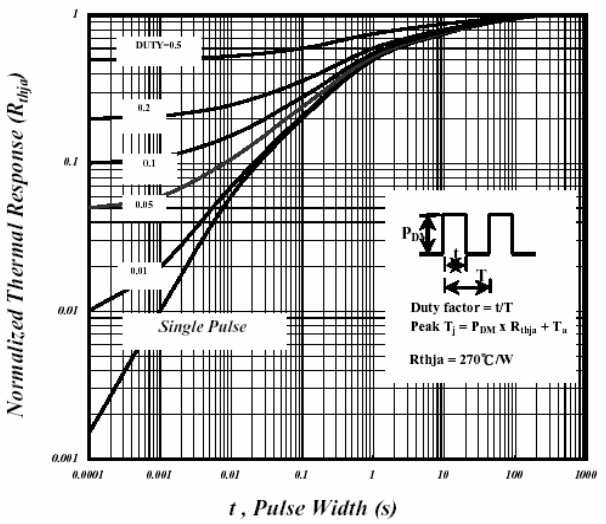


Fig 10. Effective Transient Thermal Impedance

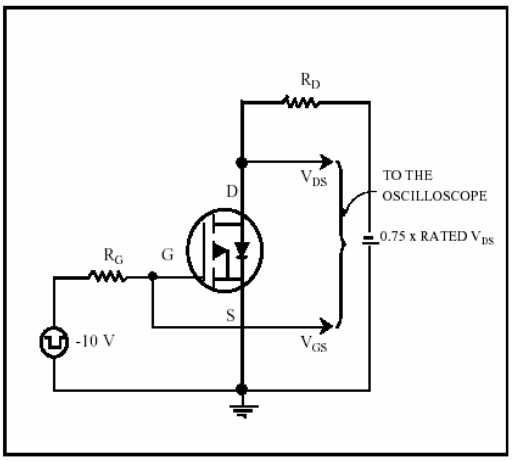


Fig 11. Switching Time Circuit

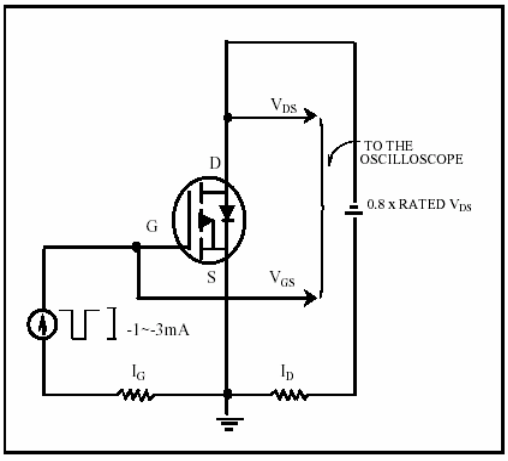


Fig 12. Gate Charge Circuit

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