DESCRIPTION

P-channel Enhancement Mode Power MOSFET

FEATURES

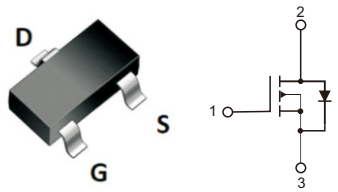
- V_{DS}=-12V,I_D=-4.3A
  $R_{DS(ON)}$<50mΩ@V_{GS}=−4. 5V
  $R_{DS(ON)}$<85mΩ@V_{GS}=−2. 5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

APPLICATION

- PWMApplications
- Load Switch
- Power Management

PINNING

PIN	DESCRIPTION
1	GATE
2	DRAIN
3	SOURCE



Simplified outline SOT-23 and symbol

Absolute Maximum Ratings (T_A=25°C, unless otherwise specified)

Parameter	Symbols	Ratings	Units
Drain-Source Voltage	V_{DSS}	-12	V
Gate-Source Voltage	V_{GSS}	±8	V
Continuous Drain Current V_{GS}=-4.5V,T_A=25°C V_{GS}=-4.5V,T_A=75°C	I_D	-4.3 -3.4	A
Pulsed Drain Current	I_{DM}	-17.2	A
Power Dissipation T_A=25°C T_A=75°C	P_D	1.25 0.8	W
Thermal Resistance - Junction to Ambient	$R_{\theta JA}$	100	°C/W
Operation Junction Temperature and Storage Temperature	T_j, T_{stg}	-55 ~ +150	°C

Electrical Characteristics (TA=25°C, unless otherwise specified)

Parameter		Symbols	Text conditions	Min	Typ	Max	Units
Off Characteristics							
Drain-Source Breakdown Voltage		B_{VDSS}	V_{GS}=0V,I_D=-250uA	-12			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=-12V,V_{GS}=0V			-1	uA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=8V,V_{DS}=0V			100	nA
	Reverse		V_{GS}=-8V,V_{DS}=0V			-100	
On Characteristics							
Gate Threshold Voltage		$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-0.4	-0.55	-0.95	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=-4.5V,I_D=-4.3A			50	mΩ
			V_{GS}=-2. 5V,I_D=-2.5A			85	mΩ
			V_{GS}=-1.8V,I_D=-2.0A			125	mΩ
Forward Transconductance		g_{FS}	V_{DS} =-10V, I_D = -4.3A	8.6			mS
Dynamic Characteristics							
Input Capacitance		C_{iss}	V_{DS}=-10V,		830		pF
Output Capacitance		C_{oss}	V_{GS}=0V,		180		pF
Reverse Transfer Capacitance		C_{rss}	f=1.0MHz		125		pF
Switching Characteristics							
Total Gate Charge		Q_g	V_{DS}=-10V,V_{GS}=-5.0V, I_D=-4.3A		10	15	nC
Gate-Source Charge		Q_{gs}			1.4	2.1	nC
Gate-Drain Charge		Q_{gd}			2.6	3.9	nC
Turn-On Delay Time		$t_{d(on)}$	V_{DS}=-6V,R_{GEN}=89Ω, R_L=6Ω,I_D=1.0A,		11		ns
Turn-On Rise Time		t_r			12		ns
Turn-Off Delay Time		$t_{d(off)}$			250		ns
Turn-Off Fall Time		t_f			210		ns
Turn-Off Delay Time							
Continuous Current		I_S				-4.3	A
Drain-Source Diode Forward Voltage		V_{SD}	I_S=-1.3A,V_{GS}=0V			-1.2	V

Typical Performance Characteristics

Fig 1. Typical Output Characteristics

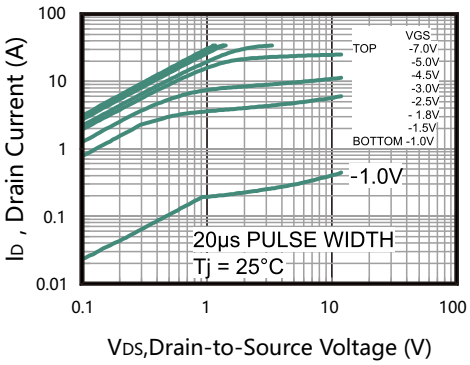


Fig 2. Typical Output Characteristics

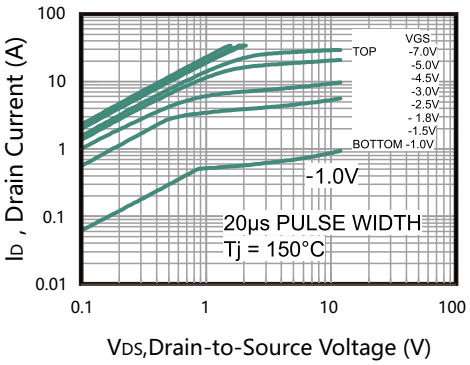


Fig 3. Typical Transfer Characteristics

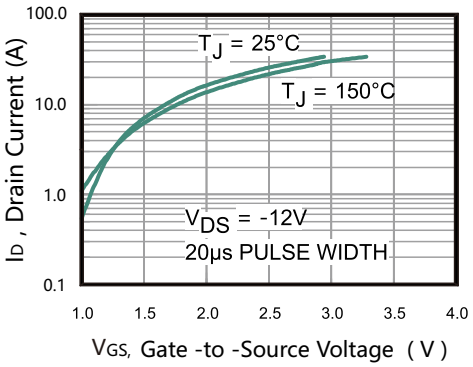


Fig 4. Normalized On-Resistance Vs. Temperature

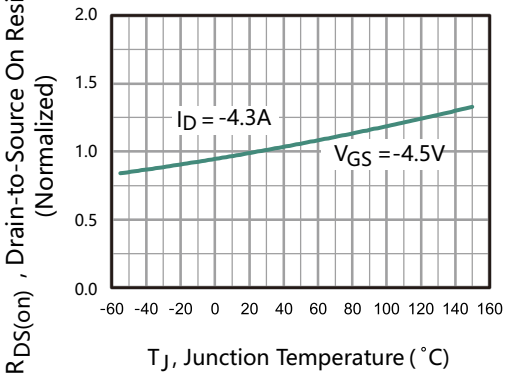


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

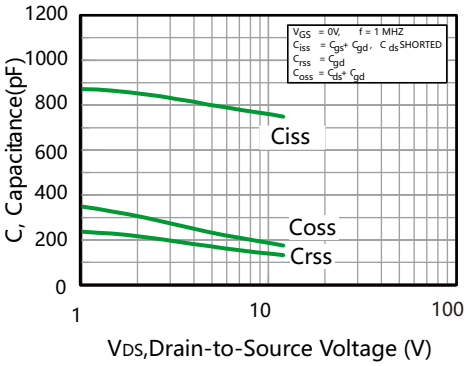


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

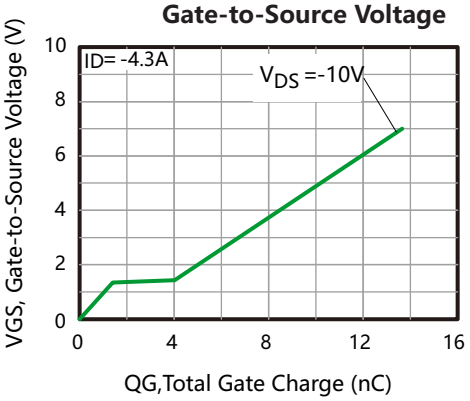


Fig 7. Typical Source-Drain Diode Forward Voltage

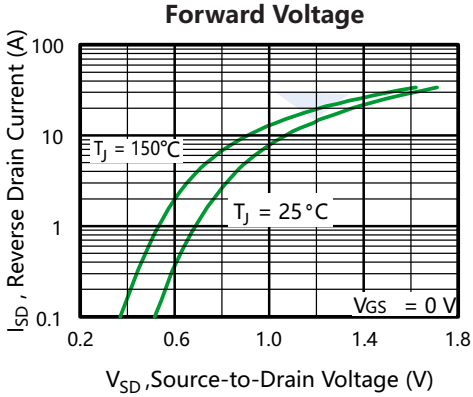
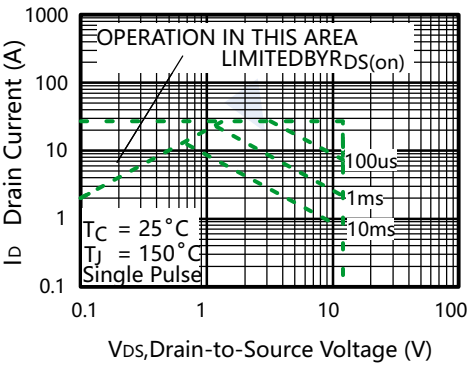


Fig 8. Maximum Safe Operating Area



Typical Performance Characteristics

Fig 9. Maximum Drai Current Vs. Case Temperature

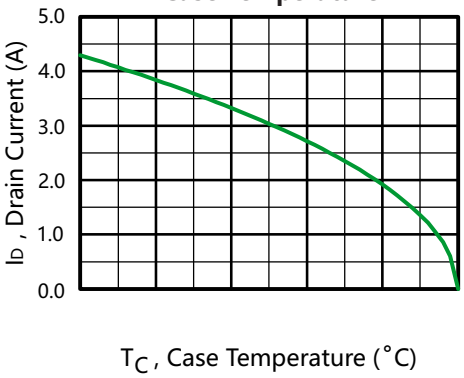
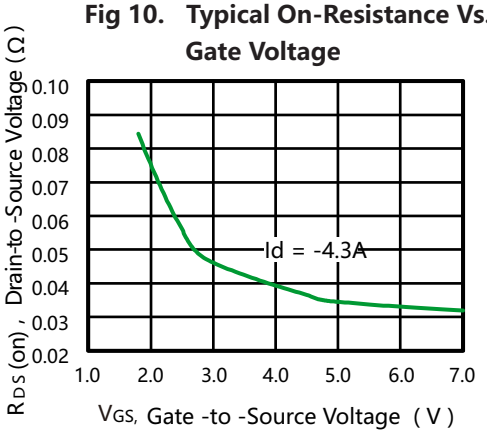
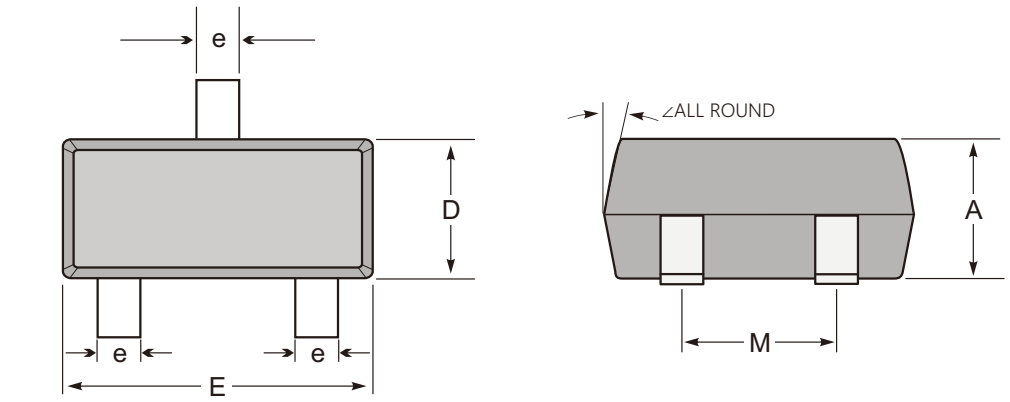
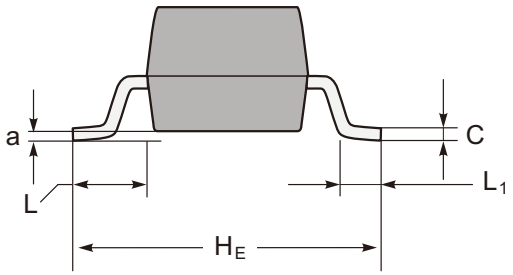


Fig 10. Typical On-Resistance Vs. Gate Voltage



SOT-23 Package Outline Dimensions

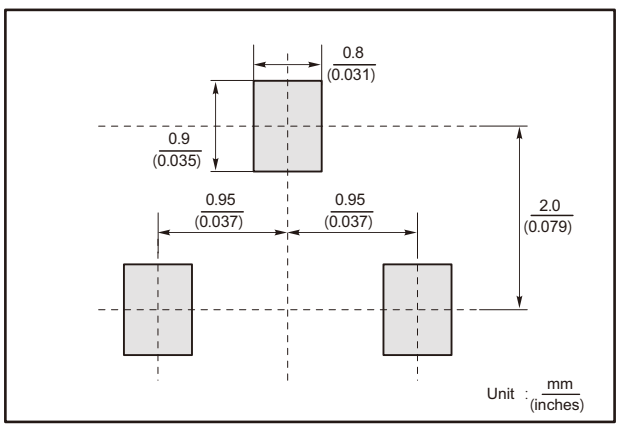




SOT-23 mechanical data

UNIT		A	C	D	E	HE	e	M	L	L1	a	∠
mm	max	1.1	0.20	1.4	3.0	2.6	0.6	1.95	0.55 (ref)	0.36 (ref)	0.15	12°
	min	0.9	0.08	1.2	2.8	2.2	0.35	1.7			0.0	
mil	max	43	7.9	55	118	102	24	77	22 (ref)	14 (ref)	6	
	min	35	3.1	47	110	87	13	67			0.0	

The recommended mounting pad size



Marking

Type number	Marking code
PM6401WD	6401

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