



20V P-Channel Enhancement Mode MOSFET

Voltage -20 V Current -3.1A

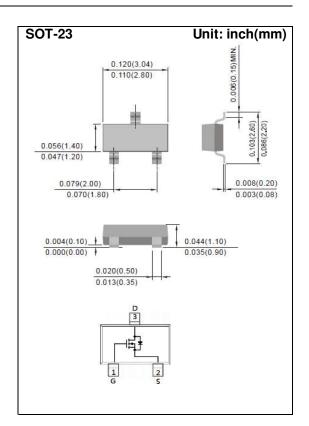
Features

- RDS(ON) , VGS@-4.5V, ID@-3.1A<100m Ω
- RDS(ON), VGS@-2.5V, ID@-2.0A<135m Ω
- RDS(ON) , VGS@-1.8V, ID@-1.1A<190mΩ
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

• Case: SOT-23 Package

• Terminals: Solderable per MIL-STD-750, Method 2026



Maximum Ratings and Thermal Characteristics (T_A=25 °C unless otherwise noted)

PARAMETE	SYMBOL	LIMIT	UNITS	
Drain-Source Voltage		V _{DS}	-20	V
Gate-Source Voltage		V_{GS}	<u>+</u> 12	V
Continuous Drain Current		I _D	-3.1	Α
Pulsed Drain Current		I _{DM}	-12.4	Α
Power Dissipation	T _a =25°C	P _D	1.25	W
	Derate above 25°C		10	mW/°C
Operating Junction and Storage Temperature Range		T_{J}, T_{STG}	-55~150	°C
Typical Thermal Resistance				
- Junction to Ambient (Note 3)	$R_{\theta JA}$	100	°C/W	





Electrical Characteristics (T_A=25 °C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =-250uA	-20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_{D}=-250uA$	-0.4	-0.71	-1.2	V
Drain-Source On-State Resistance	R _{DS(on)}	V_{GS} =-4.5V, I_{D} =-3.1A	-	84	100	mΩ
		V_{GS} =-2.5V, I_{D} =-2.0A	-	104	135	
		V _{GS} =-1.8V, I _D =-1.1A	-	134	190	
Zero Gate Voltage Drain Current	I _{DSS}	V_{DS} =-20V, V_{GS} =0V	-	-0.01	-1	uA
Gate-Source Leakage Current	I _{GSS}	$V_{GS}=\underline{+}12V, V_{DS}=0V$	-	<u>+</u> 10	<u>+</u> 100	nA
Dynamic						
Total Gate Charge	Q_g	V _{DS} =-10V, I _D =-3.1A, V _{GS} =-4.5V ^(Note 1,2)	-	5.4	-	nC
Gate-Source Charge	Q_gs		-	0.7	-	
Gate-Drain Charge	Q_gd	V _{GS} =-4.5 V	-	1.3	-	
Input Capacitance	Ciss	V _{DS} =-10V, V _{GS} =0V, f=1.0MHZ	-	416	-	pF
Output Capacitance	Coss		-	43	-	
Reverse Transfer Capacitance	Crss	I=I.UIVITZ	-	32	-	
Switching						
Turn-On Delay Time	$td_{(on)}$	101/ 1 0 1 1	-	4	-	ns
Turn-On Rise Time	tr	V_{DD} =-10V, I_{D} =-3.1A, V_{GS} =-4.5V, R_{G} =6 Ω (Note 1.2)	-	27	-	
Turn-Off Delay Time	td _(off)		-	78	-	
Turn-Off Fall Time	tf	n _G =012	-	45	-	
Drain-Source Diode			•			
Maximum Continuous Drain-Source					-1.5	А
Diode Forward Current	I _S		_	_	-1.0	
Diode Forward Voltage	$V_{ ext{SD}}$	I _S =-1.0A, V _{GS} =0V	-	0.8	-1.2	V

NOTES:

- 1. Pulse width<300us, Duty cycle<2%
- 2. Essentially independent of operating temperature typical characteristics.
- 3. Rejah is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1 inch FR-4 with 2oz. square pad of copper
- 4. The maximum current rating is package limited





TYPICAL CHARACTERISTIC CURVES

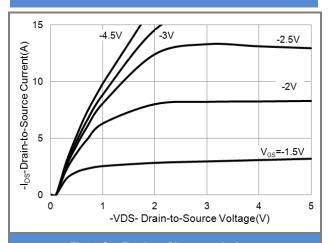


Fig.1 On-Region Characteristics

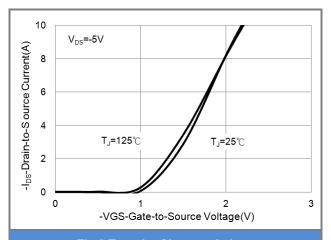


Fig.2 Transfer Characteristics

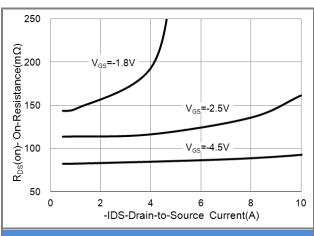


Fig.3 On-Resistance vs. Drain Current

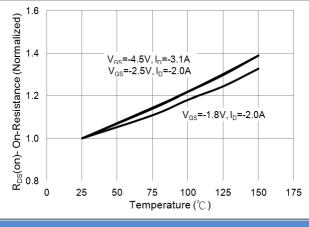


Fig.4 On-Resistance vs. Junction temperature

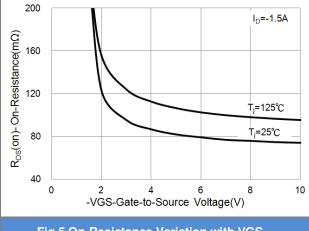
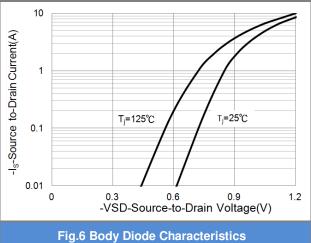


Fig.5 On-Resistance Variation with VGS.



November 9,2016-REV.03





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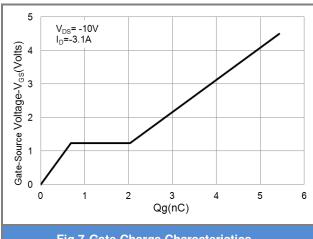


Fig.7 Gate-Charge Characteristics

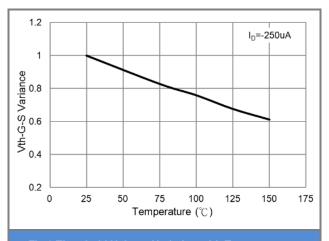


Fig.8 Threshold Voltage Variation with Temperature.

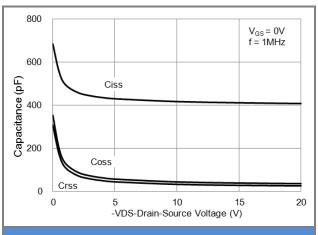


Fig.10 Capacitance vs. Drain-Source Voltage.

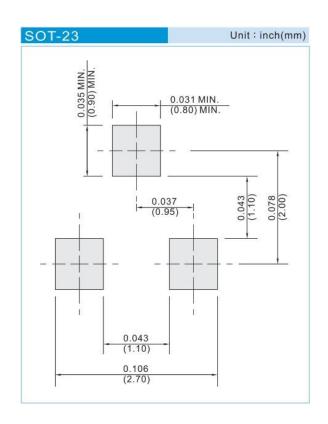




PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJ2301_R1_00001	SOT-23	3K pcs / 7" reel	01	Halogen free
PJ2301_R2_00001	SOT-23	12K pcs / 13" reel	01	Halogen free

MOUNTING PAD LAYOUT







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