



20V P-Channel Enhancement Mode MOSFET- ESD Protected

-4.0A

Voltage -20 V Current

Features

- RDS(ON), VGS@-10V, ID@-4.0A<60mΩ
- RDS(ON), VGS@-4.5V, ID@-3.3A<70mΩ
- RDS(ON), VGS@-2.5V, ID@-2.0A<96mΩ
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected 2KV HBM
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. (Halogen Free)

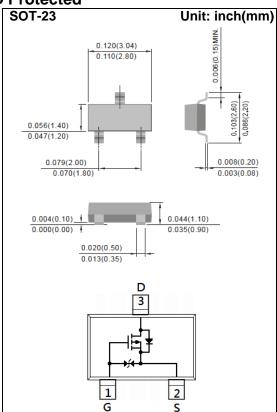
Mechanical Data

Case: SOT-23 Package

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

Approx. Weight: 0.0003 ounces, 0.0084 grams

Marking: A19



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	<u>+</u> 12	V
Continuous Drain Current		I _D	-4.0	Α
Pulsed Drain Current (Note 4)		I _{DM}	-16	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)		$R_{ hetaJA}$	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	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_{D}=-250uA$	-0.5	-0.77	-1.2	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-4.0A	-	50	60	mΩ
		V_{GS} =-4.5V, I_{D} =-3.3A	-	58	70	
		V _{GS} =-2.5V, I _D =-2.0A	-	80	96	
		V _{GS} =-1.8V, I _D =-0.5A	-	140	180	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V	-	-	-1	uA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\underline{+}8V, V_{DS}=0V$	-	-	<u>+</u> 10	uA
Dynamic (Note 5)						
Total Gate Charge	Q_g	V _{DS} =-10V, I _D =-4.0A, V _{GS} =-4.5V ^(Note 1,2)	-	6.9	-	nC
Gate-Source Charge	Q_gs		-	1.5	-	
Gate-Drain Charge	Q_{gd}		-	1.9	-	
Input Capacitance	Ciss	V _{DS} =-10V, V _{GS} =0V, f=1.0MHZ	-	602	-	pF
Output Capacitance	Coss		-	70	-	
Reverse Transfer Capacitance	Crss		-	47	-	
Turn-On Delay Time	td _(on)	101/ 101	-	8.8	-	
Turn-On Rise Time	tr	V_{DD} =-10V, I_{D} =-4.0A, V_{GS} =-4.5V, R_{G} =3 Ω (Note 1.2)	-	66	-	ns
Turn-Off Delay Time	td _(off)		-	29	-	
Turn-Off Fall Time	tf		-	14	-	
Drain-Source Diode						
Maximum Continuous Drain-Source				1.5	A	
Diode Forward Current	I _S		-	-	-1.5	A
Diode Forward Voltage	V_{SD}	I _S =-1.0A, V _{GS} =0V	-	-0.79	-1.0	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.
- 5. Guaranteed by design, not subject to production testing





TYPICAL CHARACTERISTIC CURVES

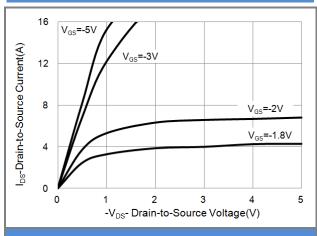


Fig.1 On-Region Characteristics

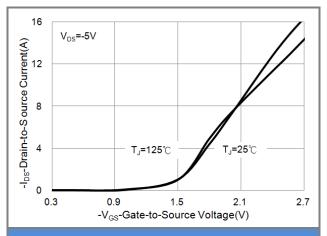


Fig.2 Transfer Characteristics

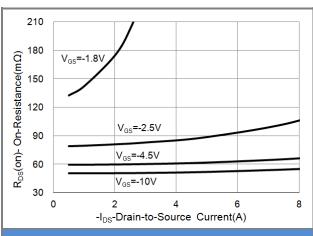


Fig.3 On-Resistance vs. Drain Current

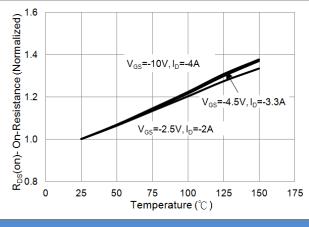


Fig.4 On-Resistance vs. Junction temperature

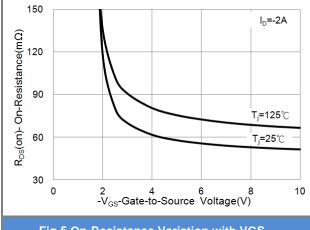


Fig.5 On-Resistance Variation with VGS.







TYPICAL CHARACTERISTIC CURVES

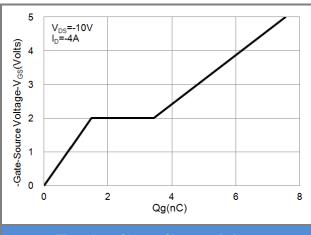
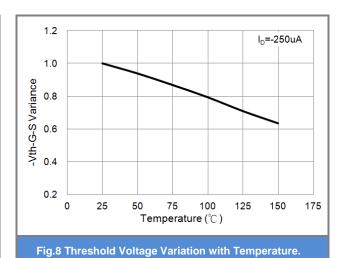


Fig.7 Gate-Charge Characteristics



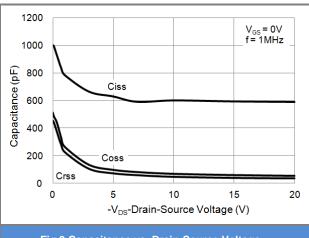


Fig.9 Capacitance vs. Drain-Source Voltage.

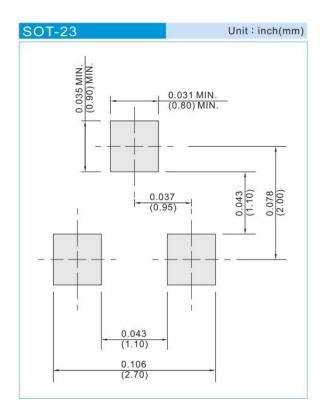




PART NO PACKING CODE VERSION

PART NO PACKING CODE	Package Type	Packing type	Marking	Version
PJA3419_R1_00001	SOT-23	3K pcs / 7" reel	A19	Halogen free
PJA3419_R2_00001	SOT-23	12K pcs / 13" reel	A19	Halogen free

MOUNTING PAD LAYOUT







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