

**P-Channel 20-V (D-S) MOSFET**
**FEATURES**

- Advance Trench Process Technology
- High Density Cell Design for Ultra Low On-resistance

**Application**

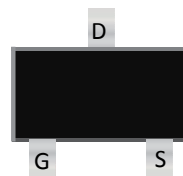
- Portable Devices
- Consumer Electronics

**Mechanical**

- Case: SOT-23 Package

**PRODUCTY SUMMARY**

$V_{DS}$	$R_{DS(on)}$ m( $\Omega$ )	$I_D$ (A)
-20	112 @ $V_{GS}=-4.5V$	-2.1
	142 @ $V_{GS}=-2.5V$	-1.9

**SOT-23**

**Packing Information**

Package	Packing
SOT-23	3Kpcs / 7" Reel

**Maximum Ratings ( $T_A=25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current <sup>1)</sup>	$I_D$	-2.1	A
Maximum Power Dissipation	$P_D$	0.35	W
Pulsed Drain Current <sup>2)</sup>	$I_{DM}$	-8.4	A
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$

**Typical Thermal Resistance**

Parameter	Symbol	Limit	Unit
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	100	$^\circ\text{C/W}$

**Note:**

$R_{\theta JA}$  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

Electrical Characteristics (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)						
Characteristics	Symbol	Test Condition	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	B <sub>V</sub> DSS	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250uA	-20			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.4	-0.65	-1.2	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2.1A	-	90	112	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1.9A	-	110	142	mΩ
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V			±100	nA
Dynamic <sup>3)</sup>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-3.1A, V <sub>GS</sub> =-4.5V	-	7	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	1	-	nC
Gate-Drain Charge	Q <sub>gd</sub>		-	1.8	-	nC
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1.0MHZ	-	522	-	pF
Output Capacitance	C <sub>oss</sub>		-	55	-	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	40	-	pF
Switching						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-10V, I <sub>D</sub> =-3.1A, V <sub>GS</sub> =-4.5V,RG=6Ω	-	10	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	4	-	ns
Turn-Off Delay Time	t <sub>d(off)</sub>		-	34	-	ns
Turn-Off Fall Time	t <sub>f</sub>		-	5	-	ns
Drain-Source Diode						
Maximum Continuous Drain-Source	I <sub>S</sub>	-	-	-	-1.5	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1.0A, V <sub>GS</sub> =0V	-	-	-1.2	V

Note:

1. Pulse width<300us, Duty cycle<2%
2. Fused current that based on wire numbers and diameter
3. Guaranteed by design, not subject to production testing.

## TYPICAL CHARACTERISTIC CURVES

Fig.1 On-Region Characteristics

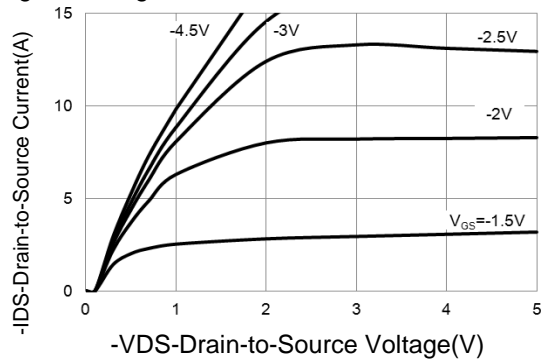


Fig.2 Transfer Characteristics

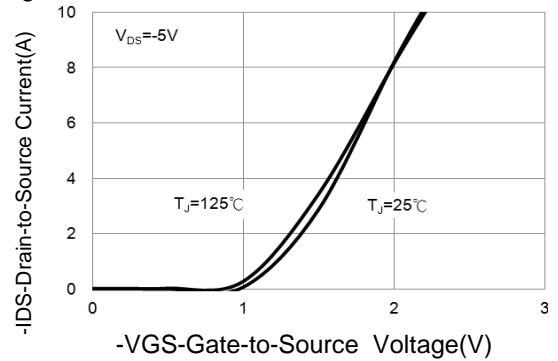


Fig.3 On-Resistance vs. Drain Current

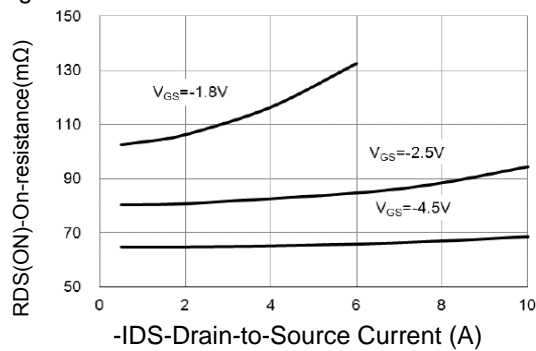


Fig.4 On-Resistance vs. Junction temperature

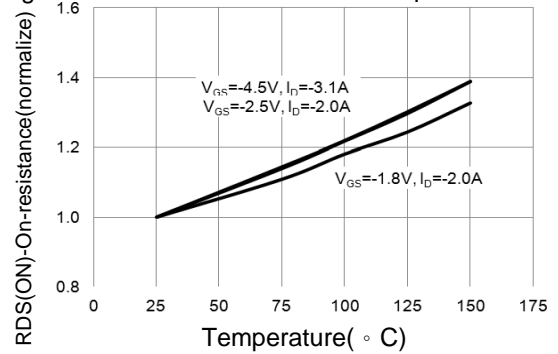


Fig.5 On-Resistance Variation with VGS.

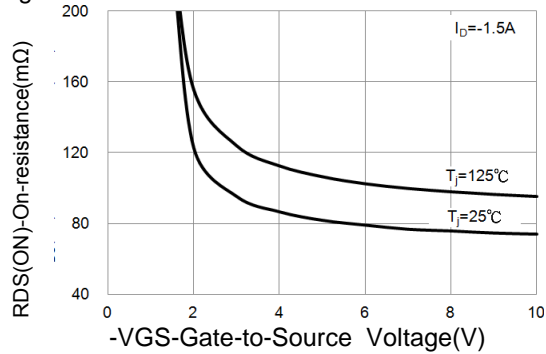


Fig.6 Body Diode Characteristics

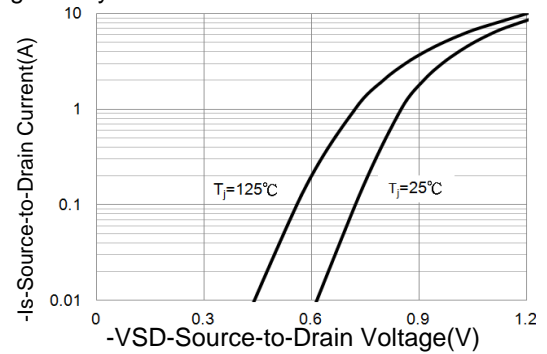


Fig.7 Gate-Charge Characteristics

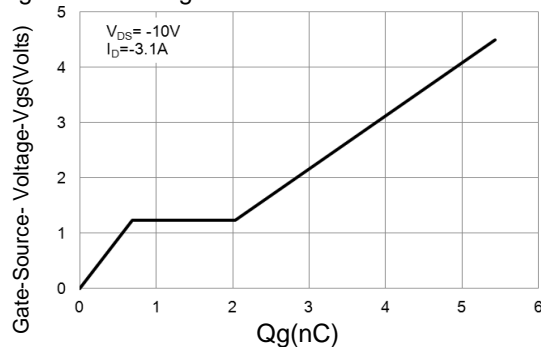
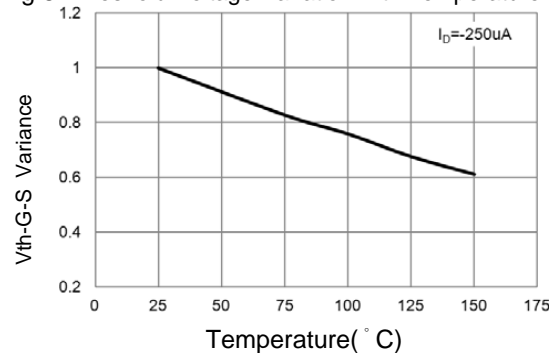
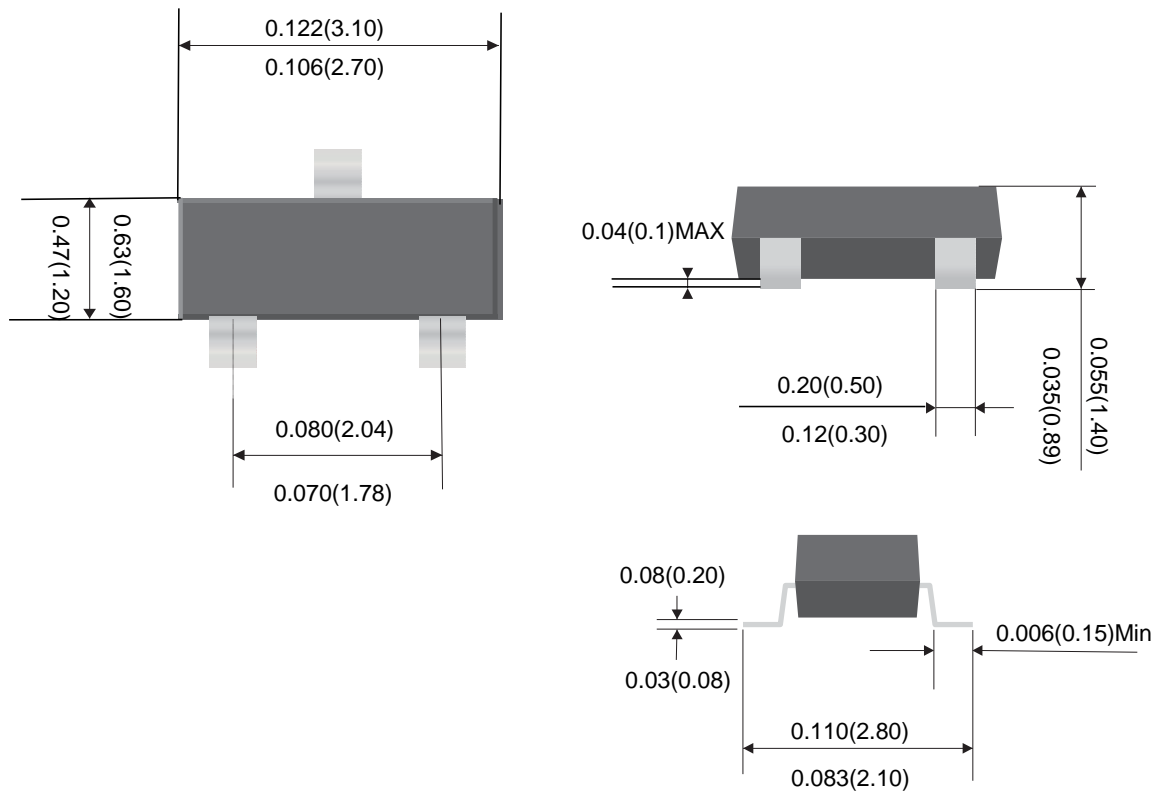


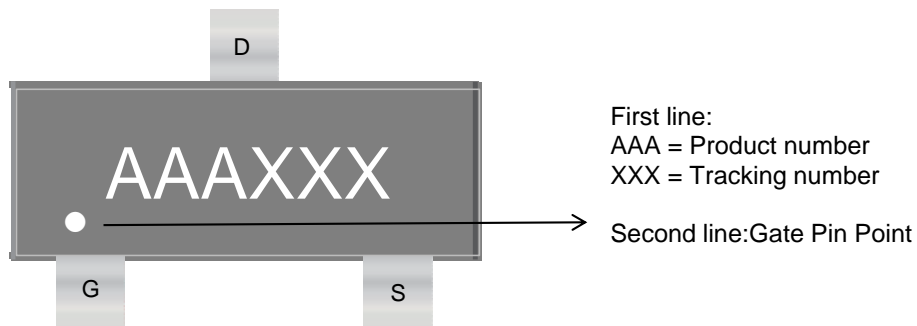
Fig.8 Threshold Voltage Variation with Temperature.



## Package Outline Dimensions ( inches and millimeters)



## Marking Information



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