

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

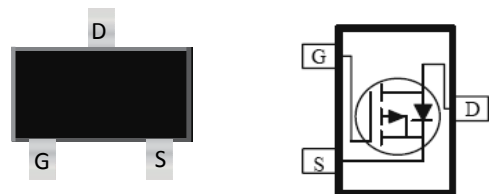
Mechanical

- Case: SOT-23 Package

PRODUCTY SUMMARY

V_{DS}	$R_{DS(on)}$ m(Ω)	I_D (A)
-20	135 @ $V_{GS}=-4.5V$	-2.0
	190 @ $V_{GS}=-2.5V$	-1.6

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}	± 12	V
Continuous Drain Current ¹⁾	I_D	-2.0	A
Maximum Power Dissipation	P_D	0.35	W
Pulsed Drain Current ²⁾	I_{DM}	-8	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 _A = 25°C UNLESS OTHERWISE NOTED)						
Characteristics	Symbol	Test Condition	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	B _V DSS	V _{GS} = 0V, I _D =-250uA	-20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-0.4	-0.75	-1.2	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-2.0A	-	100	135	mΩ
		V _{GS} =-2.5V, I _D =-1.6A	-	150	190	mΩ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V			±100	nA
Dynamic ³⁾						
Total Gate Charge	Q _g	V _{DS} =-10V, I _D =-3.1A, V _{GS} =-4.5V	-	5.4	-	nC
Gate-Source Charge	Q _{gs}		-	0.7	-	nC
Gate-Drain Charge	Q _{gd}		-	1.3	-	nC
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1.0MHZ	-	416	-	pF
Output Capacitance	C _{oss}		-	43	-	pF
Reverse Transfer Capacitance	C _{rss}		-	32	-	pF
Switching						
Turn-On Delay Time	t _{d(on)}	V _{DD} =-10V, I _D =-3.1A, V _{GS} =-4.5V, RG=6Ω	-	4	-	ns
Turn-On Rise Time	t _r		-	27	-	ns
Turn-Off Delay Time	t _{d(off)}		-	78	-	ns
Turn-Off Fall Time	t _f		-	45	-	ns
Drain-Source Diode						
Maximum Continuous Drain-Source	I _S	-	-	-	-1.5	A
Diode Forward Voltage	V _{SD}	I _S =-1.0A, V _{GS} =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

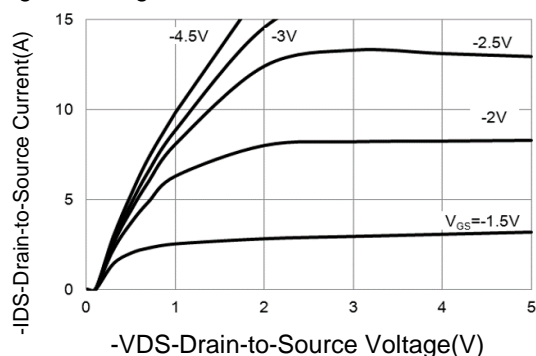


Fig.2 Transfer Characteristics

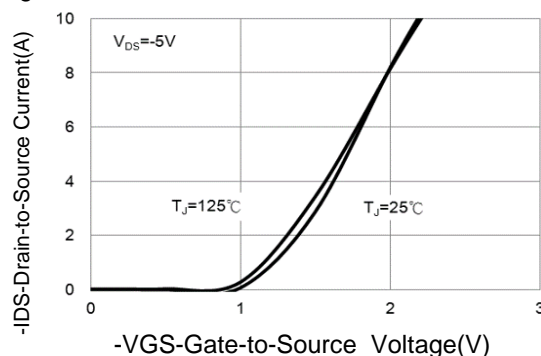


Fig.3 On-Resistance vs. Drain Current

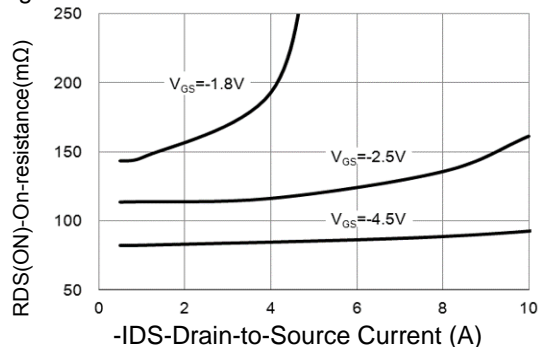


Fig.4 On-Resistance vs. Junction temperature

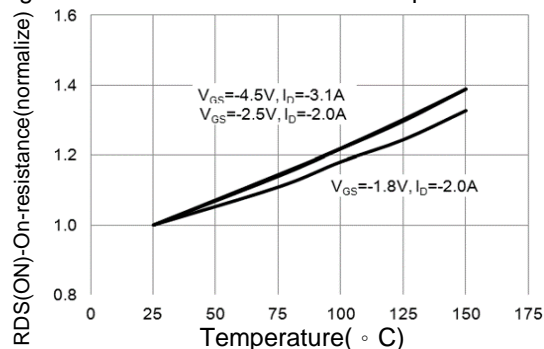


Fig.5 On-Resistance Variation with VGS.

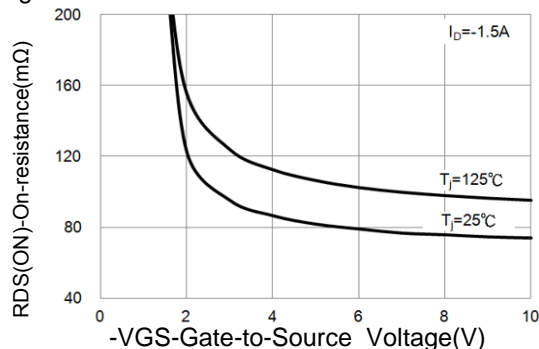


Fig.6 Body Diode Characteristics

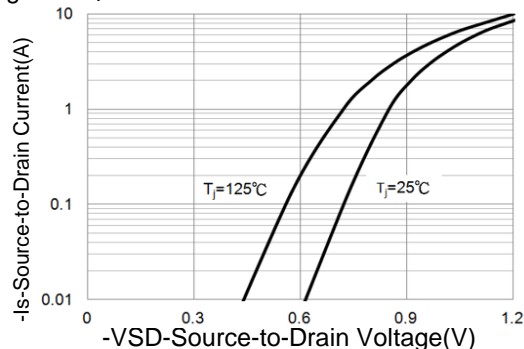


Fig.7 Gate-Charge Characteristics

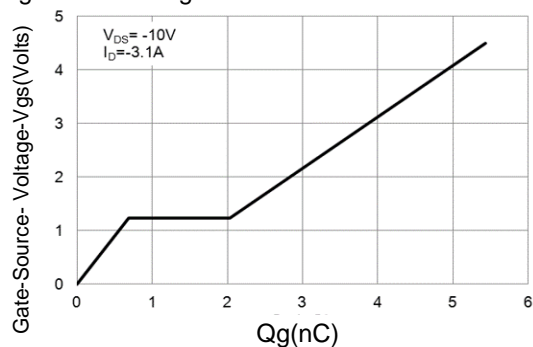
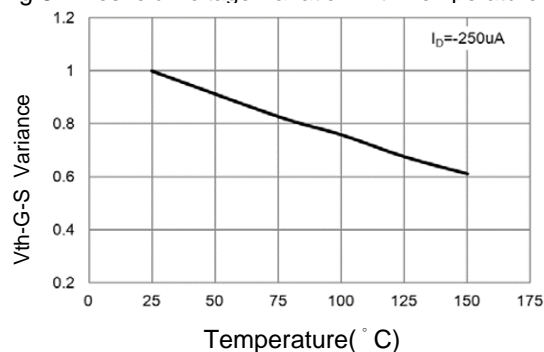
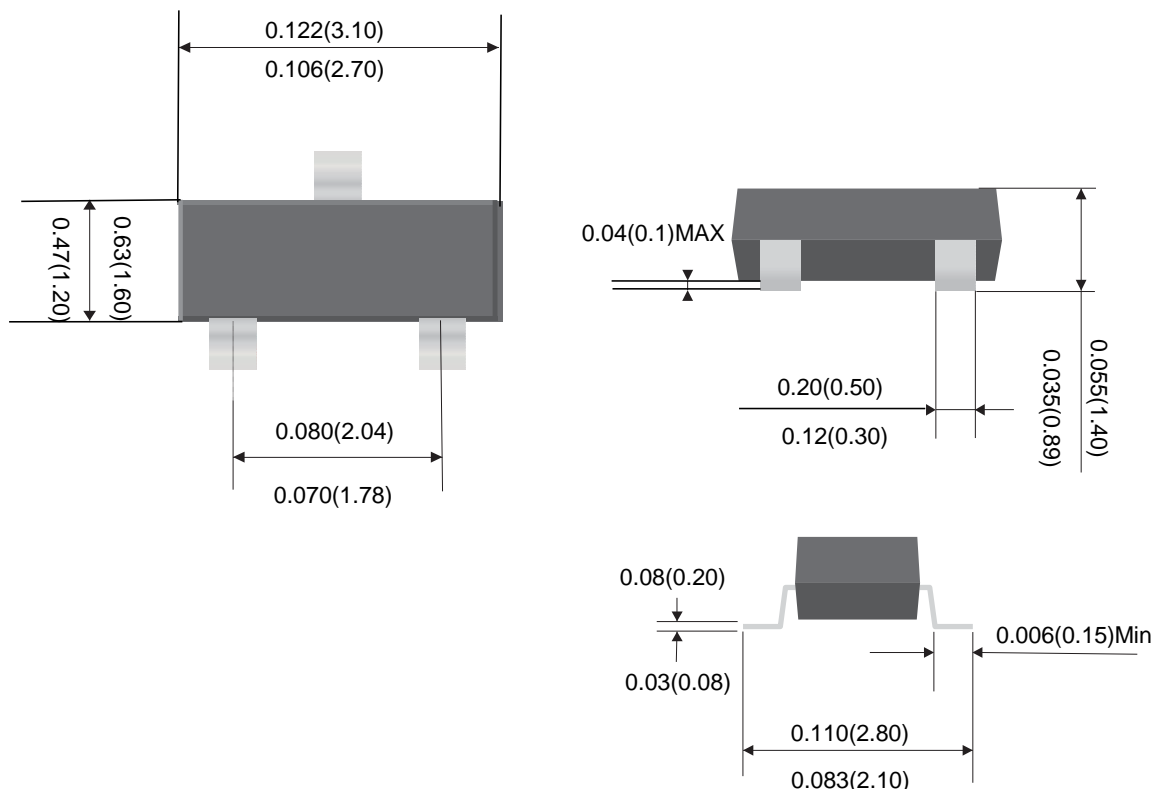


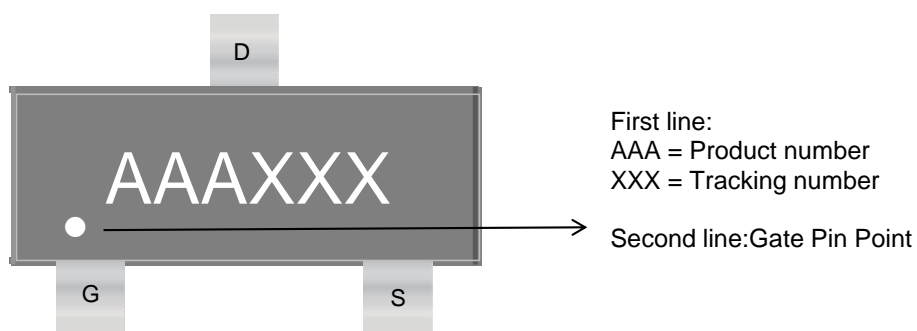
Fig.8 Threshold Voltage Variation with Temperature.



Package Outline Dimensions (inches and millimeters)



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