



SOT-23 Plastic-Encapsulate MOSFETS

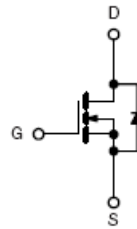
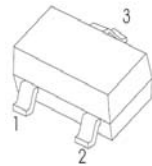
N-Channel 20-V(D-S) MOSFET

APPLICATIONS

- DC/DC Converters
- Load Switching for Portable Applications
- **Pb-Free package is available**
RoHS product for packing code suffix "G"
Halogen free product for packing code suffix "H"

SOT-23

1. GATE
2. SOURCE
3. DRAIN



MARKING: S12

Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8.0	
Continuous Drain Current	I_D	5	A
Pulsed Drain Current	I_{DM}	20	
Continuous Source-Drain Diode Current	I_S	1.04	
Maximum Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-50 ~+150	



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Electrical characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	V _{(BR) DSS}	V _{GS} = 0V, I _D =250μA	20			V
Gate-source leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±8V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1.0	μA
Gate-source threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.45		1.0	V
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} =4.5V, I _D =5.0A			0.0318	Ω
		V _{GS} =2.5V, I _D =4.7A			0.0356	
		V _{GS} =1.8V, I _D =4.3A			0.0414	
Forward tranconductance ^a	g _{fs}	V _{DS} =10V, I _D =5.0A	6			S
Dynamic^b						
Input capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f =1MHz		865		pF
Output capacitance	C _{oss}			105		
Reverse transfer capacitance	C _{rss}			55		
Gate resistance	R _g	f =1MHz	0.5		4.8	Ω
Turn-on delay Time	t _{d(on)}	V _{GEN} =5V, V _{DD} =10V, I _D =4A, R _G =1Ω, R _L =2.2Ω			10	ns
Rise time	t _r				20	
Turn-off Delay time	t _{d(off)}				32	
Fall yime	t _f				12	
Drain-source body diode characteristics						
Forward diode voltage	V _{SD}	V _{GS} =0V, I _S =4A		0.75	1.2	V

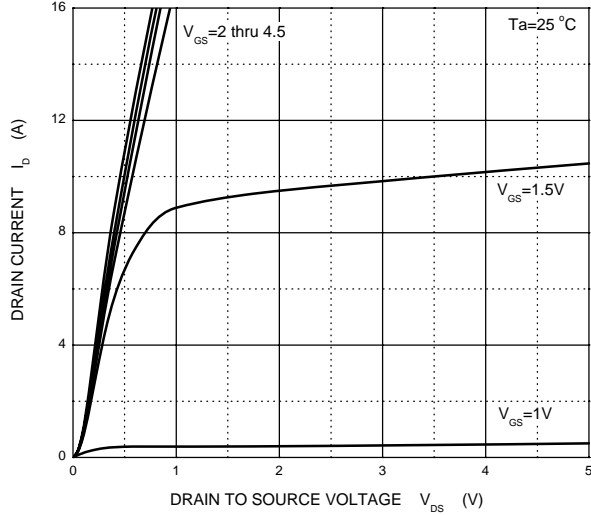
Notes :

- Pulse Test : pulse width ≤300μs, duty cycle ≤2%.
- These parameters have no way to verify.

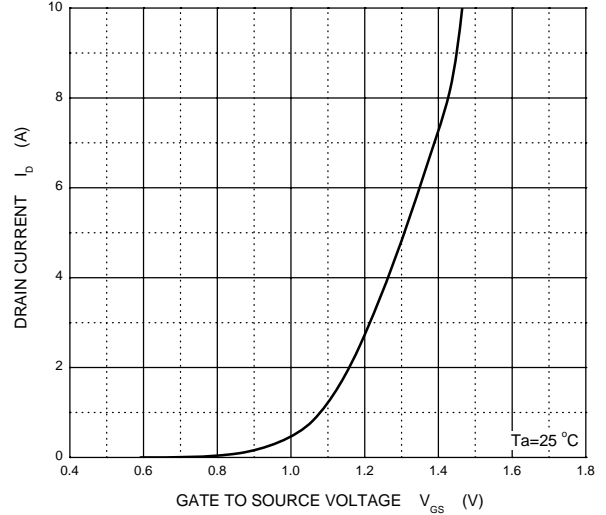


Typical Characteristics

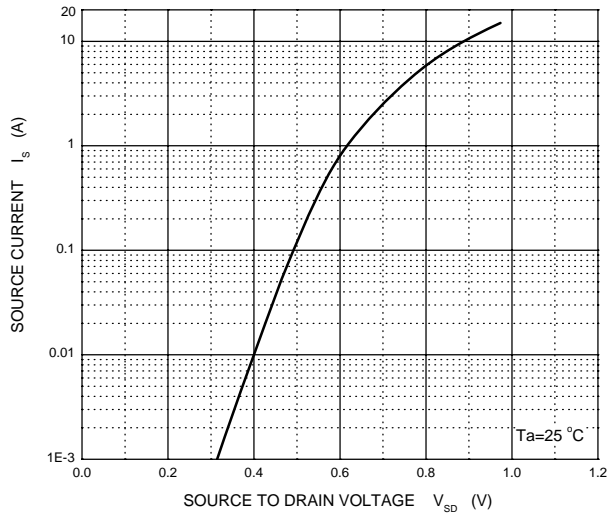
Output Characteristics



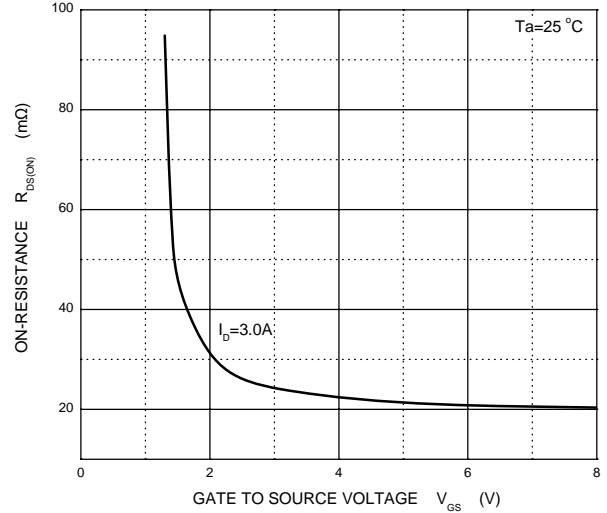
Transfer Characteristics



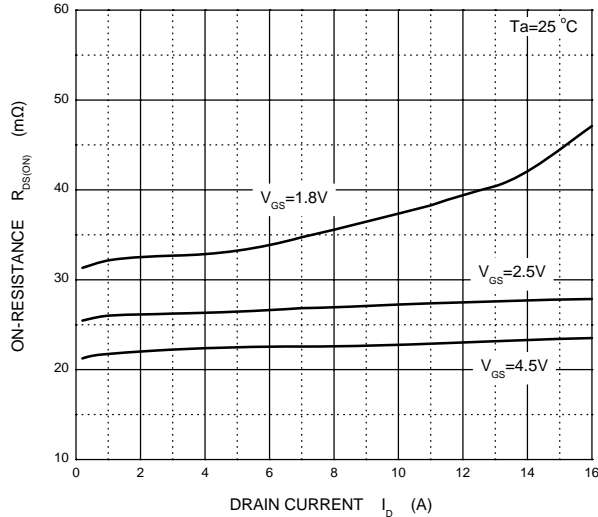
I_S — V_{SD}



$R_{DS(ON)}$ — V_{GS}



$R_{DS(ON)}$ — I_D

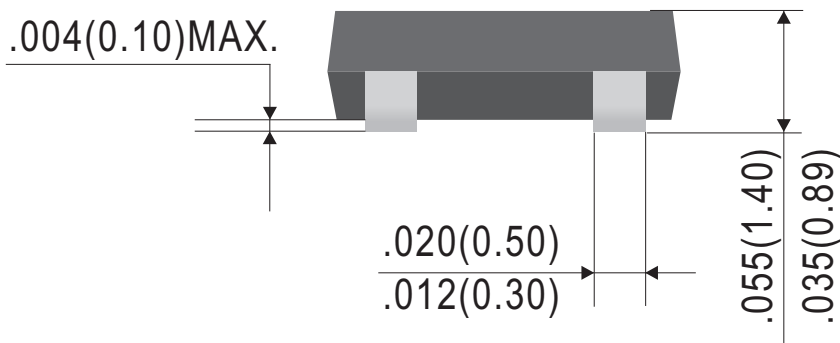
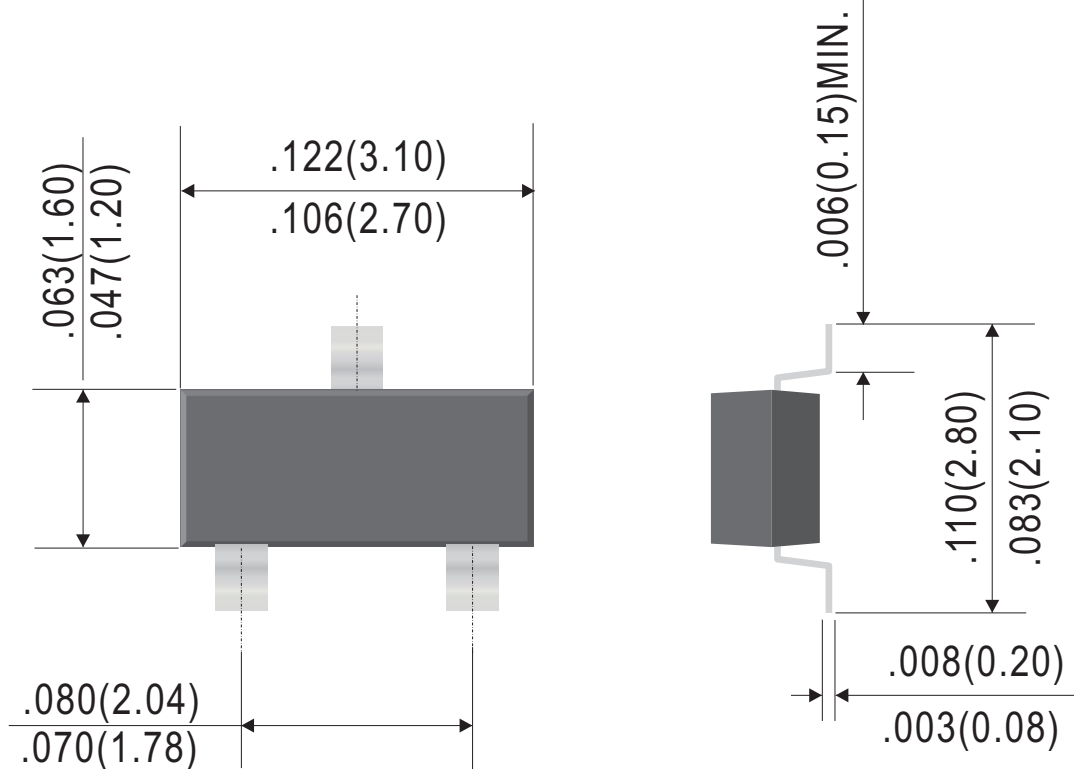




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Outline Drawing

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Dimensions in inches and (millimeters)